

## **Chapter 5 How Ecosystems Work**

### **Section 3: How Ecosystems Change**

#### **Preview**

- **Objectives**
- **Ecological Succession**

#### **Objectives**

- **List two examples of ecological succession.**
- **Explain how a pioneer species contributes to ecological succession.**
- **Explain what happens during old-field succession.**
- **Describe how lichens contribute to primary succession.**

#### **Ecological Succession**

- **Ecosystems are constantly changing.**
- **Ecological succession is a gradual process of change and replacement of the types of species in a community.**
- **Each new community that arises often makes it harder for the previous community to survive.**
- **Primary succession is a type of succession that occurs on a surface where no ecosystem existed before. It begins in an area that previously did not support life.**
- **Primary succession can occur on rocks, cliffs, or sand dunes.**
- **Secondary succession occurs on a surface where an ecosystem has previously existed. It is the process by which one community replaces another community that has been partially or totally destroyed.**
- **Secondary succession can occur in ecosystems that have been disturbed or disrupted by humans, animals, or by natural process such as storms, floods, earthquakes, or volcanic eruptions.**
- **A pioneer species is a species that colonizes an uninhabited area and that starts an ecological cycle in which many other species become established.**
- **Over time, a pioneer species will make the new area habitable for other species.**
- **A climax community is the final, stable community in equilibrium with the environment.**

- Even though a climax community may change in small ways, this type of community may remain the same through time if it is not disturbed.
- Natural fires caused by lightning are a necessary part of secondary succession in some communities.

### **Ecological Succession cont.**

- Minor forest fires remove accumulations of brush and deadwood that would otherwise contribute to major fires that burn out of control.
- Some animal species also depend on occasional fires because they feed on the vegetation that sprouts after a fire has cleared the land.
- Old-field succession is a type of secondary succession that occurs when farmland is abandoned.
- When a farmer stops cultivating a field, grasses and weeds quickly grow and cover the abandoned land.
- Over time, taller plants, such as perennial grasses, shrubs, and trees take over the area.



- **Primary succession can occur**
- **on new islands created by volcanic eruptions**
- **in areas exposed when a glacier retreats**
- **any other surface that has not previously supported life**

- **Primary succession is much slower than secondary succession. This is because it begins where there is no soil.**
- **The first pioneer species to colonize bare rock will probably be bacteria and lichens, which can live without soil.**
- **The growth of lichens breaks down the rock, which with the action of water, begins to form soil.**