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## أوراق عمل الوحدة الثانية Ecosystem Dynamic الأنظمة البيئية الحيوية

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### التواصل الاجتماعي بحسب الصف السابع



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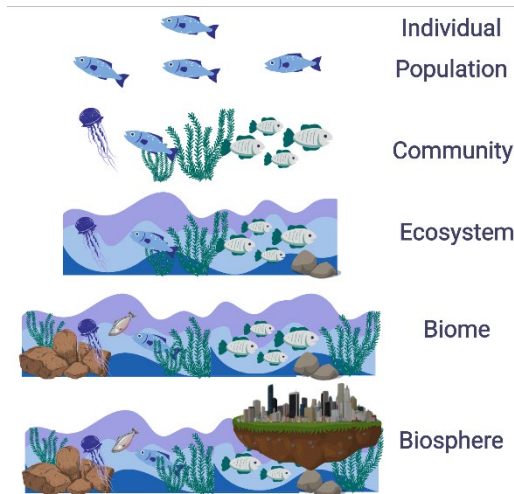
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## Dynamic Ecosystem Questions

### Lesson 1: Resources in Ecosystems



**1. Which of the following correctly describes the levels of organization in an environment, from smallest to largest?**

- A) Biosphere, Community, Population, Individual
- B) Individual, Population, Community, Ecosystem, Biosphere
- C) Ecosystem, Community, Population, Individual
- D) Population, Individual, Biosphere, Community

**2. What do you call all the organisms of the same species that live in the same area at the same time?**

- A) Community
- B) Ecosystem
- C) Population
- D) Biome

**3. What is a community in an environment?**

- A) All the living organisms in a given area.
- B) A group of organisms of the same species.
- C) All the populations of different species that live together in the same area.
- D) The area where there is no competition for resources.

**4. Which of the following is considered a limiting factor for a population?**

- A) Unlimited food supply
- B) Ample sunlight
- C) Availability of water
- D) High reproductive rate

**5. What is the term for the maximum number of individuals of one species that an ecosystem can support over time?**

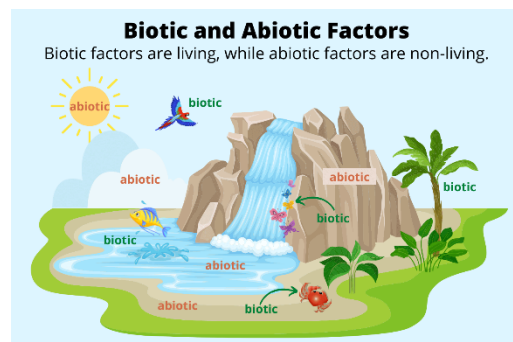
- A) Biotic potential
- B) Limiting factor
- C) Carrying capacity
- D) Biosphere

**6. What happens to a population when it reaches its carrying capacity?**

- A) It keeps growing until biotic potential is reached.
- B) It remains stable unless limiting factors change.
- C) It declines immediately.
- D) It overcomes the limiting factors and keeps increasing.

**7. In the Picture, which of the following were considered abiotic factors components of the environment?**

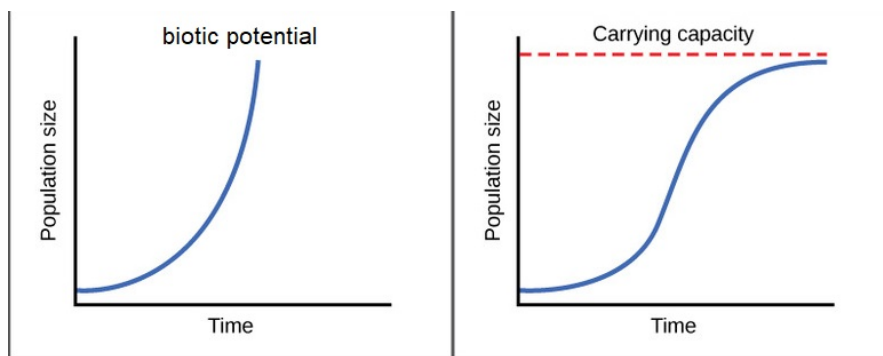
- A) Birds and mammals
- B) Rocks and water
- C) Grasses and trees
- D) Lions and antelope



### 8. How are a community and an ecosystem different?

- A) A community includes both living and nonliving things, while an ecosystem only includes living things.
- B) An ecosystem includes both living and nonliving things, while a community includes only living things.
- C) A community includes multiple ecosystems.
- D) A community is larger than an ecosystem.

