

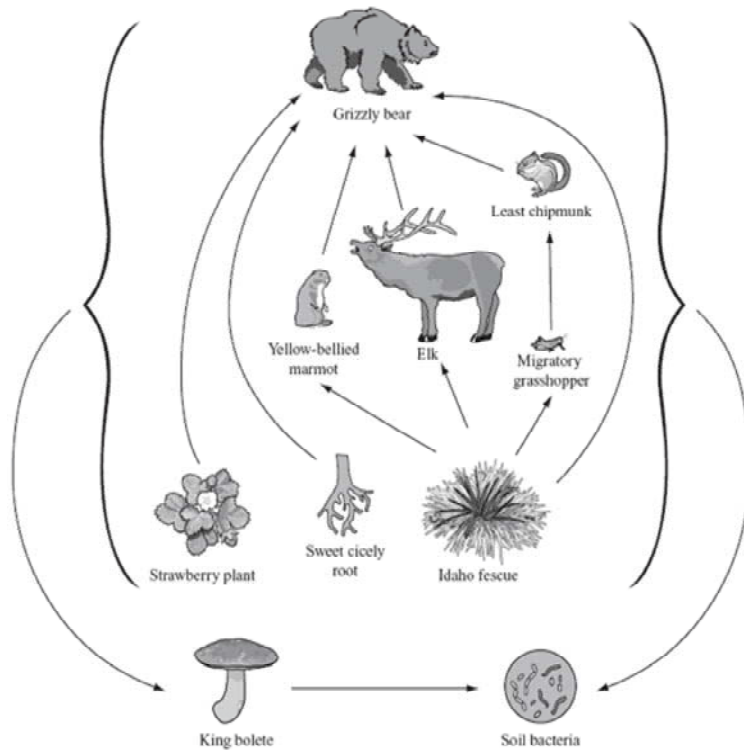
Version A

AP* Biology: Ecology Practice MC

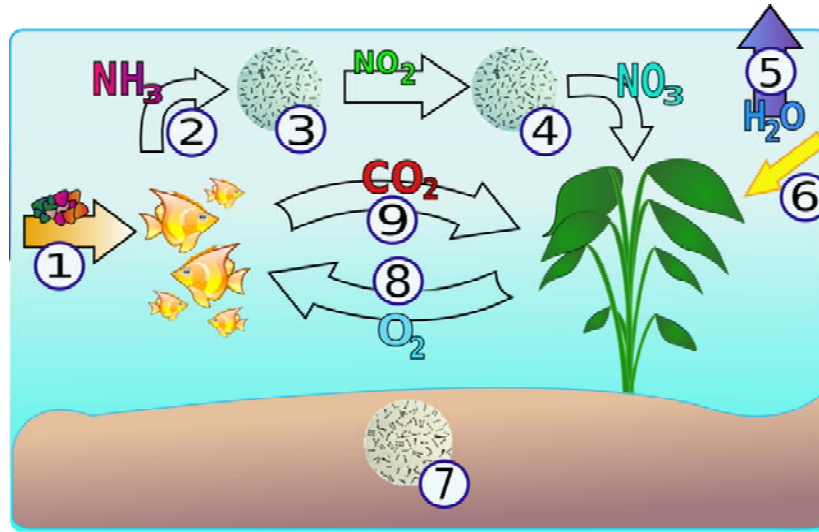
Directions: Each of the questions or incomplete statements below is followed by four suggested answers or completions. Select the one that is best in each case and mark it on your answer sheet.

Questions 1 and 2

A biologist made observations and collected data in order to establish the food web below for a given habitat.



- Which of the following organisms is most likely to be located at the apex of the pyramid of biomass?
 - King bolete
 - Idaho fescue
 - Elk
 - Grizzly Bear
- All of the following statements about the food web diagram above are correct EXCEPT:
 - All organisms, except Idaho fescue and the strawberry plant are consumers.
 - The death of the grasshopper would not cause the collapse of the food web.
 - The marmot and the elk are at the same trophic level.
 - The sweet cicely root is a producer.

