

## Changes in Ecosystems

### Adapting to Change

- When an organism is born, it belongs to a species, with all of the species characteristics, but it is also an individual
- Some individuals have characteristics that give them an advantage.

- animals/plants develop adaptation to help it survive in a new niche.

### Natural Selection

- Individuals with advantages are able to pass on their traits to their offspring
- Those with unfavourable characteristics have less chance to reproduce

niche - an organisms role in its environment

### Adaptive Radiation

- With enough changes over time, one species can turn into several different species

these new species may live together but are reproductively isolated.

Example:

Galapagos island finches

13 different species have radiated

from one species to find new niches.



reproductive isolation

- different mating seasons.

- different mating calls

### Ecological Succession

- Ecosystems also evolve over time
- Ecological succession refers to changes in the biotic characteristics - what living things are there.

Two types:

1. Primary succession - begins with bare rock
  - First organisms to arrive and reproduce are pioneer organisms
  - These species alter the biotic and abiotic environment in some way
  - Primary succession may last for hundreds of years until a mature community forms

mature communities are also called climax communities

climax communities do not undergo much change.

- volcanoes

- glaciers scraping everything away

Pioneer

- lichens

- mosses

## Ecological Succession (continued)

2. Secondary succession – Occurs after a disasters that leaves the soil and possibly some living organisms

- Examples:

floods/tsunamis  
earthquakes  
hurricanes/tornadoes  
fire

human factors

- Much more rapid than primary succession, only lasts decades

- soil is established traps moisture and can grow seeds.

- it can reset the ecosystem

## Events that affect Mature Communities

### Flooding

- Water not contained within natural or artificial boundaries.
- Occurs when water levels can change regularly.
- Can result in
  - soil erosion/mudslides,
  - pollution/bacteria/mold
- May be associated with global warming and climate change.
- Can also be associated with tsunamis in coastal areas

### Drought

- Occurs when an area receives less water than normal over long periods of time

### Insect Infestations

- Insects can be very destructive, but may play a role in forest renewal.
- Example: Pine Beetle
  - warmer winters are not killing beetle larvae
  - more beetles in spring that kill trees.
  - dead trees are more susceptible to forest fire
- Entire ecosystems can be affected by insect infestations

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Quiz next class  
on  
radiation.