### 9. Which of the following best describes the term *biotic potential*?



- A) The potential growth of a population in perfect conditions.
- B) The total number of individuals in an area.
- C) The ability of an ecosystem to support various species.
- D) The reproductive rate of a population.

### 10. What is the relationship between limiting factors and carrying capacity?

- A) Limiting factors increase carrying capacity.
- B) Limiting factors reduce the number of predators.
- C) Limiting factors determine the carrying capacity.
- D) Limiting factors have no effect on carrying capacity.

### 11. Which term refers to the interaction between a species and its environment, including living and nonliving components?

- A) Population
- B) Ecosystem
- C) Community
- D) Habitat

**12. What is the smallest unit of organization in an ecosystem?**

- A) Population
- B) Individual
- C) Community
- D) Biosphere

**13. What is the largest level of organization that includes all ecosystems on Earth and the surrounding atmosphere?**

- A) Community
- B) Population
- C) Biosphere
- D) Biome

**14. What is overpopulation?**

- A) When a population is too small to support the ecosystem.
- B) When a population's size grows too large and causes damage to the environment.
- C) When a population size decreases drastically.
- D) When a population remains stable over time.

**15. What effect does an overpopulation of birds have on the spider population in a community?**

- A) The spider population increases.
- B) The spider population remains stable.
- C) The spider population decreases.
- D) The spider population is unaffected.

**16. Which of the following can cause a decrease in population size?**

- A) Increase in food availability
- B) Decrease in competition
- C) Natural disasters like floods and fires
- D) Mild weather conditions

**17. What happens when a population's size becomes too large for its ecosystem to support?**

- A) The population reaches its biotic potential.
- B) The population size remains constant.
- C) Overpopulation occurs, and it can cause damage to the environment.
- D) The population will continue to increase without any effects.

**18. Which term describes a species that no longer has any living individuals?**

- A) Threatened species
- B) Endangered species
- C) Extinct species
- D) Overpopulated species

**19. Why did the population of the giant moa bird in New Zealand become extinct?**

- A) They were overhunted by humans.
- B) A natural disaster wiped them out.
- C) They migrated to a different area.
- D) They lost their food supply due to climate change.

**20. What is an endangered species?**

- A) A species whose population is stable and thriving.
- B) A species that is at risk of extinction.
- C) A species that is overpopulated.
- D) A species that faces no environmental threats.

**21. Which of the following is a consequence of overpopulation in an ecosystem?**

- A) Increased food supply for all organisms.
- B) Decrease in competition among species.
- C) Damage to the environment and decrease in available resources.
- D) Stability and balance in the ecosystem.

**22. What is the primary factor that led to the classification of California sea otters as a threatened species in the early 1900s?**

- A) Overhunting by humans
- B) Lack of food supply
- C) Habitat expansion
- D) Pollution in the water

**23. Which of the following terms refers to a species that is at risk, but not yet endangered?**

- A) Extinct species
- B) Overpopulated species
- C) Critically endangered species
- D) Threatened species

**24. All the meerkats that live in a wildlife refuge make up which of the following?**

- A) population
- B) community
- C) biosphere
- D) niche

**25. What is the difference between a population and a community?**

- A) A population is made up of all species in an area. A community is made up only of one species.
- B) A population is made up of only one species. A community is made up of all species in an area.
- C) A population is made up of all the species and nonliving things in an area. A community is made up of all species in an area.
- D) The words mean the same thing.



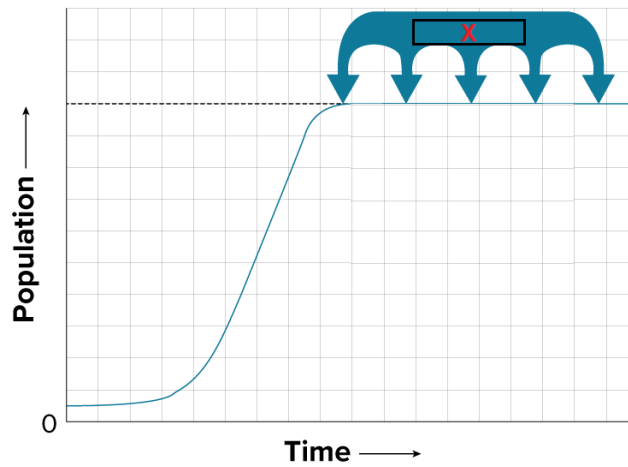
26. If there are no limiting factors, a population can reach its \_\_\_\_\_.

