

Directions: Read all the directions thoroughly and make sure to read the overview and objectives. Answer all questions below on a separate piece of paper, and be sure to visit all the web links as indicated. When visiting the web links, make sure you read all the information and look over the images, and answer any associated questions.

Objectives: After studying this material you should be able to:

1. Describe an ecosystem and explain how the biological community interacts with its environment.
2. Explain the role of disturbance in (natural and managed) ecosystems and its relationship to succession.
3. Explain what primary succession is and give some real world examples.
4. Explain what secondary succession is and distinguish it from primary succession.
5. Describe how living components in the ecosystem change nonliving components during succession.

Ecological Succession - Overview

From the Latin, *succedere*, to follow after

"Change in the species composition of a community over time." (Lewis, Life glossary)

- **Primary Succession** follows the formation of new land surfaces consisting of rock, lava, volcanic ash, sand, clay, or some other exclusively **mineral substrate**.
 - This means that there is **NO SOIL** present.
 - Soil is a mixture of mineral material, decaying organic material, and living organisms.
- **Secondary Succession** follows the destruction or partial destruction of the vegetation area by some sort of disturbance, like a fire, windstorm, or flood that leaves the soil intact.
- **Pioneer species** initiate recovery following disturbance in both primary AND secondary successions

Pioneers "pave the way" for later colonists by altering the biotic and abiotic environment:

- soil stabilization
 - soil nutrient enrichment (organic matter and [biological nitrogen fixation](#))
 - increased moisture holding capacity
 - light availability
 - temperature
 - exposure to wind
- Species composition tends towards a **Climax Community** through succession.
 - The climax community describes an end product of succession that persists until disturbed by environmental change.
 - Succession occurs on large scales involving higher plants and animals, but may involve microbial communities on a smaller scale.

Watch the youtube video → http://www.youtube.com/watch?v=Y9EQbKH_hA&feature=related (note if the video does not play, just move on to the next portion of the activity)

Visit the web link → http://www.geowords.org/ensci/imagesbook/04_03_succession.swf

1. How is primary succession different from secondary succession?
2. Describe the example of secondary succession indicated in the simulation
3. How does the rate of secondary succession compare to primary succession?
4. Imagine a lawn on campus or in someone's yard. Are there any examples of succession there now? If no one maintained it for five years, what might it look like? What would it look like after 10 years? 50? 100?

<http://bcs.whfreeman.com/thelifewire/content/chp55/55020.html>

Visit the link above, read the introduction, watch the animation, take the quiz, and answer the following questions:

5. What are some of the "pioneer" species in glacial moraines?
6. How do alder trees affect nitrogen content in soil?
7. How do the alder trees influence spruce tree growth?
8. Write the answers to the two quiz questions.