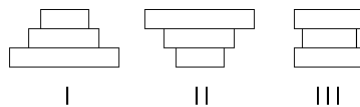


3. A typical nitrogen cycle is shown above. All organisms utilize energy to sustain life, but many organisms require that the energy be in a specific form in order for them to be able to use that energy for growth, development, and reproduction. Which of the following processes effectively makes nitrogen unavailable for plant use?
- The reduction of gaseous nitrogen to ammonia
 - The reduction of nitrate to gaseous nitrogen
 - The oxidation of nitrite to nitrate
 - The oxidation of ammonia to nitrite
4. Genetic diversity refers to the total number of genes in a species. Genetic diversity increases biodiversity because it creates variation in populations of organisms. Variation creates the potential for organisms within a population to adapt to changes in the environment differently. A population with genetic diversity has a greater chance of surviving an environmental change and increases the population's chances of surviving for additional generations. Which of the following statements about genetic diversity is true?
- Genetic uniformity of a crop increases the crop's overall resistance to pests and disease.
 - Genetic resistance to pests and diseases can be increased by crossing a crop plant with ancestral varieties.
 - Genetic engineering technology is used to increase genetic diversity by creating new species with synthetic genes.
 - Genetic diversity within populations of common crop species such as corn is typically high.

5. The Law Conservation of Matter states that matter cannot be created nor destroyed. Matter is cycled through the earth and undergoes transformations so that it can be utilized by various abiotic and biotic factors. Which of the following are true statements regarding the carbon cycle?
- I. It has increased atmospheric carbon dioxide levels, causing global warming
 - II. It involves photosynthetic processes
 - III. It leads to the reduction of aquatic biomass
- A) I only
 - B) II only
 - C) III only
 - D) I, II and III only
6. Which of the following best describe biodiversity?
- I. The range of all genetic traits, expressed and recessive, that make up a gene pool
 - II. The number of different species that inhabit a specific area
 - III. The range of habitats that can be found in a defined area
- A) I only
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 - C) I and II only
 - D) I, II and III

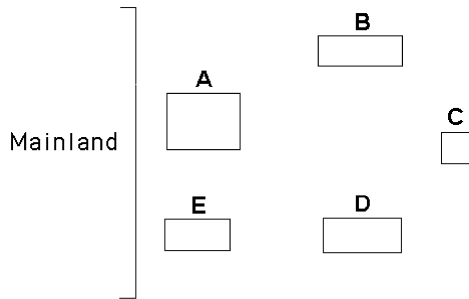
Questions 7-9

A biologist conducted a study to determine the age structure of organisms within three different populations.



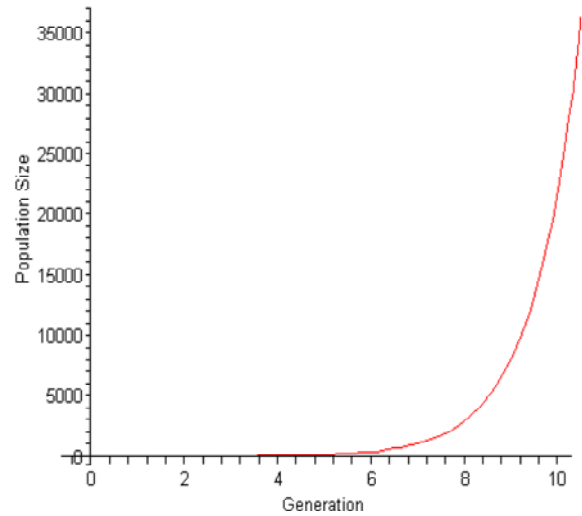
7. Which population is in the process of increasing?
- A) I only
 - B) II only
 - C) III only
 - D) I and II only
8. Which population appears to be stable?
- A) I only
 - B) II only
 - C) III only
 - D) I and II only
9. Assuming these age-structure diagrams describe human populations, in which population is future unemployment likely to be most severe?
- A) I only
 - B) II only
 - C) III only
 - D) I, II and III

Five islands formed at about the same time exist off the coast of the mainland. Note that the islands are drawn to scale.