- A) competition level
- B) population potential
- C) population density
- D) biotic potential

27. What is the effect of the growth of a population in an ecosystem?

- A) fewer resources for each individual in the population
- B) a greater amount of resources in the ecosystem
- C) a decrease in the amount of resources needed by each individual
- D) an increase in the size of the ecosystem

28. which of the following is labelled part by X in the graph bellow?

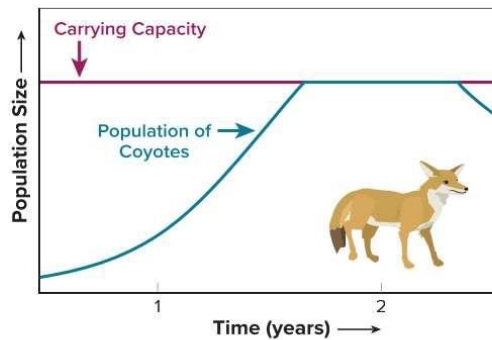


- A. Biotic potential
- B. Limiting factor
- C. Extinction
- D. overpopulation



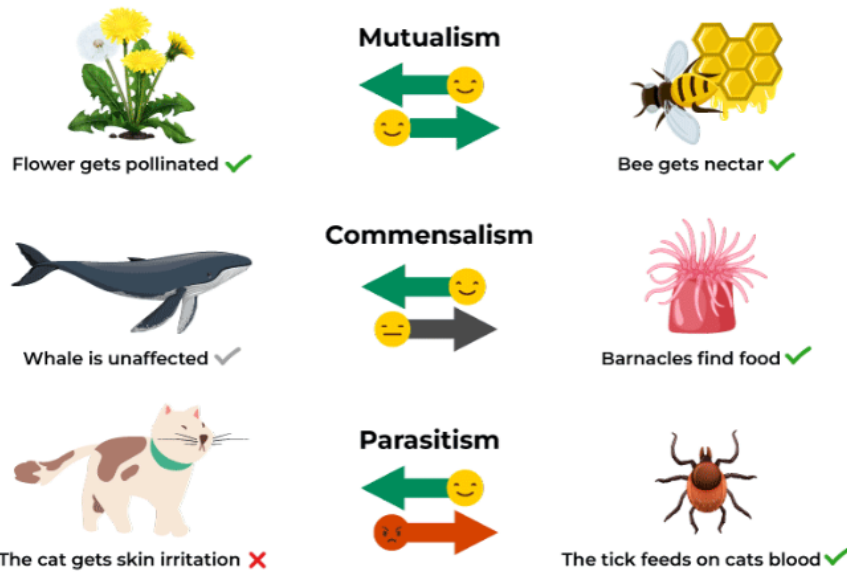
### Three-Dimensional Thinking

Examine the graph, then answer the questions below.



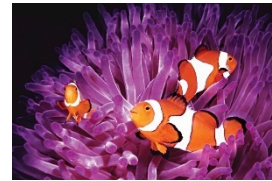
2. A population of coyotes lives in a habitat with plentiful food and no predators. Analyze the graph and interpret what is happening to their population size at the one year mark.
  - A The population size is increasing.
  - B The population size is decreasing.
  - C The population size is remaining the same.
  - D The population size cannot be inferred from the graph.
  
3. Which of the following explains what happened to the coyote population size when it reached its carrying capacity, and why?
  - A The population size continued to increase because the ecosystem had not changed.
  - B The population size stopped increasing because it had reached the largest number of coyotes that the ecosystem could support.
  - C The population size became zero because the ecosystem could no longer support the coyote population.
  - D The population size can no longer be inferred from the graph once carrying capacity is reached.

