

INTERACTIONS THAT CHANGE AN ECOSYSTEM

Interactions in the Environment #5^A

What are some factors that might cause an ecosystem to change?

Natural	Human
<ul style="list-style-type: none"> • fire 	<ul style="list-style-type: none"> • bioinvasion
<ul style="list-style-type: none"> • drought 	<ul style="list-style-type: none"> • habitate loss
<ul style="list-style-type: none"> • earthquake 	<ul style="list-style-type: none"> • pollution
<ul style="list-style-type: none"> • change to abiotic elements (e.g, water, sunlight) 	

Succession

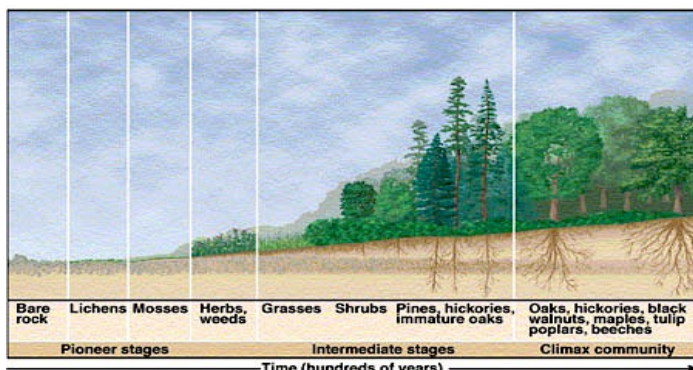
Succession is the replacement of one population of living things by another over time.

- Dominant plant and animals species are gradually replaced by new species.
- Plants play a key role as they provide both food and shelter.

Primary Succession

Primary succession occurs in an area where there has never been any life (e.g., sand dunes, rocky shore, newly formed volcanic island).

1. Lichen are the first organisms to ‘colonize’ the bare rock. It is called a **pioneer species**. It begins the process of building soil by breaking down the rock.
2. Moss grows next on the lichen and thin soil. The death and decay of the moss will help create enough soil for grass, weeds, and small plants to grow.
3. As each generation of plant grow and die, more soil is created. This allows for shrubs and bushes, which appear in the **intermediate stages** of succession. They out-compete the shorter plants.



4. Eventually trees will grow and out-compete the shrubs. A forest develops.

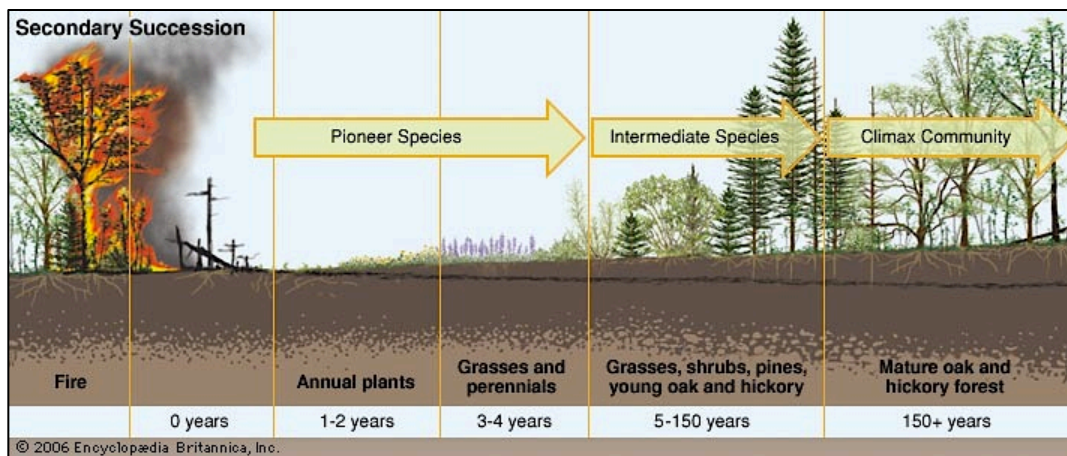
5. When a mature forest is reached it is called a **climax community**. The ecosystem is stable and simply renews itself. As each new plant species begins to grow, consumers that feed on it move into the area. As the plants change, so too do the animals.

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Secondary Succession

Secondary succession occurs in an area where a community has been destroyed or disturbed by natural occurrences (e.g., fire, drought, earthquake) or human activities (e.g., forestry, farming, pollution, construction, bioinvasion).

After a natural disturbance, since the soil is already present, flowers and grasses grow first. Then, shrubs and bushes. This is followed by trees. The community re-establishes itself.



Human Impact - Habitat Loss

- Humans use land for building cities, farming, mining, recreation, and travel. All activities can result in loss of habitat for other living things.
- This means loss of producers, and as a result the loss of consumers.
- Example: Building a new mall.
 - Wetlands drained, meadows paved, trees cut.
 - Plants die as cut down or cannot move.
 - Animals die due to loss of habitat.
 - Animals move to new area
 - They must compete with those organisms already living there.
 - They either coexist, take over, or do not survive.



Habitat Loss and Biodiversity

- **Biodiversity** can be used to measure the health of an ecosystem – the more varied the organisms, the more interactions will take place.
- Habitat loss puts organisms at risk. They can become endangered (in danger of becoming extinct) due to reduced populations or from the change to elements (e.g., loss of water, shelter).
- This can lead to extinction (a species no longer exists anywhere on Earth!).



Polar bears are in danger of becoming extinct due to their changing ecosystem