

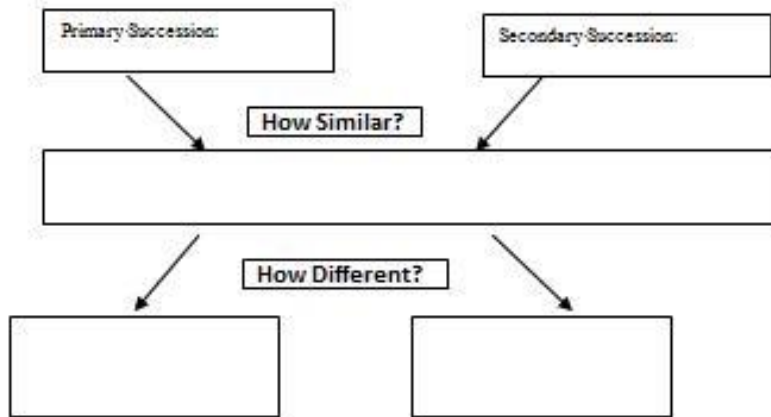
An ecosystem, or ecological system, consists of a community and all the physical aspects of its habitat, such as the soil, water, and weather. Earth's ecosystems may seem stable, but they are not static. They change seasonally, they can change suddenly, and they can even change over time. Climate change is one way that ecosystems can change. They can also change through a regular, progressive process called succession.

When a volcano forms a new island, a glacier recedes and exposes bare rock, or a fire burns all of the vegetation in an area, a new habitat is created. This change sets off a process of colonization and ecosystem development. The first organisms to live in a new habitat where soil is present tend to be small, fast-growing plants, called pioneer species. They may make the ground more hospitable for other species. Later waves of plant immigrants may then outcompete and replace the pioneer species.

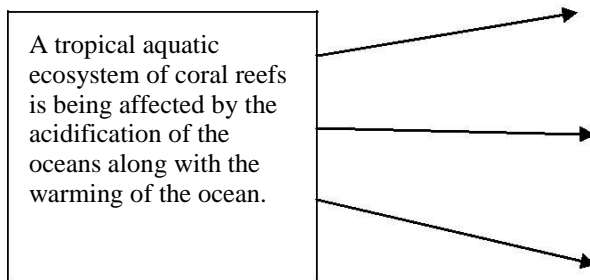
Succession is the somewhat regular progression of species replacement. Succession that occurs where life has not existed before is called primary succession. Succession that occurs in areas where there has been previous growth, such as in abandoned fields or forest clearings, is called secondary succession.

It was once thought that the stages of succession were predictable and that succession always led to the same final community of organisms within any particular ecosystem. Ecologists now recognize that initial conditions and chance play roles in the process of succession. For example, if two species are in competition, a sudden change in the climate may favor the success of one species over the other. For this reason, no two successions are alike.

1. Create a compare and contrast chart for the terms —primary succession and —secondary succession.



2. Make cause and effect diagrams. Fill in the partially completed one below and make two new ones for the following situations.



a) A volcano erupts and creates a new landmass in the Pacific Ocean.

b) A glacier melts into the ocean exposing land.

3. A nursery owner wants Easter lilies to bloom in the spring and poinsettias to bloom during the December holidays. Which plant response would the owner manipulate to make sure each plant bloomed for the appropriate season?

- a. photoperiodism, a response to the length of days and nights
- b. heliotropism, a response to the position of the Sun in the sky
- c. phototropism, a response to the direction from which light is coming
- d. dormancy, in which a seed remains inactive until conditions are suitable for growth

4. After fires destroyed 793,000 acres of aspen and pine forest in Yellowstone National Park in the unusually dry summer of 1988, biologists were able to study the long-term effects of fire on an ecosystem. The biologists found that the soil after the fire was more fertile and soon gave rise to small plants and new pine trees. What ecological process were the biologists observing?

- F. adaptation
- G. pioneer succession
- H. primary succession
- I. secondary succession