## Lesson 2: Interactions Within Ecosystems



1. What type of symbiotic relationship exists between the Barbel fish and the hippos?

- A) Commensalism
- B) Parasitism
- C) Mutualism
- D) Predation



2. Which of the following best describes mutualism?

- A) One species benefits while the other is harmed.
- B) Both species benefit from the relationship.
- C) One species benefits while the other is unaffected.
- D) Both species are harmed in the relationship

3. In the relationship between clownfish and sea anemones, how does the sea anemone benefit?

- A) It receives protection from predators.
- B) It receives energy from the clownfish's waste.
- C) It is unaffected by the clownfish's presence.
- D) It uses the clownfish as food.

**4. Which of the following is an example of commensalism?**

- A) A hunting wasp laying eggs in a spider's body.
- B) Epiphytes growing on tree trunks for more space and sunlight.
- C) Barbel fish cleaning hippos' mouths.
- D) Clownfish living among sea anemone tentacles.

**5. How does parasitism differ from mutualism?**

- A) Both species are harmed in parasitism, while both benefit in mutualism.
- B) One species benefits and the other is harmed in parasitism, while both benefit in mutualism.
- C) One species is unaffected in parasitism, while both are unaffected in mutualism.
- D) Both species benefit in parasitism, while one benefits and the other is harmed in mutualism.

**6. What is the role of the Barbel fish in its relationship with the hippos?**

- A) It harms the hippos by feeding on their flesh.
- B) It benefits by cleaning the hippos and feeding on parasites.
- C) It is unaffected by the hippos' presence.
- D) It lays eggs inside the hippos to provide food for its larvae.

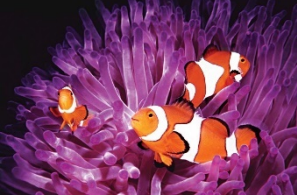


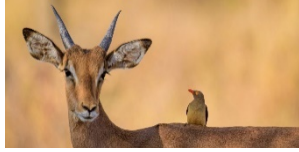
**7. Which of the following describes a parasitic relationship?**

- A) A bird building its nest in a tree.
- B) A wasp laying eggs inside a paralyzed spider.
- C) Barbel fish following and grooming hippos.
- D) A clownfish living among sea anemone tentacles.

**8. In commensalism, how is one species affected?**

- A) One species benefits, while the other is harmed.
- B) One species benefits, while the other is unaffected.
- C) Both species are harmed.
- D) Both species benefit.

9. Which of the following is a parasitic relationship?

A	B	C	D
			

10. Which of the following is an example of a cooperative relationship in ecosystems?

- A) A lion hunting a zebra
- B) Leafcutter ants carrying leaves to grow fungus for food
- C) A wolf competing with a raven for meat
- D) An osprey catching a fish

11. What is the primary benefit of predator-prey relationships in ecosystems?

- A) To increase prey populations
- B) To keep prey populations from growing too large
- C) To help predators find food more easily
- D) To promote competition among prey species

12. Which of the following best describes a competitive relationship in an ecosystem?

- A) One organism hunts and eats another.
- B) Organisms cooperate to find food.
- C) Organisms share the same habitat and compete for resources.
- D) Both organisms benefit from the relationship.

**13. How do elephants benefit from cooperative relationships within their population?**

- A) They hunt for food more effectively.
- B) They compete for sunlight and space.
- C) They raise their young and watch for predators together.
- D) They reduce their population size.

**13. What is the role of predators in maintaining healthy prey populations?**

- A) Predators help remove weak or injured individuals from prey populations.
- B) Predators help prey populations grow.
- C) Predators provide food and shelter for prey populations.
- D) Predators compete with prey for resources.

**14. What type of relationship exists between leafcutter ants when they work together to carry leaves to their nest?**

- A) Predator-prey relationship
- B) Competitive relationship
- C) Cooperative relationship
- D) Commensalism

**15. Which of the following is an example of a predator-prey relationship?**

- A) A group of elephants raising their young together.
- B) An osprey catching a fish.
- C) Trees competing for sunlight.
- D) Leafcutter ants working together to grow fungus.

**16. How does competition affect the organisms involved in a competitive relationship?**

- A) Both organisms benefit equally.
- B) One organism benefits while the other is harmed.
- C) Both organisms are harmed.
- D) One organism is harmed, and the other is unaffected.