10. Which island has the greatest number of species?
- A
 - B
 - C
 - D
 - E
11. How is it that the open ocean produces the highest net primary productivity of Earth's ecosystems, yet net primary productivity per square meter is relatively low?
- It contains greater concentrations of nutrients.
 - It receives a greater amount of solar energy per unit area.
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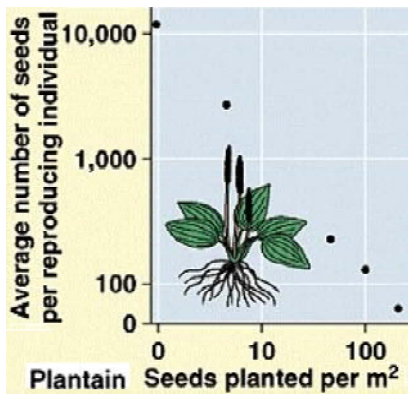
12.



The growth curve for a population is shown above. All of the following are true EXCEPT

- N is becoming larger each successive generation
- r_{\max} is positive
- Exponential growth is taking place
- The growth rate is accelerating

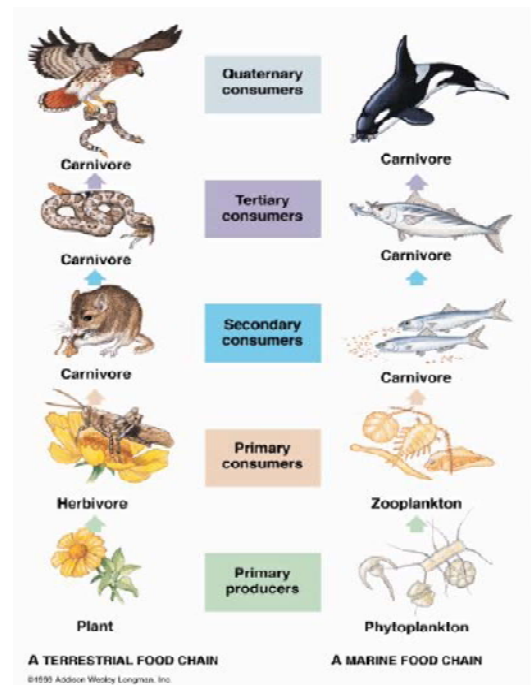
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Plantain and banana are common names for different plants from the genus *Musa*. Plantains are a fruit used primarily in cooking compared bananas which are often eaten raw. An experiment was performed to look at the relationship between the quantity of seeds produced and the number of seeds that germinate per square meter of land. The data from the experiment is graphed above. Which of the following conclusions is best supported by the data?

- A) The population of plantains is increasing.
- B) Plantain seeds do not germinate when crowded.
- C) An increased density of plantain plants decreases the individual seed output.
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14.



Examine the diagram above. All of the following are reasons why some usable energy is not transferred from one trophic level to another EXCEPT

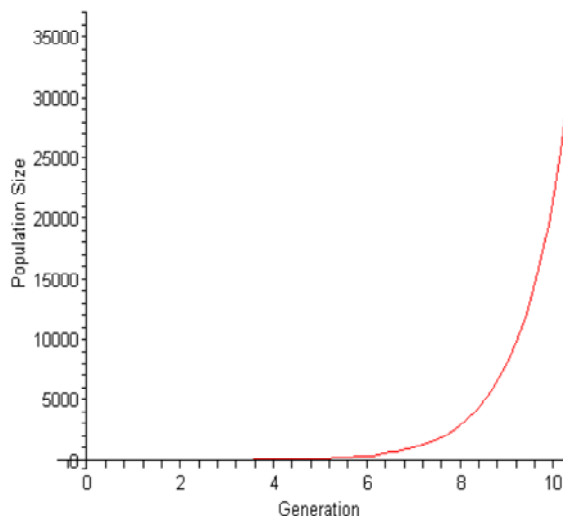
- A) There is usable energy loss due to conversion to heat energy.
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- C) The supporting trophic level is not completely consumed by the successive trophic level.
- D) Food consumed is not completely digested.

