



Lesson 15-4

Changes in Communities



How do primary and secondary succession differ?

I. How do primary and secondary succession differ?

A. Fires, floods, volcanoes, hurricanes and other natural disasters can change communities very quickly.

*Even without disasters communities change

*The series of predictable changes that occur in community over time is called succession

B. Primary Succession

When a new island is formed by volcanic eruption or rock is exposed from a melting glacier, there are no living things present.

*Over time living things will inhabit the area

*Primary succession is the series of changes that occurs in an area where no soil or organisms exist

*First species to populate an area are called pioneer species

*Pioneer species are often carried by wind or water

-Typical pioneer species= lichens and mosses

-As pioneer species grow, they start to break up the soil

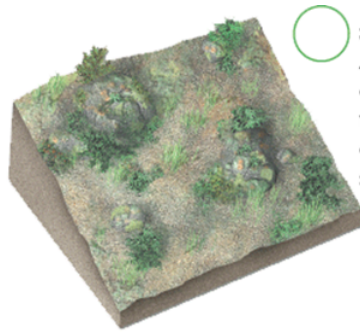
-When they die, they provide nutrients that enrich the thin layer of soil forming on the rocks

*As plants seeds land in the new soil, they begin to grow

*Specific plants that grow will depend on the climate

*Eventually succession may lead to a community of organisms that does not change unless the ecosystem is disturbed.

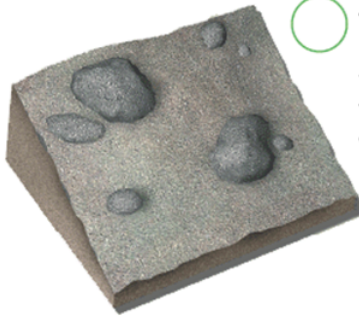
-a mature community could take centuries

**Soil Creation**

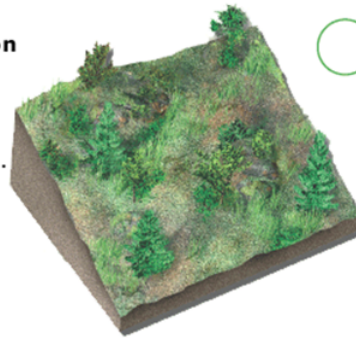
As pioneer species grow and die, soil forms. Some plants grow in this new soil.

**Pioneer Species**

The first species to grow are pioneer species such as mosses and lichens.

**Volcanic Eruption**

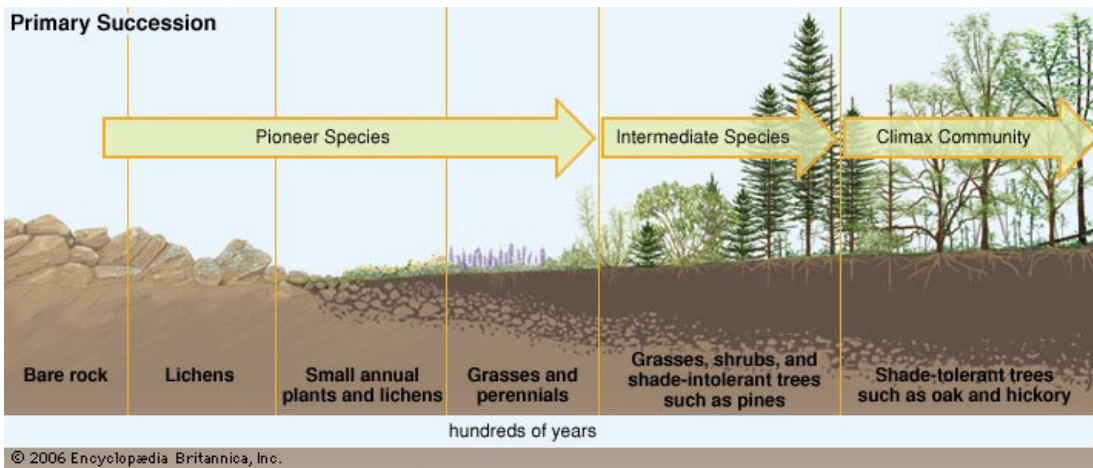
Shortly after a volcanic eruption, there is no soil, only ash and rock.

**Fertile Soil and Maturing Plants**

As more plants die, they decompose and make the soil more fertile. New plants grow and existing plants mature in the fertile soil.

Primary Succession

Primary succession occurs in an area where no soil and no organisms exist.





Example of Primary Succession: *Surtsey Island, Iceland.

- Surtsey Island: A volcanic island (1.5 km) off of Iceland that was formed by an underwater volcanic eruption between 1963 and 1967.
- Surtsey island gave scientists an opportunity to study primary succession taking place



Surtsey Today



C. Secondary Succession

Secondary succession is a series of changes that occurs in an area where the ecosystem had been disturbed, but the soil and organisms still exist

- *Natural disturbances that have this effect include fires, hurricanes, and tornadoes

- *Human activities like farming, logging and mining may also disturb an ecosystem and cause secondary succession to begin

- *Unlike primary succession, secondary succession occurs in a place where an ecosystem currently exists.

- *Usually occur more rapidly because soil and seed already exist

ex. abandoned field > tree growth begins > forest develops > mature community

The diagram shows a cross-section of a landscape undergoing secondary succession. From left to right, it depicts: 1. An abandoned field with grasses and wildflowers. 2. A field where pine seedlings and other trees are beginning to replace the grasses. 3. A forest where trees are crowding out the grasses. 4. A mature forest dominated by oak, hickory, and pine trees. Below the landscape, a blue arrow points to the right, labeled 'Increasing time'. Below the arrow are four boxes, each with a 'Title:' label and a description of the stage.

Increasing time

Title: Grasses and wildflowers have taken over this abandoned field.

Title: After a few years, pine seedlings and other trees replace some of the grasses and wildflowers.

Title: As tree growth continues, the trees begin to crowd out the grasses and wildflowers.

Title: Eventually, a forest of mostly oak, hickory, and some pine dominates the landscape.

Secondary Succession

Secondary succession occurs following a disturbance to an ecosystem, such as clearing a forest for farmland

A rock band is performing on a stage. The stage is flanked by two large speaker stacks. The left stack is labeled 'Primary Succession' and the right stack is labeled 'Secondary Succession'. The band consists of a drummer, a guitarist, and a bassist. Below the stage, there are two rows of cards, each with a small image and a text label. The top row contains: 'farming', 'soil present but disturbed', 'no organisms', 'flood', and 'no existing ecosystems'. The bottom row contains: 'no soil', 'organisms present but disturbed', 'mining', 'glacier', 'volcanic eruption', 'fire', 'tornado', and 'existing ecosystem'. Each card has a small image of a disturbance or condition. The stage has a red curtain background and a blue floor. There are also some icons in the top right corner: a speaker, a refresh icon, and a pencil icon.

Primary Succession

Secondary Succession

farming

soil present but disturbed

no organisms

flood

no existing ecosystems

no soil

organisms present but disturbed

mining

glacier

volcanic eruption

fire

tornado

existing ecosystem