**17. Which of the following scenarios describes a cooperative relationship?**

- A) Two trees growing taller to get more sunlight.
- B) An elephant helping another elephant watch for predators.
- C) A lion hunting and eating a zebra.
- D) A spider capturing an insect in its web.

**18. What is the main role of predators in predator-prey relationships?**

- A) To help the prey population grow larger.
- B) To reduce competition between prey species.
- C) To prevent prey populations from growing too large.
- D) To increase the number of weak individuals in the prey population.

**19. Why do trees in a forest compete with each other?**

- A) For water and nutrients only.
- B) For space to grow only.
- C) For sunlight, water, and nutrients.
- D) For predators to protect them.

**20. How does living in groups benefit squirrel monkeys in a cooperative relationship?**

- A) They can compete for the same food source.
- B) They increase the number of predators.
- C) They help each other find food and watch for danger.
- D) They reduce the size of the habitat.

**21. Nada plants some flowers in a flower bed and then ignores them. Soon weeds grow and the flowers die. The weeds had been able to get enough resources to survive, while the flowers had not. This is an example of \_\_\_\_\_.**

- A) competition
- B) population size
- C) habitat
- D) community

**22. Some populations have cooperative relationships. This is where \_\_\_\_\_.**

- A) members of the same species compete for resources
- B) members of different species compete for resources
- C) members of the same species work together for survival
- D) members of different species work together for survival

**Complete the following table:**

Mutualism- commensalism- parasitism - competition - cooperation - predator prey

Type of Relationship	Example 2
	Barbel fish and hippos: The fish clean the hippos' mouths and get food in return.
	Barnacles on whales: Barnacles get transportation, while the whales are unaffected.
	Tapeworms in the intestines of animals: The tapeworms get food, while the host is harmed.
	Trees competing for sunlight in a dense forest.
	Wolves hunting in packs to capture larger prey.
	A lion hunting and eating a zebra: The lion is the predator, and the zebra is the prey.





### Three-Dimensional Thinking

The image below depicts *Rhizobium*, a type of bacteria, growing within plant root nodules.



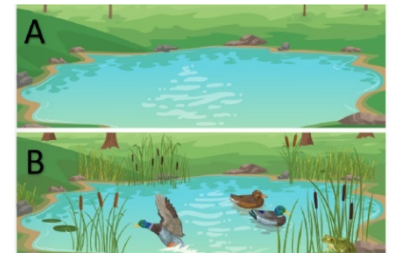
2. Imagine that you are growing bean plants. You notice that every bean plant with *Rhizobium*, a type of nitrogen-fixing bacteria, is very healthy. You also notice that the plants without *Rhizobium* in their root nodules seem to be doing poorly. Through research, you learn that *Rhizobium* gains food from the plant. What can you infer about the relationship between the *Rhizobium* bacteria and the bean plants?
- A *Rhizobium* and the bean plant are an example of commensalism.
  - B *Rhizobium* and the bean plant are an example of mutualism.
  - C *Rhizobium* and the bean plant are an example of a predator-prey interaction.
  - D *Rhizobium* and the bean plant are not part of a relationship.
- 
3. A documentary on sharks shows a small remora fish attached to the shark. The remora fish eats any parasites on the shark and leftover food. Which explanation best fits this type of relationship?
- A This relationship is parasitism because the fish is eating off the shark.
  - B This relationship is mutualism because the fish receives food and the shark is cleared of dangerous parasites.
  - C This relationship is commensalism because only the fish is benefiting while the shark is neither helped nor harmed.
  - D This relationship is cooperative because both are working together to help the fish receive food.

### Lesson 3: Changing Ecosystems

Feature	Primary Succession	Secondary Succession
<b>Starting Condition</b>	Occurs in areas with no pre-existing soil or vegetation (e.g., bare rock, lava flow, or sand dunes).	Occurs in areas where soil and some organisms are already present (e.g., after a fire, flood, or human activity).
<b>Initial Organisms</b>	Begins with pioneer species like lichens and mosses	Starts with grasses
<b>Soil formation</b>	takes a long time	Soil is already present
<b>Speed of Succession</b>	Slow	Faster
<b>Climax Community</b>	Takes a long time to reach the climax community	Reaches a climax community more quickly.

#### 1. What is ecological succession?

- A) The growth of a single plant species over time.
- B) The process of one ecological community gradually changing into another.
- C) The interaction between predator and prey in an ecosystem.
- D) The competition between organisms for resources.



