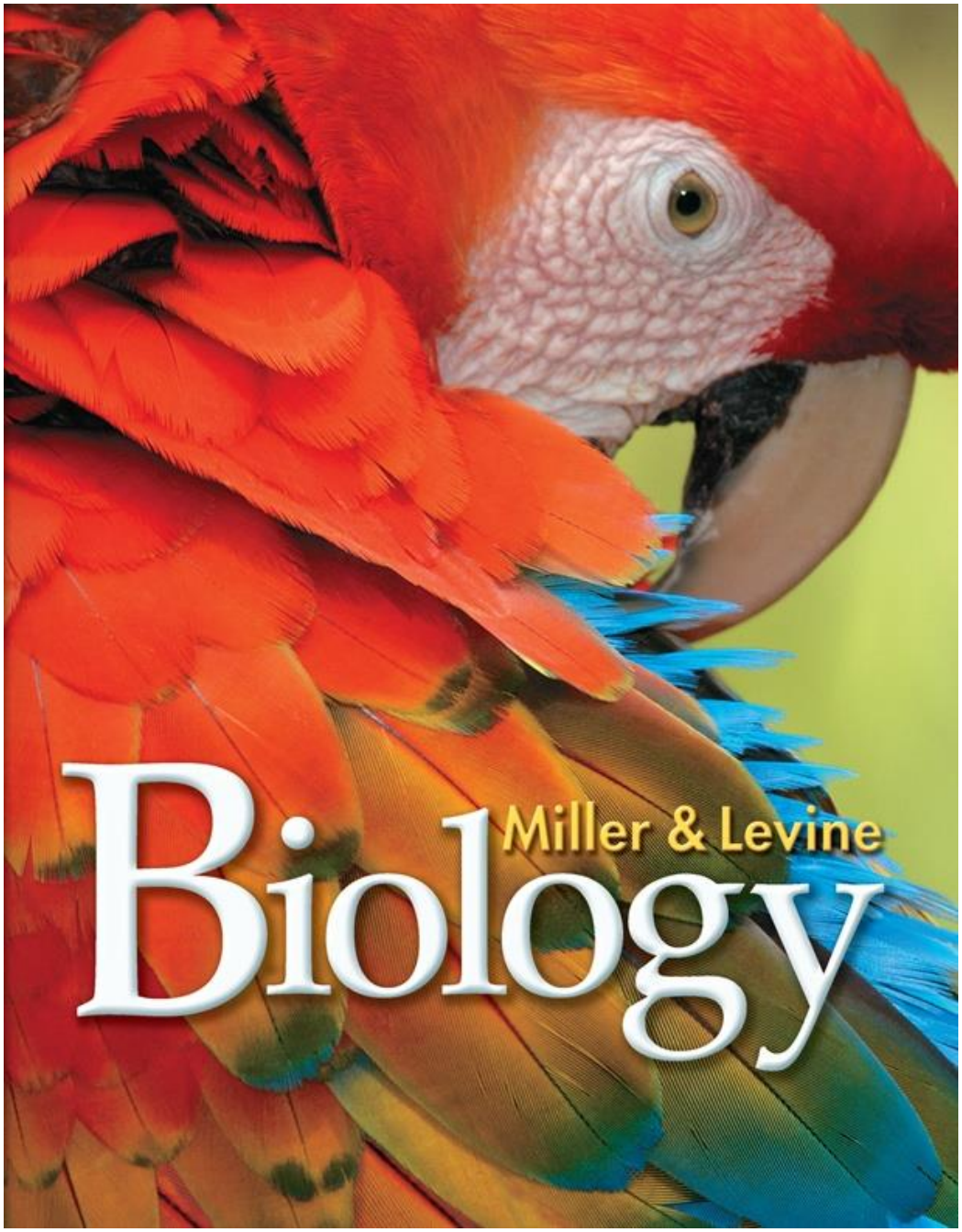


Lesson Overview

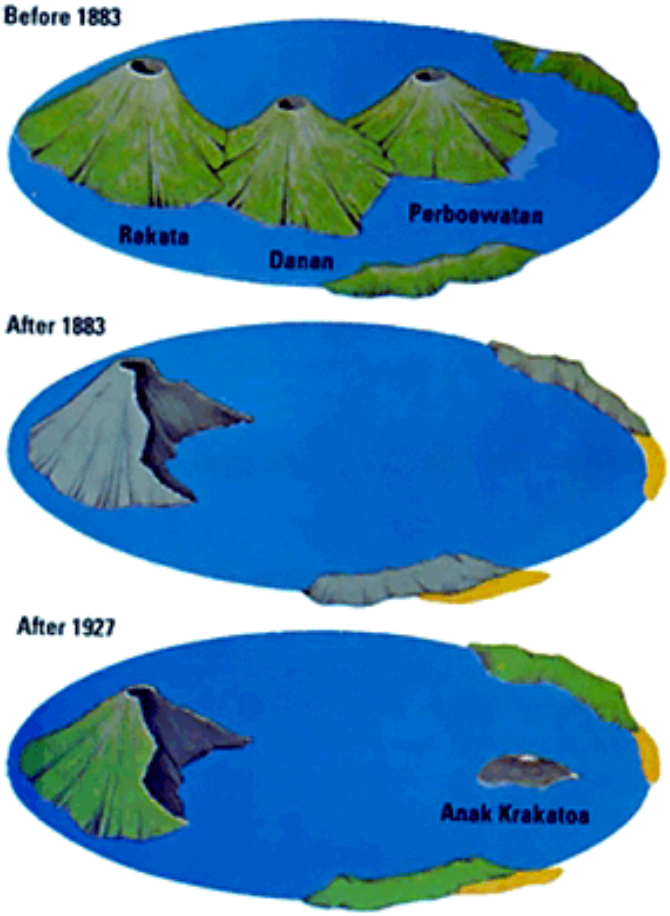
4.3 Succession

THINK ABOUT IT

In 1883, the volcanic island of Krakatau in the Indian Ocean was blown to pieces by an eruption. The tiny island that remained was completely barren.

Within two years, grasses were growing. Fourteen years later, there were 49 plant species, along with lizards, birds, bats, and insects. By 1929, a forest containing 300 plant species had grown. Today, the island is blanketed by mature rain forest.

How did the island ecosystem recover so quickly?



Primary and Secondary Succession