Version B

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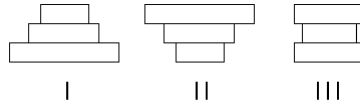


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Questions 2-4

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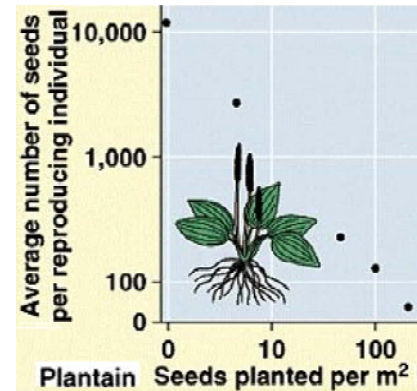
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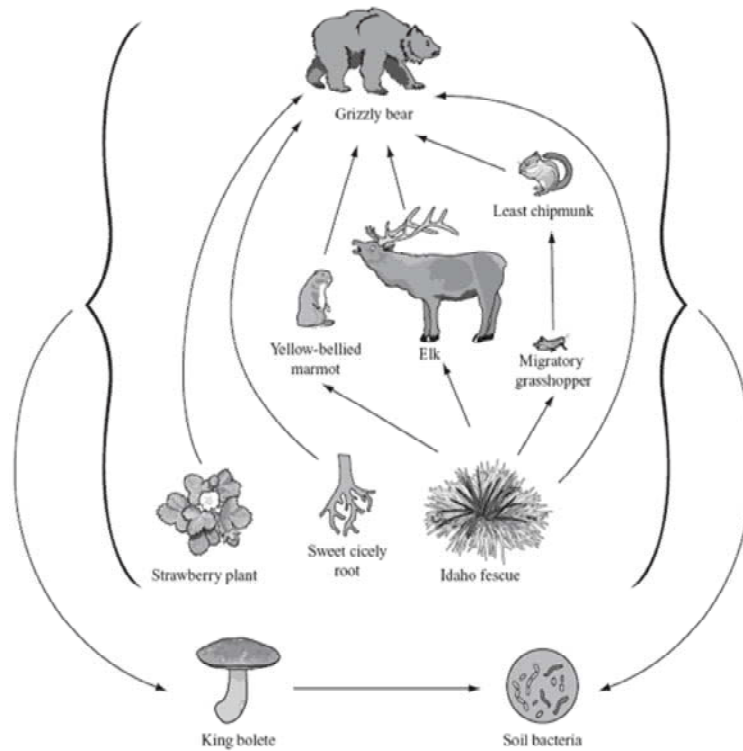
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Questions 8 and 9

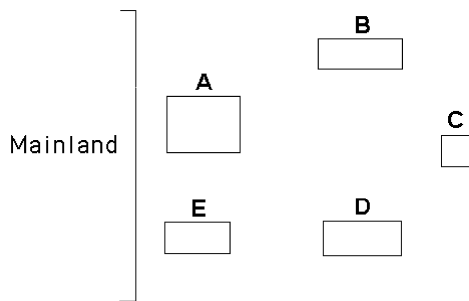
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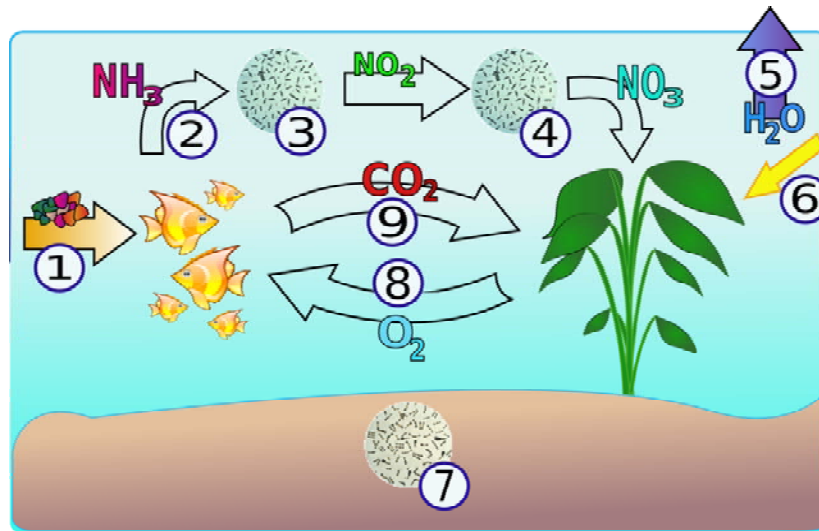
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Five islands formed at about the same time exist off the cost of the mainland. Note that the islands are drawn to scale.