#### 2. What is the final stage of ecological succession in a land ecosystem called?

- A) Primary succession
- B) Pioneer stage
- C) Climax community
- D) Secondary succession

#### 3. Which of the following is an example of primary succession?

- A) Forest regrowth after a wildfire.
- B) Grass growing in a previously mowed lawn.
- C) Lichens growing on newly formed lava rock.
- D) Weeds growing in an abandoned field.

**4. What role do lichens play in primary succession?**

- A) They provide shade for other plants to grow.
- B) They break down rock and contribute to soil formation.
- C) They compete with other plants for sunlight.
- D) They decompose dead organisms.

**5. Which of the following best describes a climax community?**

- A) A community that experiences rapid changes in species composition.
- B) A community that no longer goes through major ecological changes.
- C) A community with only one type of plant species.
- D) A community that forms immediately after a disturbance.

**6. What usually happens first during primary succession?**

- A) Large trees grow in the new area.
- B) Soil becomes deep enough to support shrubs.
- C) Mosses and ferns add nutrients to the soil.
- D) Small animals move into the new area.

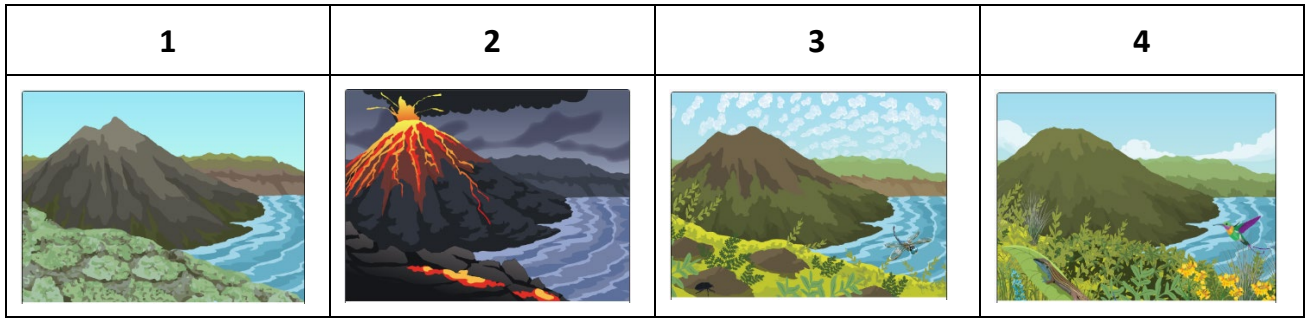
**7. Which of the following statements is true about secondary succession?**

- A) It occurs in areas where no soil or vegetation exists.
- B) It only happens after volcanic eruptions.
- C) It begins in areas where soil and some organisms are already present.
- D) It starts with the growth of lichens and mosses.

**8. What causes soil formation during primary succession?**

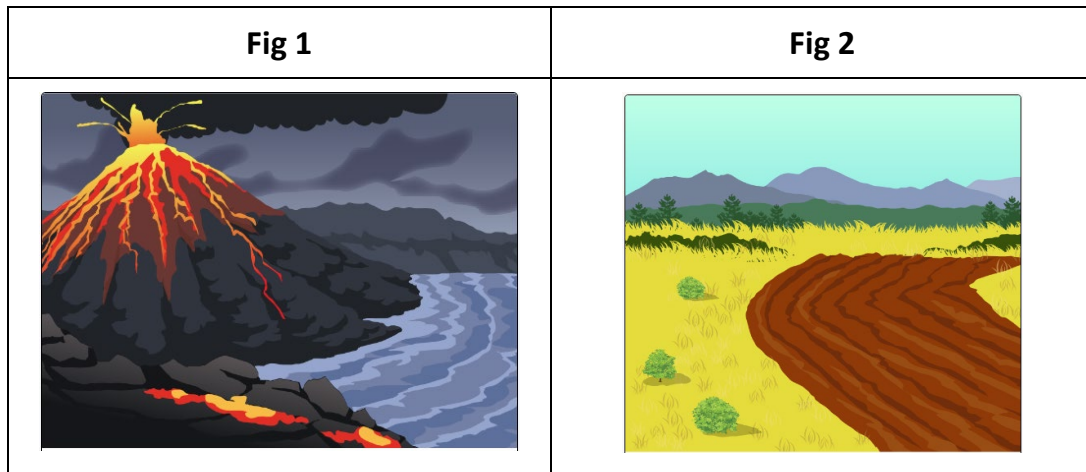
- A) Decomposition of dead animals.
- B) Weathering of rocks by lichens and mosses.
- C) Large plant roots breaking apart rocks.
- D) Precipitation carrying soil from nearby areas.

