

Primary Succession

As a glacier retreats, the process of primary succession will occur. Describe the various stages that lead to the development of a mature community.

Step 1: As a glacier retreats it scrapes rock bare.

OR

new rock is formed after a volcanic eruption occurs and the lava cools.

Step 2: Spores are transported to the bare rock by wind and water.

The spores are typically lichens

Step 3: The lichens grow on the rocks causing break down by chemical secretions.

★ Lichens Definition: Lichens are an organism composed of an alga and a fungus
Why can lichens grow on bare rock?

Primary Succession Continued

Step 3 continued: As the lichens grow and then die soil starts to form from the organic material left behind.

★ This process take hundreds of years

Many cycles occur of lichen growth and death.

Additionally weathering occurs by wind, rain & freezing to form soil.

Step 4:

- The soil enables other organisms to grow when their spores land on the soil.
- The spores are transported via wind, rain & other organisms.
- The organism must be able to withstand harsh conditions (nutrient-poor)
- These organisms are called pioneer species which include mosses

Pioneer Species Definition: They are the first organism to survive and reproduce in an area.

Step 5: • The moss lives and dies through many cycles leading to the formation of more organic matter → soil

- Pioneer species alter both abiotic & biotic components of the environment
 - ◊ make soil more fertile
 - ◊ ↑ soil's ability to hold moisture
 - ◊ provide food for other organisms (insects)
 - ◊ animals (small) start to appear.

Primary Succession

Step 6:

- grasses, wildflowers and shrubs begin to grow as the accumulation of organic matter for the soil contains more nutrients and can retain/hold more water.
- More insects, micro-organisms and other organisms move in

Step 7:

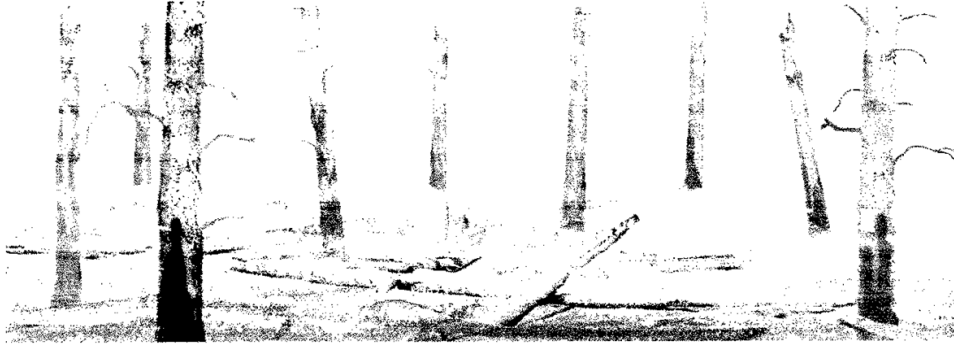
- Animals transport tree seed into the area
- The first trees to grow will be deciduous as they can tolerate direct sunlight
- As these trees grow they produce shaded areas where shade intolerant plants will die off and be replaced by shade tolerant plants.
 - ◊ This ↑ diversity

Step 8:

- Coniferous trees start to grow in the shaded areas.
- The conifers grow taller than the deciduous trees casting them into the shade.
- Deciduous trees die off and conifers take over
- This is the climax community

*NOTE: The 3 major types of climax communities are coniferous forests in northern latitudes, deciduous in temperate zones, and tropical forests in tropical zones.

2. Secondary Succession



Results of Forest Fire

After a forest fire, not much is left except ash and burnt trees. Describe the sequence of events that will occur during secondary succession.

Step 1: • The soil has been exposed
• Within the soil micro-organisms, worms, insects along with a variety of seeds exist.
• Seeds are also carried in by animals

Step 2: • The existing nutrients are used by the organisms present.

Step 3: • This type of succession is much faster