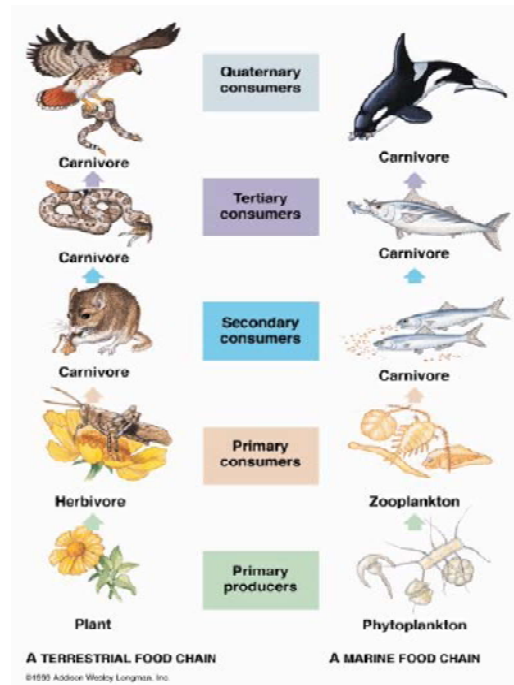


11. Which island has the greatest number of species?
- A) A
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 - D) D
 - E) E



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14.



Examine the diagram above. All of the following are reasons why some usable energy is not transferred from one trophic level to another EXCEPT

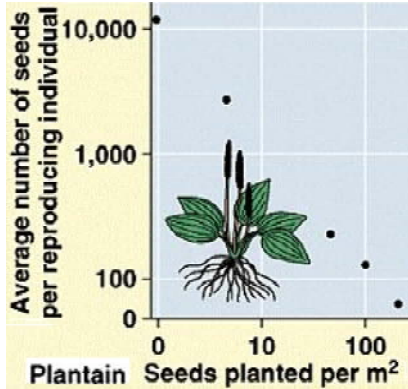
- A) There is usable energy loss due to conversion to heat energy.
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Version C

AP* Biology: Ecology Practice MC

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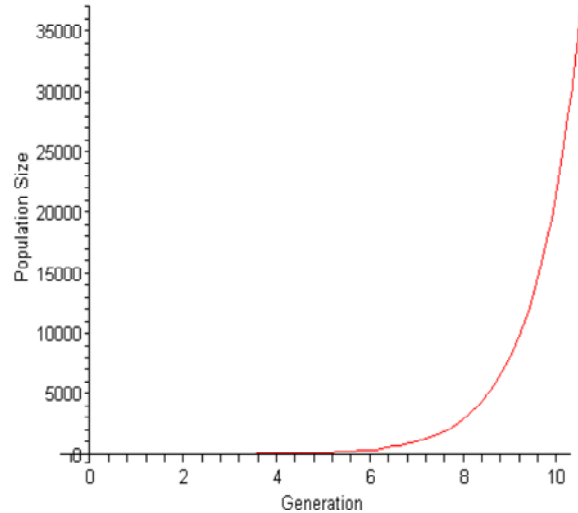
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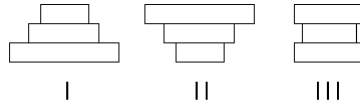


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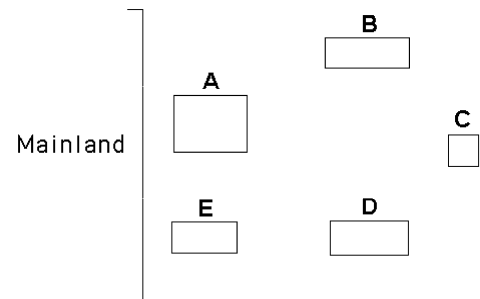
Questions 3-5

A biologist conducted a study to determine the age structure of organisms within three different populations.



