Chapter 5

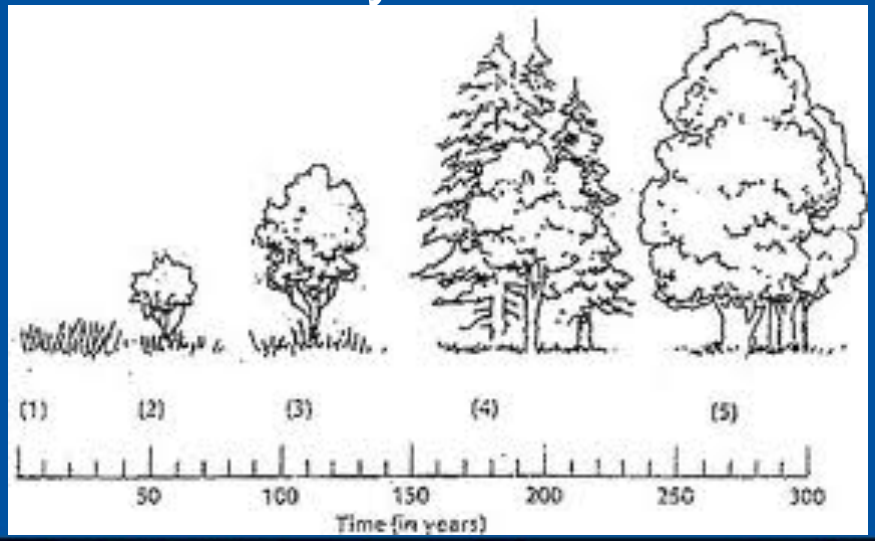
How Ecosystems Work

Section 3: How Ecosystems Change

DAY ONE

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.



Ecological Succession

Ecological Succession Video

Ecological 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 **rocks, cliffs, or sand dunes**.

Ecological 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, earthquakes, or volcanic eruptions.

Ecological 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.
- 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.

Climax Community

Climax Community

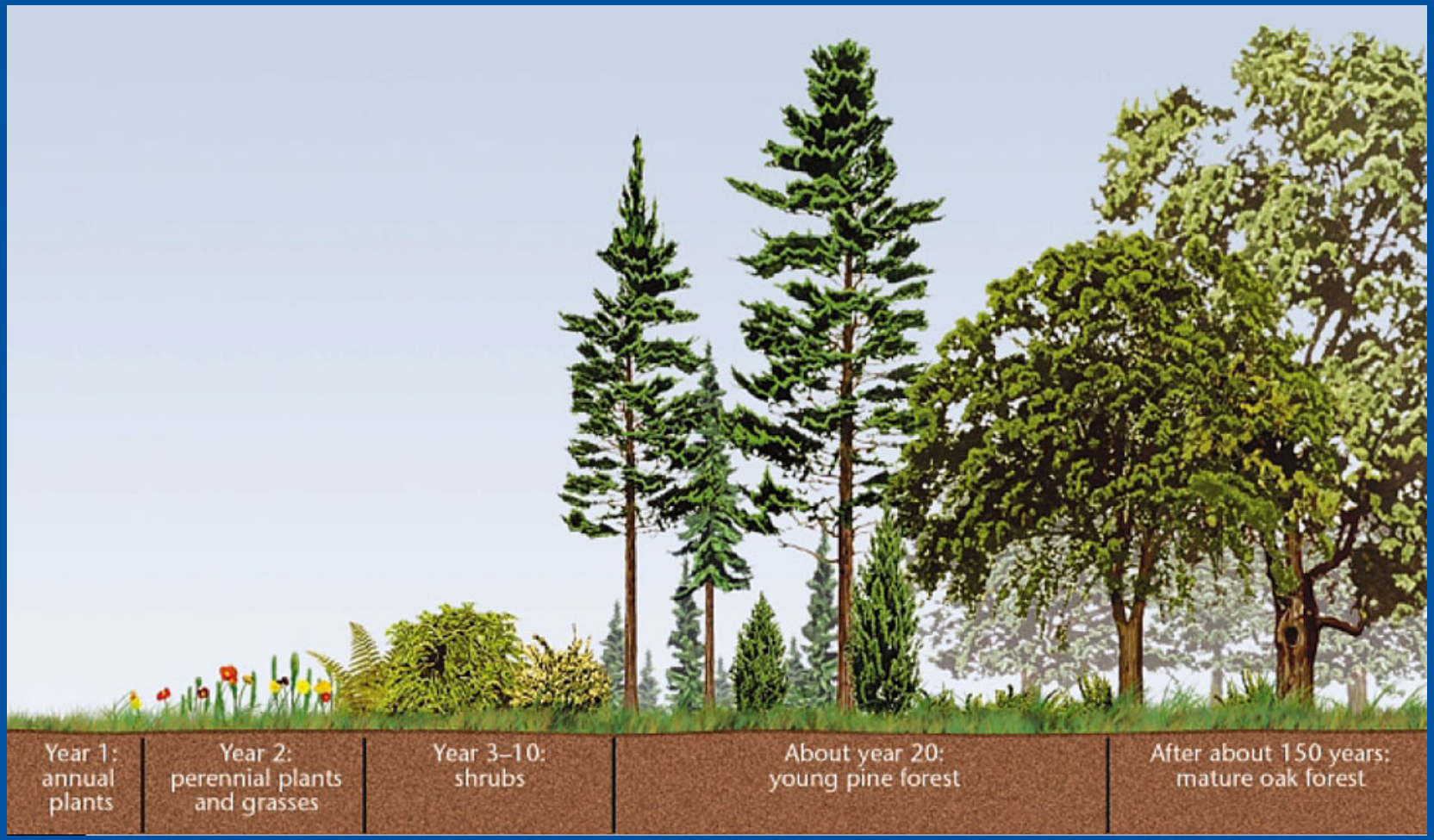
Ecological Succession

- **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.

Ecological 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.

Ecological Succession



Ecological Succession

- **Primary succession** can occur on new islands created by **volcanic eruptions**.
- Primary succession is much slower than secondary succession. This is because it begins where there is no soil.

Ecological Succession

- 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.

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