9. Put the following figures in the correct order



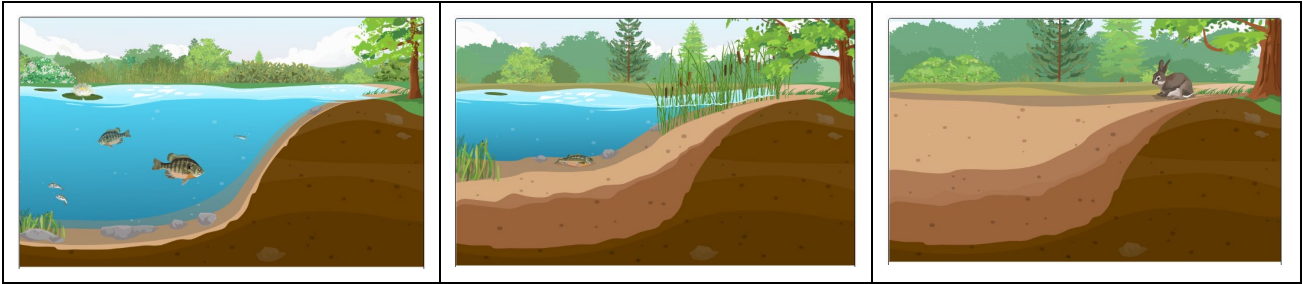
- A. 1,2,3,4
- B. 1,3,2,4
- C. 2,1,3,4
- D. 2,1,4,3

10. The following two figures show different types of ecological succession, which one of the following statements is correct?



- A. The change in fig 2 requires longer time for a climax community to develop than fig 1
- B. The change in fig 1 begins in an environment with pre-existing soil (the surface soil is present)
- C. The change in fig 2 no previous community is presented in the environment (no life)
- D. The change in fig 1, life starts with Lichen spores, they break down the rock which builds up soil, and they add nutrients to the soil as they die and decay

### Aquatic succession



#### 1. What is one negative environmental impact of sedimentation in water systems?

- A) Increased visibility for aquatic animals
- B) Improved growth of underwater plants
- C) Habitat loss and clogging of waterways
- D) Reduction in the amount of nutrients in the water

#### 2. How can suspended sediment in water negatively impact aquatic plants?

- A) By increasing the oxygen levels in the water
- B) By reducing the amount of light that reaches them
- C) By creating more space for plant growth
- D) By increasing the temperature of the water

#### 3. What is eutrophication?

- A) The process of water becoming clear and oxygen-rich
- B) The process of water becoming nutrient-rich due to decaying organisms and runoff
- C) The process of sediment being removed from water systems
- D) The process of decreasing nutrient levels in water systems

#### 4. As eutrophication occurs, populations of algae grow.

##### How does this speed up succession?

- A. The algae use so much of the oxygen in the water that fish die, decay and add to the build up of soil.
- B. The algae become soil.
- C. The growth of the algae causes pollution to increase.
- D. The presence of the algae encourages sediment to drop out of streams into the pond.

5. Which of the following is an example of a **natural** disruption that can change an ecosystem?

- A) Deforestation
- B) Drilling for oil
- C) Forest fire
- D) Building a dam

6. How can natural disturbances like forest fires **benefit** an ecosystem?

- A) By decreasing the diversity of plant life
- B) By increasing the number of pollutants
- C) By controlling the size of certain populations and allowing new plant growth
- D) By causing habitat loss and soil erosion

7. What is one major consequence of habitat loss due to deforestation?

- A) Increased food sources for animals
- B) Disruption of forest ecosystems
- C) Decreased extraction of natural resources
- D) Improved air quality

8. How does pollution typically affect populations in an ecosystem?

- A) It increases the variety of species in the area.
- B) It decreases the amount of available nutrients for organisms.
- C) It prevents nonnative species from entering the ecosystem.
- D) It causes a more stable environment for native species.