3. Which population appears to be stable?
- A) I only
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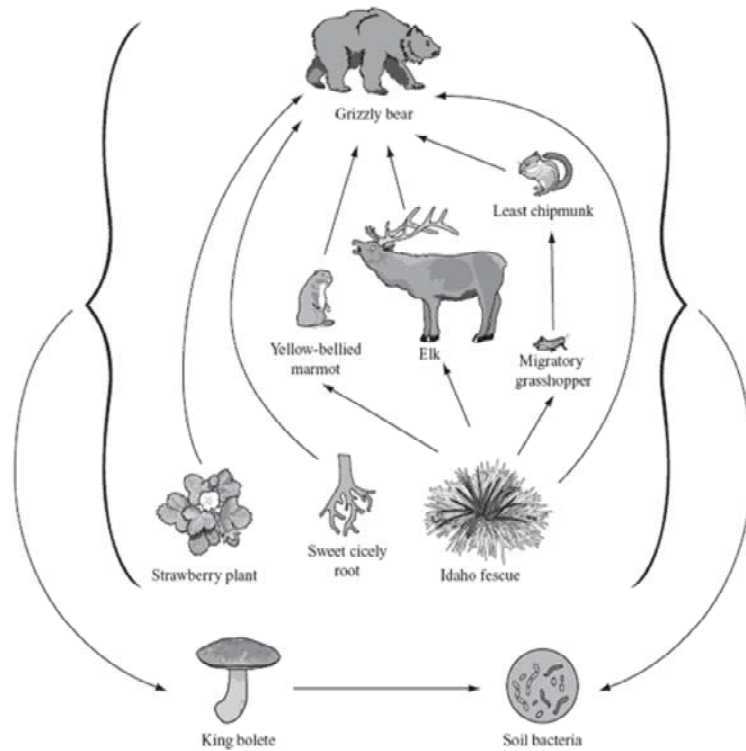
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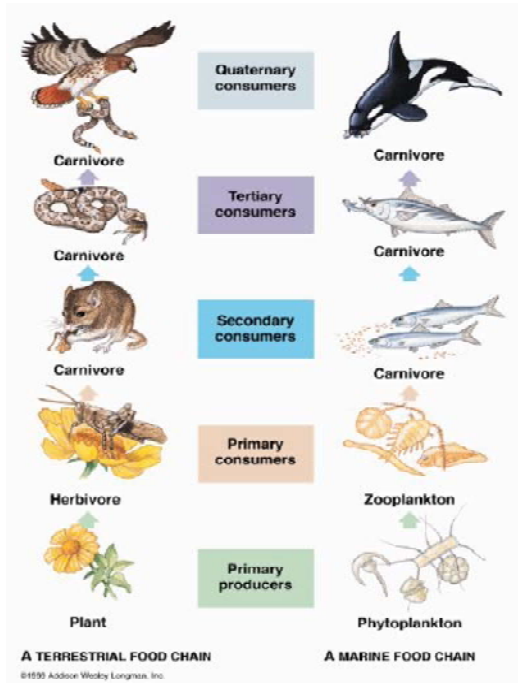
Questions 8 and 9