- How do communities change over time?

Primary and Secondary Succession

- How do communities change over time?

- Ecosystems change over time, especially after disturbances, as some species die out and new species move in.

Primary and Secondary Succession

Ecological succession is a series of more-or-less predictable changes that occur in a community over time.

Ecosystems change over time, especially after disturbances, as some species die out and new species move in.

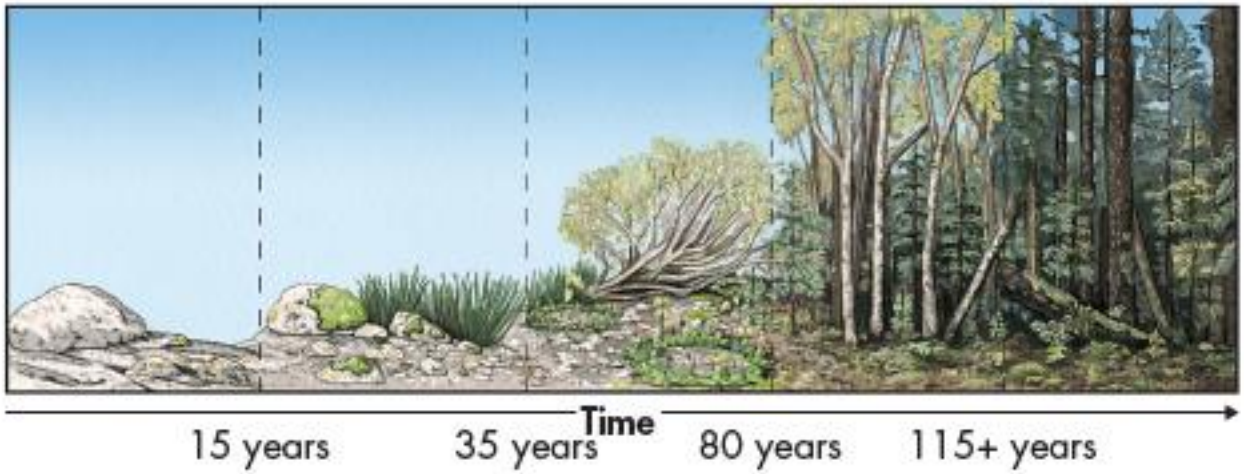
Over the course of succession, the number of different species present typically increases.

