The environment may be altered in substantial ways by human disturbances (deforestation), other living things (invasive species), or natural disasters (forest fires and climate change). Although these changes often occur very quickly, in most cases species replace others gradually. This results in long term changes in ecosystems. These gradual long term changes in an altered ecosystem are called ***ecological succession***. After a disturbance, ecosystems tend to change over time until a stable system is formed. The type of succession, which occurs in an ecosystem, depends upon climatic and other limitations of a given geographical area. There are two types of succession: primary succession and secondary succession.

***Primary succession*** occurs in an area where no soil exists. Think about the formation of the Hawaiian Islands, new land is always being formed by volcanic eruptions. ***Secondary succession*** occurs when a disturbance changes an existing ecosystem without removing the soil. Forest fires are an example of secondary succession.

After an environment has been altered by a disturbance, organisms begin to reoccupy the area. The first organisms to do this are called pioneer organisms or ***pioneer species***. Pioneer species modify their environment; ultimately creating conditions which are less favorable for themselves, but establish conditions under which more advanced organisms can live and grow. Typical pioneer species in a primary succession situation are lichens. When lichens die, they leave organic material that build up to form soil. Typical pioneer species for secondary succession situations are grasses, weeds, and annual plants. It has been observed that when natural disasters occur, such as floods or fires, the damaged ecosystem is likely to recover in a series of successional plant stages. These stages lead to a stable final community. This community is called a ***climax community*** and is very similar to the plant community that originally existed in the ecosystem. This community may reach a point of stability that can last for hundreds or thousands of years.