9. What impact do **nonnative species** typically have on ecosystems?

- A) They help native species thrive by providing additional food.
- B) They usually decrease competition among native species.
- C) They can lead to overcrowding and competition, disrupting native populations.
- D) They always benefit the ecosystem by increasing biodiversity.

**10. Which of the following is an example of resource extraction that can disrupt ecosystems?**

- A) Using solar panels for energy
- B) Planting more trees in urban areas
- C) Mining for minerals and deforestation
- D) Practicing crop rotation on farms

**11. How can oil drilling negatively impact aquatic environments?**

- A) By providing more habitats for marine animals
- B) By causing soil erosion along coastlines
- C) By leading to oil spills that devastate aquatic life
- D) By creating more food resources for fish

**12. What effect can air pollution from human activities have on ecosystems?**

- A) It provides additional nutrients for plant growth.
- B) It causes harmful gases to enter the atmosphere, impacting plant and animal life.
- C) It improves the reproductive rate of native species.
- D) It only affects human health and not other organisms.

**13. What is eutrophication, and how does it relate to pollution?**

- A) It is the process of removing nutrients from soil, caused by natural disasters.
- B) It is the accumulation of pollutants in water that leads to an excess of nutrients, harming aquatic ecosystems.
- C) It is the introduction of nonnative species that reduces biodiversity.
- D) It is the recovery of ecosystems after a natural disturbance.

**14. Which of the following is a direct consequence of introducing nonnative species into an ecosystem?**

- A) Increased food sources for native predators.
- B) Stabilization of the ecosystem by filling empty niches.
- C) Disruption of existing populations and potential extinction of native species.
- D) Reduced competition and increased cooperation among species

15. Which of the following is **NOT** from the negative impacts of sedimentation?

- A. Coastline alteration
- B. Increase visibility for animals to find food in water
- C. Cover habitats of fish or other animals
- D. Clog waterways and flooding



### Three-Dimensional Thinking

After a devastating forest fire, small green sprouts begin to appear on the forest floor.



2. What is happening in the image?

- A The forest is undergoing primary succession.
- B The forest is undergoing secondary succession.
- C The green sprouts will not grow into full plants and the forest will not recover.
- D The forest is suffering from eutrophication.

3. How might a lake suffering from eutrophication affect a population of fish?

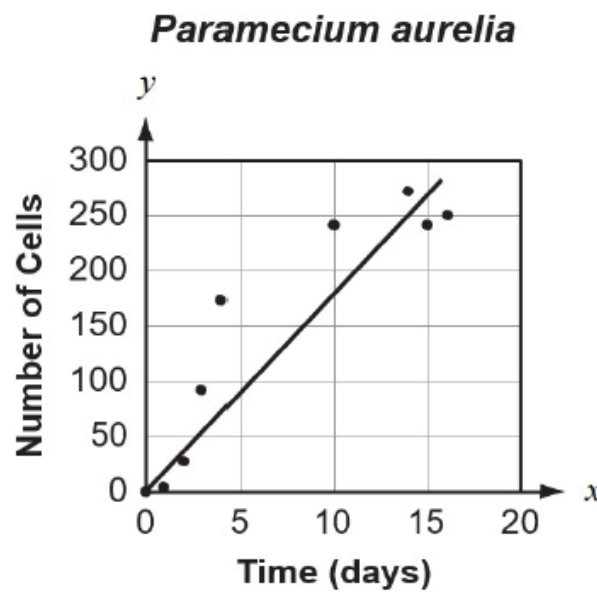
- A The population will grow because of the extra nutrients.
- B The population will suffer due to decreases in oxygen and habitat loss.
- C The fish population will not be affected.
- D The size of the population will waver.



Which change in the ecosystem increases the carrying capacity for a particular species?

- A) drought
- B) flood
- C) appearance of a competing species
- D) disappearance of a competing species

What does the graph of *P. caudatum*'s growth in relation to time and food supply indicate?



- A) The population will continue to decrease as long as food and water are available.
- B) The population will grow over time with unlimited food, water, and space.
- C) The population will remain constant regardless of the food and water supply.
- D) The population will immediately decrease once food is introduced.