Primary Succession

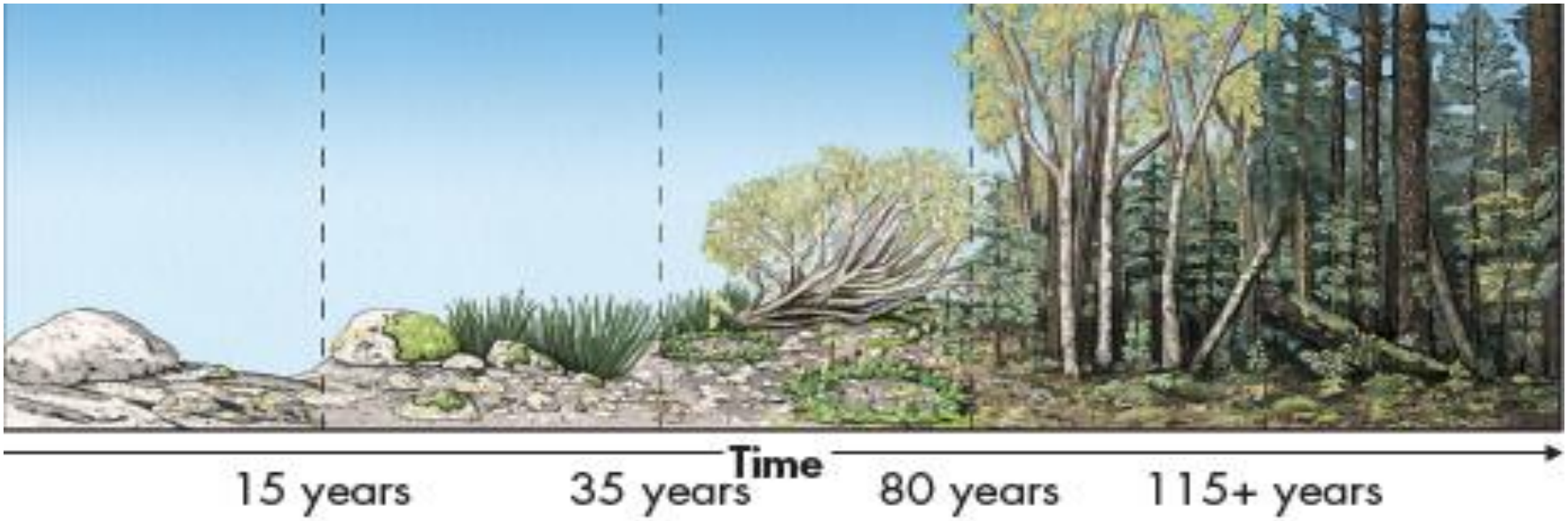
Volcanic explosions can create new land or sterilize existing areas.

Retreating glaciers can have the same effect, leaving only exposed bare rock behind them.

Succession that begins in an area with no remnants of an older community is called **primary succession.**



Primary Succession: Succession that begins in an area with no remnants of an older community.