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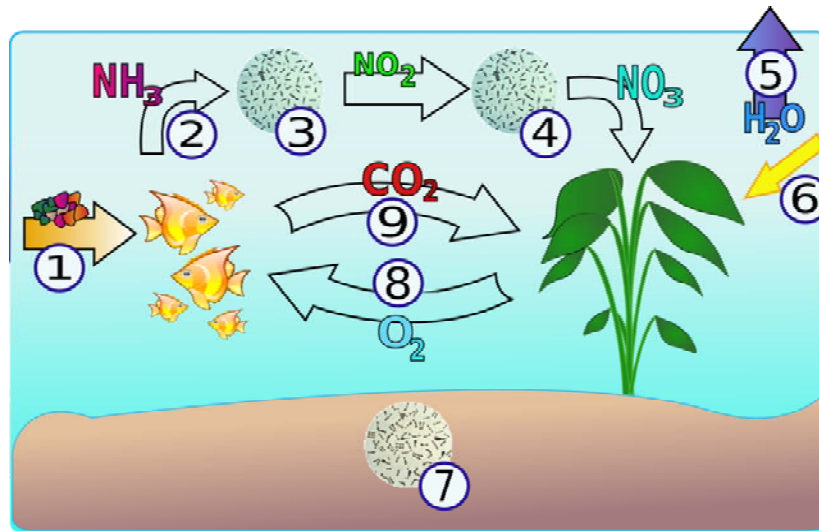


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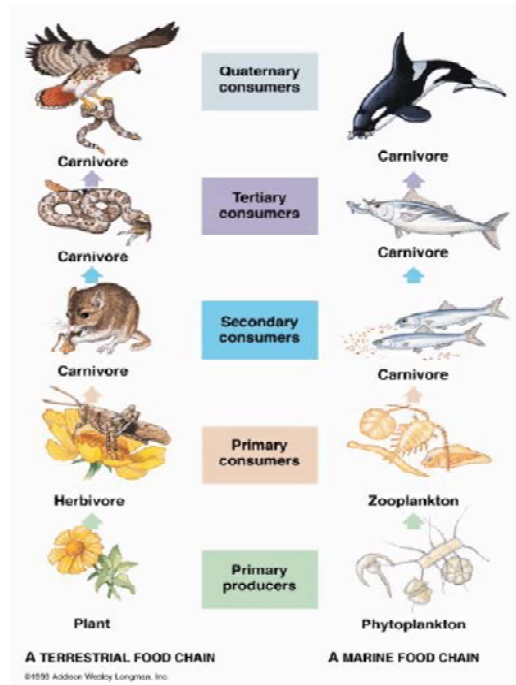
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 - The number of different species that inhabit a specific area
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- I only
 - II only
 - I and II only
 - I, II and III

Version D

AP* Biology: Ecology Practice MC

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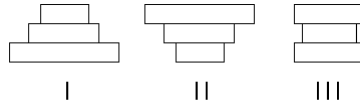


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Questions 2-4

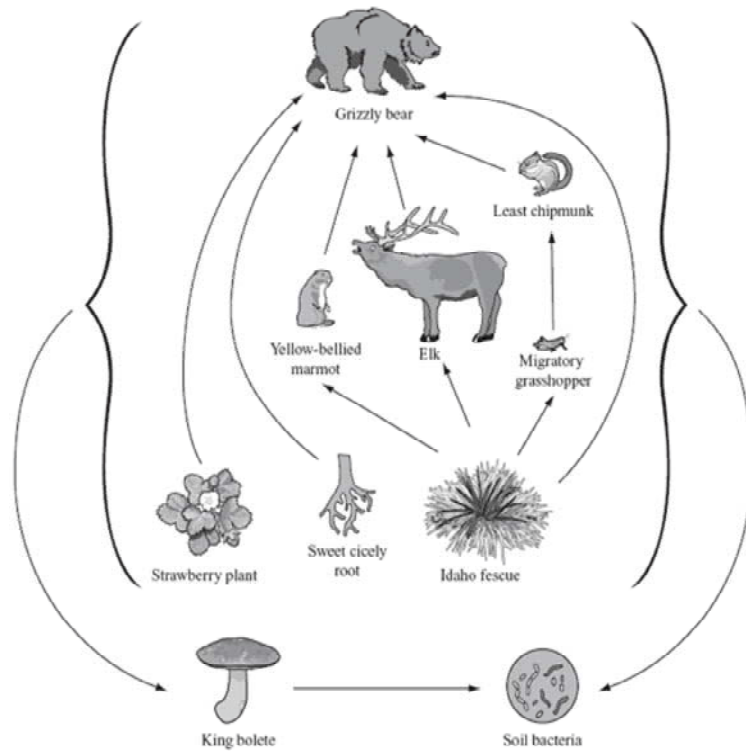
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Questions 6 and 7

