3.1 Natural Change in Ecosystems

How organisms Adapt

Organisms change as abiotic and biotic components in their environment change

- **Natural selection:**
  a process by which random changes are selected for by nature to allow the best adapt member of the species to survive and reproduce.

- **Adaptive Radiation:**
  the development of a number of new species from a common ancestor due to the process of natural selection.

How ecosystems change

Ecological succession: Changes that take place over time in the *types* of organisms that live in an area.

Two Types

1. Primary Succession: The establishment of new community where none existed before.

Starts after a volcanic eruption or retreat of glacier
- no soil (just bare rock)

Lichen (algae and bacteria in symbiotic relationship) is carried in by rain or wind.

Lichen break down the rock via chemical weathering.

Pioneer Species: First species to survive and reproduce

Dead/decaying lichen add organic matter and starts to create soil

Grasses and other smaller plants can now grow, and as they die and decay more soil is made.

Trees and other larger plants can now grow.

The community is now at its climax and it is a more diverse community.

Climax Community: Equilibrium state, mature community
(eg. boreal forest, grassland, rainforest)

2. Secondary Succession: The *re-establishment* of community following disturbance.

Result of disturbance (eg. fire)
- already has soil/nutrient
- NOT a new community

Root/seeds left over starts to grow again

Wind/rain bringing in new species

Reach climax community faster (decades) than primary succession (centuries).

Other natural disturbances:
Flooding: cause erosion and changes the soil

Tsunamis: destroy ecosystems and change soil (salt)

Drought: prolonged drought can kill plants (and therefor animals)

Insect infestation: eg. pine beetle kills pine trees

Comparing Primary and Secondary Succession

Primary	**Both**	**Secondary**