What is Ecological Succession?

Worksheet

Ecological succession is the orderly replacement of species in a community over time, moving from pioneer species toward a stable climax community. It occurs as primary succession (starting on bare land with no soil) or secondary succession (starting where soil already exists after a disturbance).

Questions

1. Which type of succession starts on bare rock with no soil?

A) Secondary succession
B) Primary succession
C) Climax succession
D) Pioneer succession

2. Which organisms typically colonize an area first during primary succession?

A) Oak trees
B) Lichens and mosses
C) Large mammals
D) Shrubs

3. Why is secondary succession usually faster than primary succession?

A) It has more sunlight
B) Soil, seeds, and roots are already present
C) There are no pioneer species
D) Climax communities form first

4. What best describes a biome?

A) A single species population
B) A large ecological region defined by climate and dominant vegetation
C) A short-term disturbance event
D) A single climax tree

5. A volcanic eruption creates a new island of bare lava rock. Describe the succession that follows.

6. A forest fire burns through a woodland but leaves the soil intact. What type of succession occurs, and how does it differ from succession on bare rock?

7. An abandoned farm field is left untouched. Rank the order in which grasses, shrubs, and forest trees are expected to appear.

8. Define: What is primary succession?

9. Define: What is secondary succession?

10. Define: What is a pioneer species?

Answer Key

1. B) Primary succession - Primary succession begins on lifeless substrates like bare rock or lava where no soil exists yet.

2. B) Lichens and mosses - Lichens and mosses are pioneer species that can survive on bare rock and begin breaking it into soil.

3. B) Soil, seeds, and roots are already present - Because soil and seed banks already exist, secondary succession skips the slow soil-building stage.

4. B) A large ecological region defined by climate and dominant vegetation - A biome is a broad geographic region, like a desert or tundra, shaped mainly by climate.

5. This is primary succession because there is no soil at the start. Lichens and mosses arrive first as pioneer species and break down the rock. Dead lichen matter mixes with rock particles to form thin soil. Grasses, then shrubs, then trees colonize as soil deepens and matures. A climax forest community eventually stabilizes on the island.

6. Because soil, seeds, and roots already exist, this is secondary succession. Secondary succession skips the slow soil-building stage of primary succession. Fast-growing grasses and weeds appear within months. Shrubs and fast-growing trees follow within a few years. A climax community re-establishes much faster than primary succession, often in decades rather than centuries.

7. This is secondary succession since farmland already has soil. Order of appearance: grasses and weeds first (fast-growing, sun-loving). Then shrubs and small sun-tolerant trees establish. Finally, shade-tolerant trees grow up and form a mature forest, the climax community.

8. Succession that begins on bare land with no existing soil, such as after a volcanic eruption or glacial retreat.

9. Succession that begins where soil already exists, following a disturbance like a fire, flood, or abandoned farmland.

10. The first organisms (often lichens or mosses) to colonize a lifeless area and begin soil formation.