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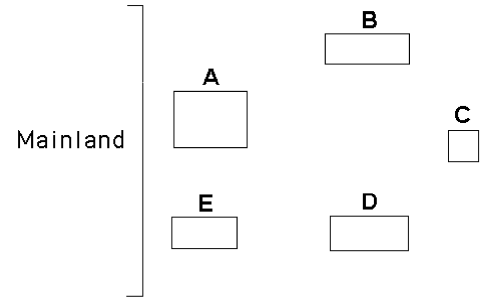


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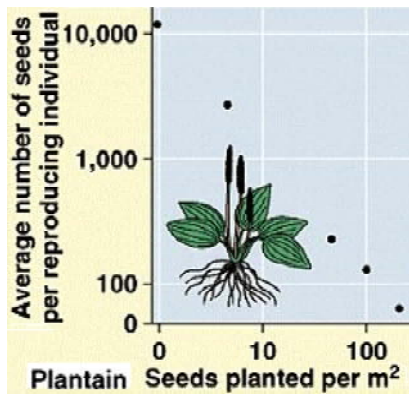
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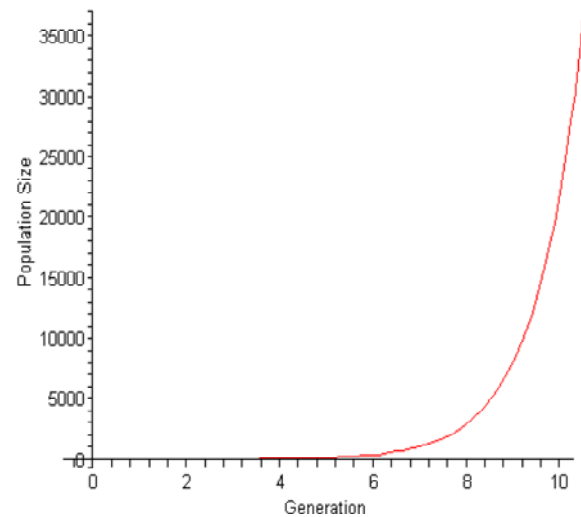
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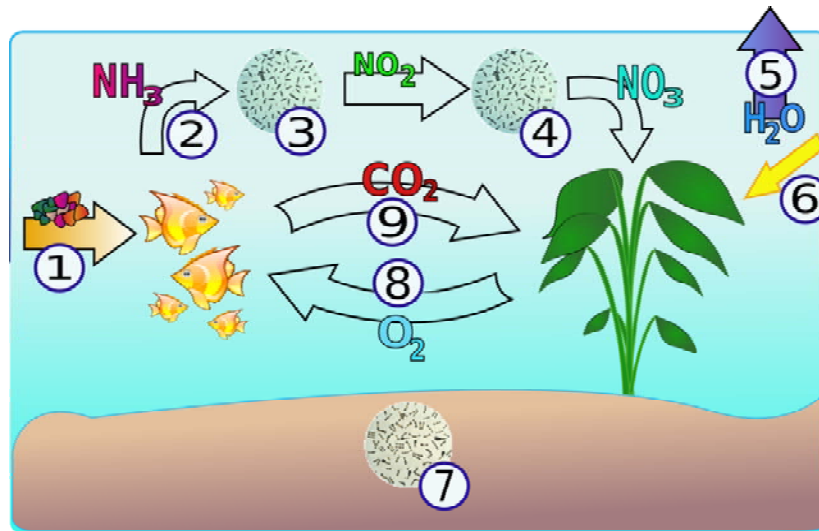
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