

What is Community Succession?

Worksheet

Community succession is ecological change driven by pioneer species establishing first, then being replaced by later species over decades or centuries until reaching climax equilibrium. Two main types exist: primary succession (bare rock/lava) and secondary succession (disturbed but not sterilized land).

Questions

1. Which organisms typically colonize bare rock first?
 - A) Lichens and mosses
 - B) Oak and maple trees
 - C) Grasses and shrubs
 - D) Ferns only
2. Primary succession occurs on
 - A) Disturbed soil after a fire
 - B) Abandoned farmland
 - C) Bare rock or fresh lava flow
 - D) Already-established meadows
3. What defines a climax community?
 - A) The first species to arrive
 - B) A stable, self-maintaining community in equilibrium with climate
 - C) Only present in tropical forests
 - D) Changes rapidly every year
4. A forest fire kills trees but leaves soil intact. What type of succession follows?
 - A) Primary succession only
 - B) Secondary succession
 - C) No succession; forest won't recover
 - D) Climax community immediately
5. A lava flow in Hawaii is colonized by pioneer species. Trace succession for 200 years.
6. An abandoned farm in North Carolina stops being plowed. What is the succession pathway?
7. A forest fire destroys most vegetation in a temperate woodland. Is this primary or secondary succession?
8. Define: What is community succession?
9. Define: What are pioneer species?
10. Define: Difference: primary vs secondary succession?

Answer Key

1. A) Lichens and mosses - Lichens and mosses are pioneer species hardy enough to break down rock and start soil formation.
2. C) Bare rock or fresh lava flow - Primary succession requires no pre-existing soil; it must form from bare substrate.
3. B) A stable, self-maintaining community in equilibrium with climate - Climax is the stable endpoint of succession when species composition no longer changes without disturbance.
4. B) Secondary succession - Soil remains intact, so secondary (faster) succession occurs, not primary.
5. Year 0-10: Lichens and mosses establish, breaking rock into soil. Year 10-50: Grasses, ferns, small shrubs appear; soil thickens. Year 50-150: Native 'hi'a trees establish; understory fills with native plants. Year 150+: Mature 'hi'a forest with diverse canopy and ground layer.
6. Year 0-3: Pioneer annuals (crabgrass, ragweed) quickly dominate. Year 3-10: Perennial grasses and small shrubs; pine seedlings establish. Year 10-30: Pine forest dominates; shade increases; oak seedlings germinate. Year 30+: Oaks replace pines; transition to oak-hickory hardwood forest (climax for the region).
7. This is secondary succession - soil remains intact despite fire. Year 1-2: Fast-growing herbaceous plants and grasses dominate (pioneer herbaceous stage). Year 2-15: Shrubs and small trees (often fire-adapted species like aspen) establish. Year 15+: Slower shade-tolerant species gradually replace pioneers; eventual return to original forest type or new climax depending on climate shifts.
8. Gradual change in species composition and ecosystem structure over time, from pioneers to a stable climax community.
9. Fast-growing, hardy species like lichens and grasses that colonize bare substrate first and create conditions for later species.
10. Primary: bare substrate (rock, lava); soil must form. Secondary: disturbed but soil remains; faster succession.

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