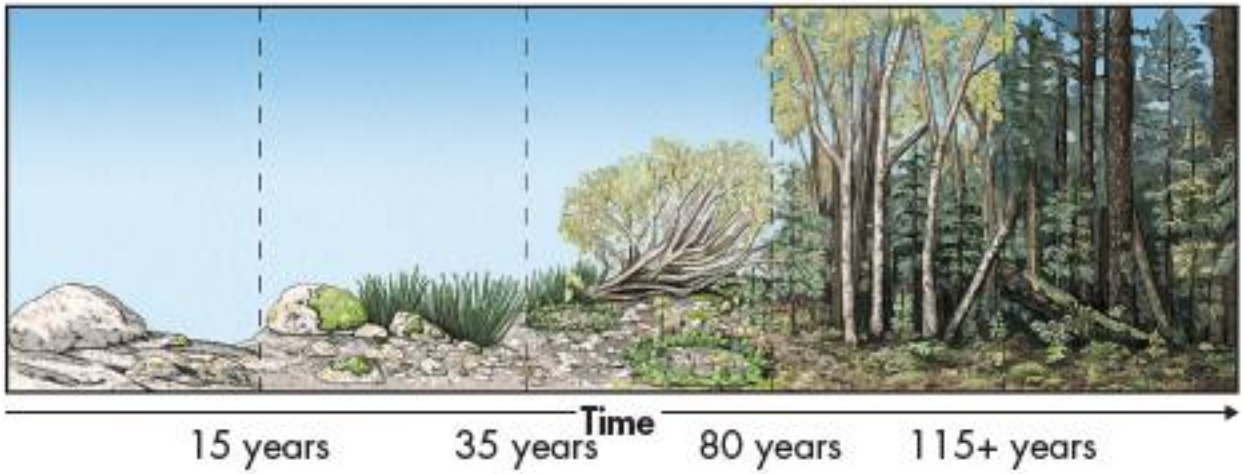


Primary Succession

For example, in Glacier Bay, Alaska, a retreating glacier exposed barren rock.

Over the course of more than 100 years, a series of changes has led to the hemlock and spruce forest currently found in the area.

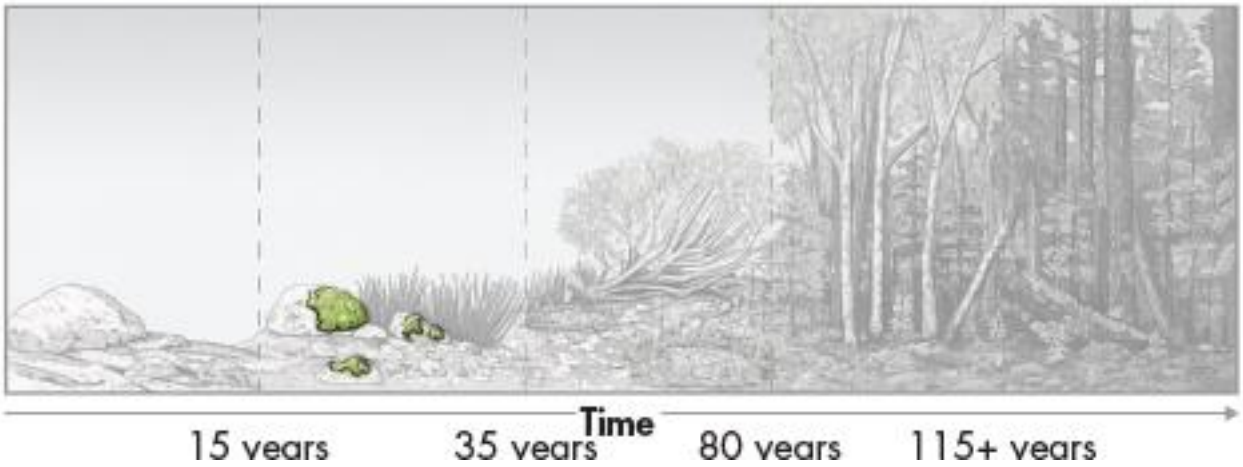
Changes in this community will continue for centuries.



Primary Succession

The first species to colonize barren areas are called **pioneer species.**

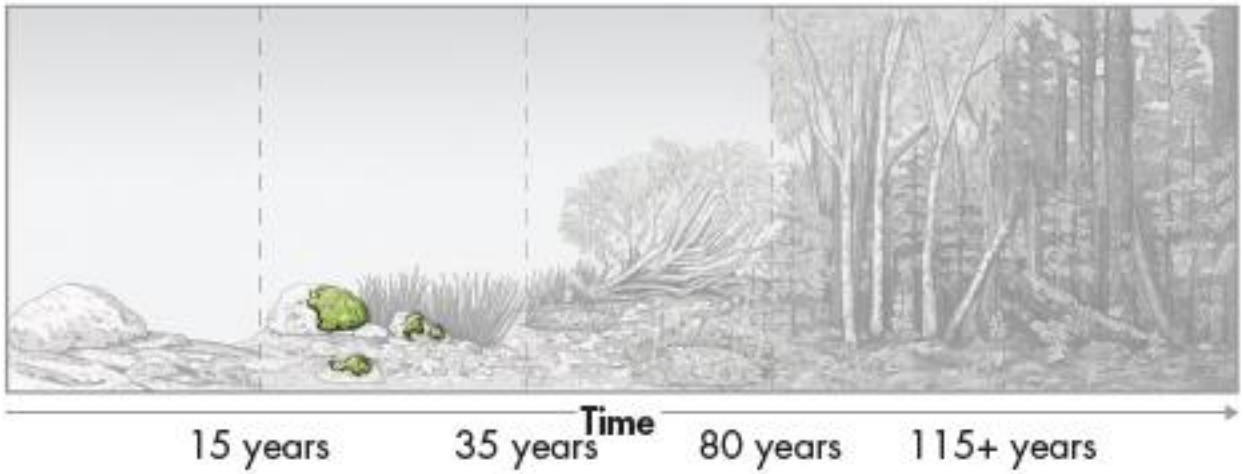
One ecological pioneer that grows on bare rocks lichen—a mutualistic symbiosis between a fungus and an alga.



