

## Section 3: How Ecosystems Change

### Preview

- Classroom Catalyst
- Objectives
- Ecological Succession
- Primary Succession
- Secondary Succession
- Old-Field Succession
- Fire and Secondary Succession

◀ Back

Next ▶

Preview

Main

## Classroom Catalyst

### Section 3: How Ecosystems Change

**Are your school grounds undergoing ecological succession?**

**What clues would you look for to answer this question?**

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Write your response in your science journal.

◀ Back

Next ▶

Preview

Main

### Objectives

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

- **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 new islands created by volcanic eruptions, in areas exposed when a glacier retreats, or 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.

### Primary Succession

- 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.
- The first pioneer species to colonize bare rock are usually 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.

## Secondary Succession

- **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, and earthquakes.

### Secondary Succession

- 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.



### Old-Field Succession

- 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.

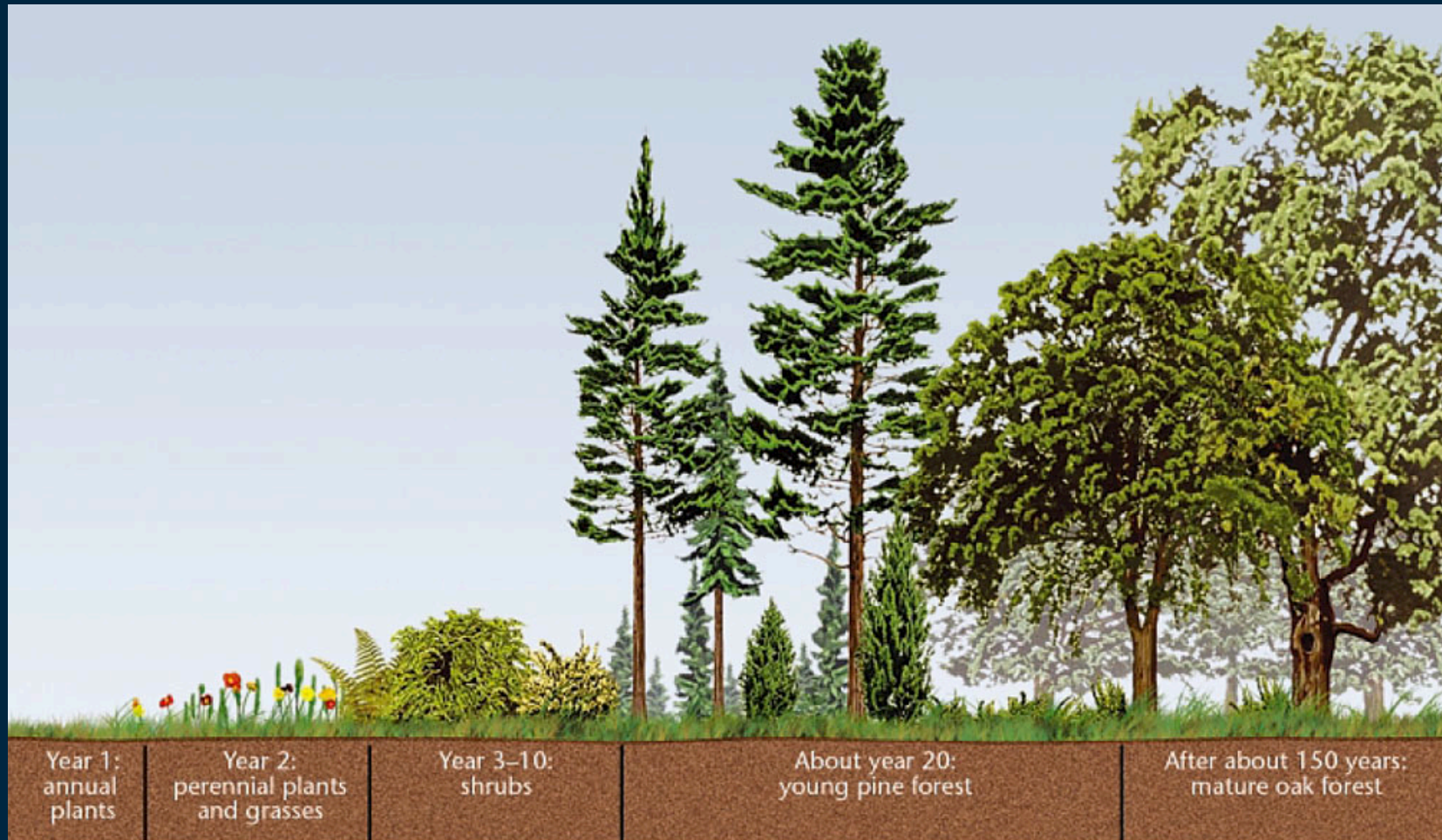
◀ Back

Next ▶

Preview

Main

## Secondary Succession



◀ Back

Next ▶

Preview

Main

## Fire and Secondary Succession

- Natural fires caused by lightning are a necessary part of secondary succession in some communities.
- 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.