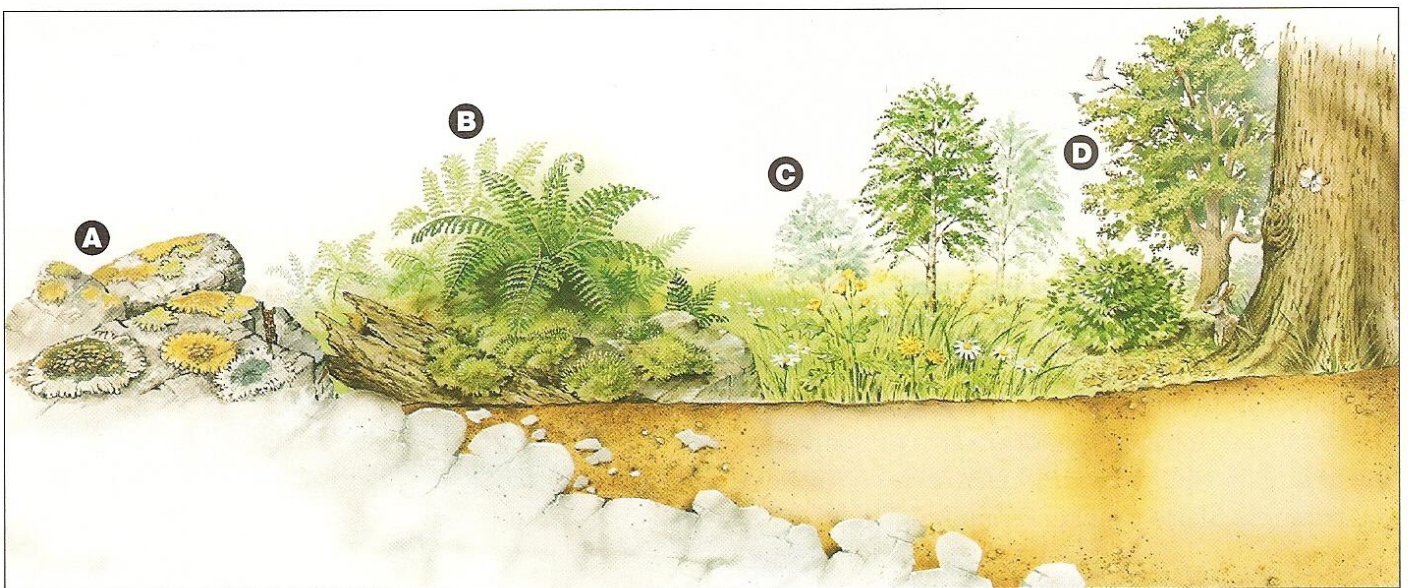


2.4 A First Look at Succession

Have you ever noticed grasses or plants growing in a vacant lot near your home? If you wait long enough, bushes and trees will grow, and animals will make their homes in the lot. Can you imagine how this process happens?

Over time, changes take place in an ecosystem. Some changes are rapid. For example, a forest fire or a landslide might completely destroy an existing ecosystem. Other changes are slow. For example, seeds carried by wind or water might take root in a vacant lot or sidewalk cracks and result in a new population of plants. If conditions are good, the new plants might become established and even replace plants that were already growing.

The gradual process by which certain species replace other species in an ecosystem is called **succession**. In the process of succession, organisms that are present at one stage alter the environment in some way. This change makes it possible for some other species to move in. If the process continues naturally, the final result is a stable ecosystem in which there are few further changes. Look at Figure 2.21 to see how succession proceeds to change bare rock to forest. First, lichens, mosses, and ferns grow, preparing the area for varied plants and animals. Finally the area becomes a woodland. Succession can be a very slow process, taking hundreds, even thousands, of years.



- A** Lichens produce acids that help to break down the rock. The broken-down rock and the decomposing bodies of dead lichens contribute to soil formation.
- B** The resulting soil is poor and thin. However, mosses and ferns grow and slowly replace the lichens.
- C** The soil layer thickens, which means it can hold more water. Plants that need more soil and moisture, such as grasses and flowering weeds, take root and grow. They attract insects, such as bees and butterflies.
- D** Since the soil is now thicker and richer, bushes and trees take root. They provide shelter and food for birds, mammals, and other organisms, which now start moving in.

Figure 2.21 Succession is a long, slow process in which a stable natural ecosystem gradually develops over time.

Succession occurs wherever plants can become established in all ecosystems (including open water). Succession works because as some organisms become established and grow in an area, they change the conditions and allow other plants and animals to grow and live there. The process of succession is a natural one, and it usually has positive effects. For example, a forest will regrow into a healthy ecosystem after a natural disaster has damaged the area. However, it is possible for succession to have negative effects. This is true, for instance, if succession occurs too quickly. Usually succession takes place slowly, but can speed up if extra nutrients and pollutants are present. Farmers' fields contain fertilizers, so if run-off from a field enters a stream or a lake, plants may grow too quickly and start to fill in the open water.

There is a delicate balance between organisms in a succeeding ecosystem. Some foreign species, such as purple loosestrife shown in Figure 2.22, do so well that other species, which normally develop at the next stage of succession, cannot become established. The natural balance can also be disturbed by foreign animals. Zebra mussels, shown below, are very successful in the Canadian Great Lakes. Zebra mussels eat much of the food which naturally occurring organisms usually eat, so the organisms in the next stages of succession find it difficult to get enough food.



Figure 2.22 Purple loosestrife is an unwelcome visitor in wetland areas, where it is choking out native plants.

DidYouKnow?

The shallowest of the Great Lakes, Lake Erie, is being filled in. As succession moves out from the shoreline, it is claiming what used to be open water.

“Musselling” In!


The zebra mussel has travelled the world. It now makes the Canadian Great Lakes one of its homes.

What to Do

With the aid of resources, including the Internet, answer the following questions.

- What are zebra mussels?
- Where did they come from?
- How do they affect plants, animals, and humans?
- How are they being controlled?
- Can you think of any benefits produced by zebra mussels?

What Did You Find Out?

 Write a brief illustrated report of your findings.

Find Out **ACTIVITY**