Primary Succession

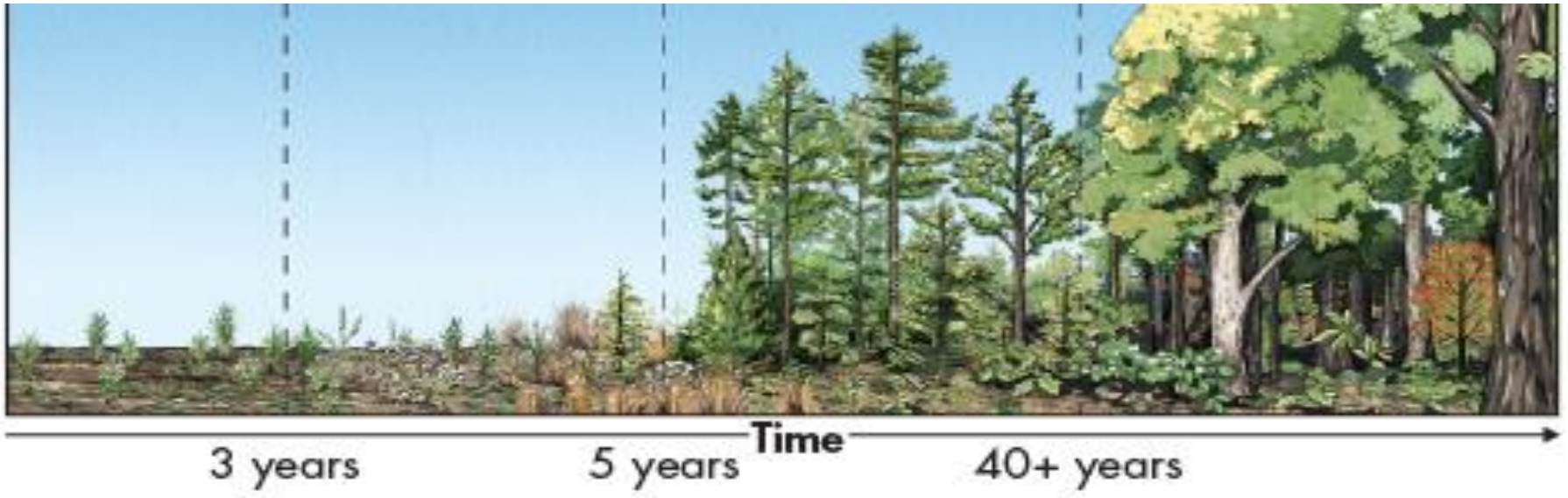
Over time, lichens convert, or fix, atmospheric nitrogen into useful forms for other organisms, break down rock, and add organic material to form soil.

Certain grasses, like those that colonized Krakatau early on, are also pioneer species.



Secondary Succession

Sometimes, existing communities are not completely destroyed by disturbances. In these situations, **secondary succession** occurs.



Secondary succession proceeds faster than primary succession, in part because soil survives the disturbance. As a result, new and surviving vegetation can regrow rapidly.

Secondary Succession

Secondary succession often follows a wildfire, hurricane, or other natural disturbance.

We think of these events as disasters, but many species are adapted to them. Although forest fires kill some trees, for example, other trees are spared, and fire can stimulate their seeds to germinate.

Secondary succession can also follow human activities like logging and farming.

Secondary Succession

This series shows secondary succession taking place in abandoned fields of the Carolinas' Piedmont.

Over the last century, these fields have passed through several stages and matured into oak forests. Changes will continue for years to come.