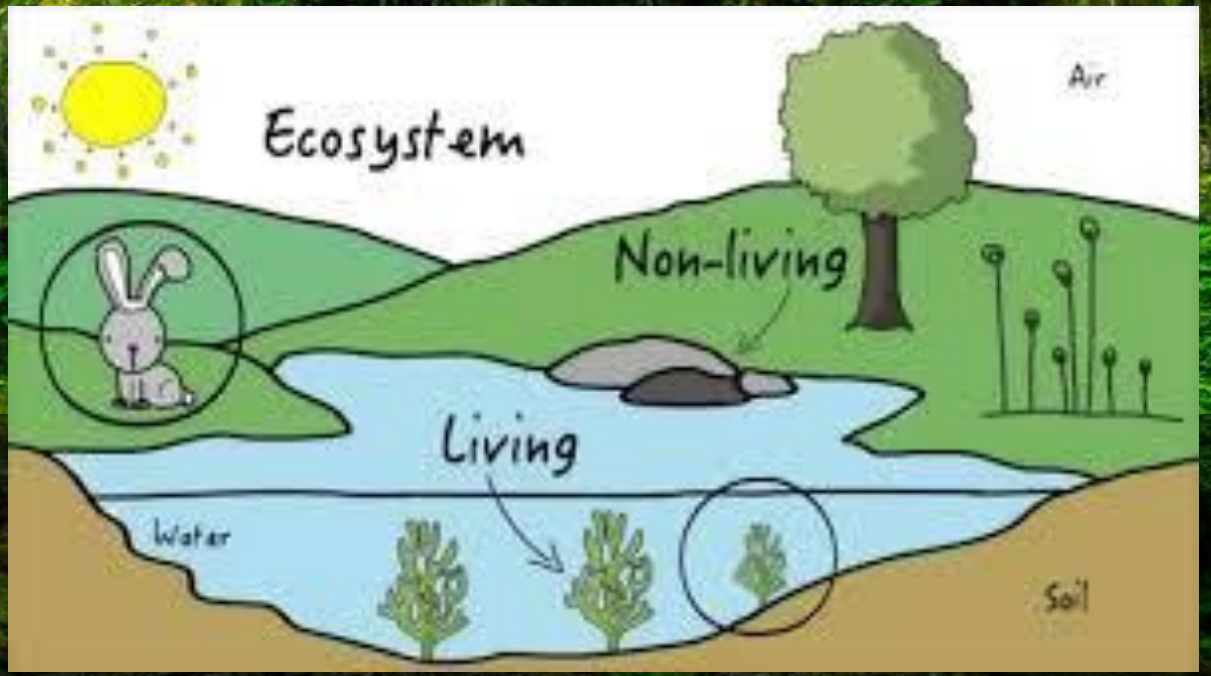
ECOLOGY



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CHE 110: Environmental Studies

Unit - 2

Ecosystems

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Succession

- Ecological succession is the gradual process by which ecosystems change and develop over time.
- It is therefore a series of predictable temporary communities or stages leading up to a climax community.
- Each stage/temporary community is called a successional or seral stage.
- Each step prepares the land for the next successional stage.
- All habitats are in the state of constant ecological succession.
- Ecosystem is continuously changing and reorganizing as well as ecological succession refers to orderly that changes happening in composition or structure of ecosystem

Types of Succession

- Primary succession

https://www.youtube.com/watch?v=G0fDbTqqXjA
https://www.youtube.com/watch?v=8ceDE01iWLE

  - Primary succession refers to a series of community changes which occur on an entirely new habitat which has never been colonized before. For example, a newly quarried rock face or sand dunes. (pioneer and climax community).

- Secondary succession

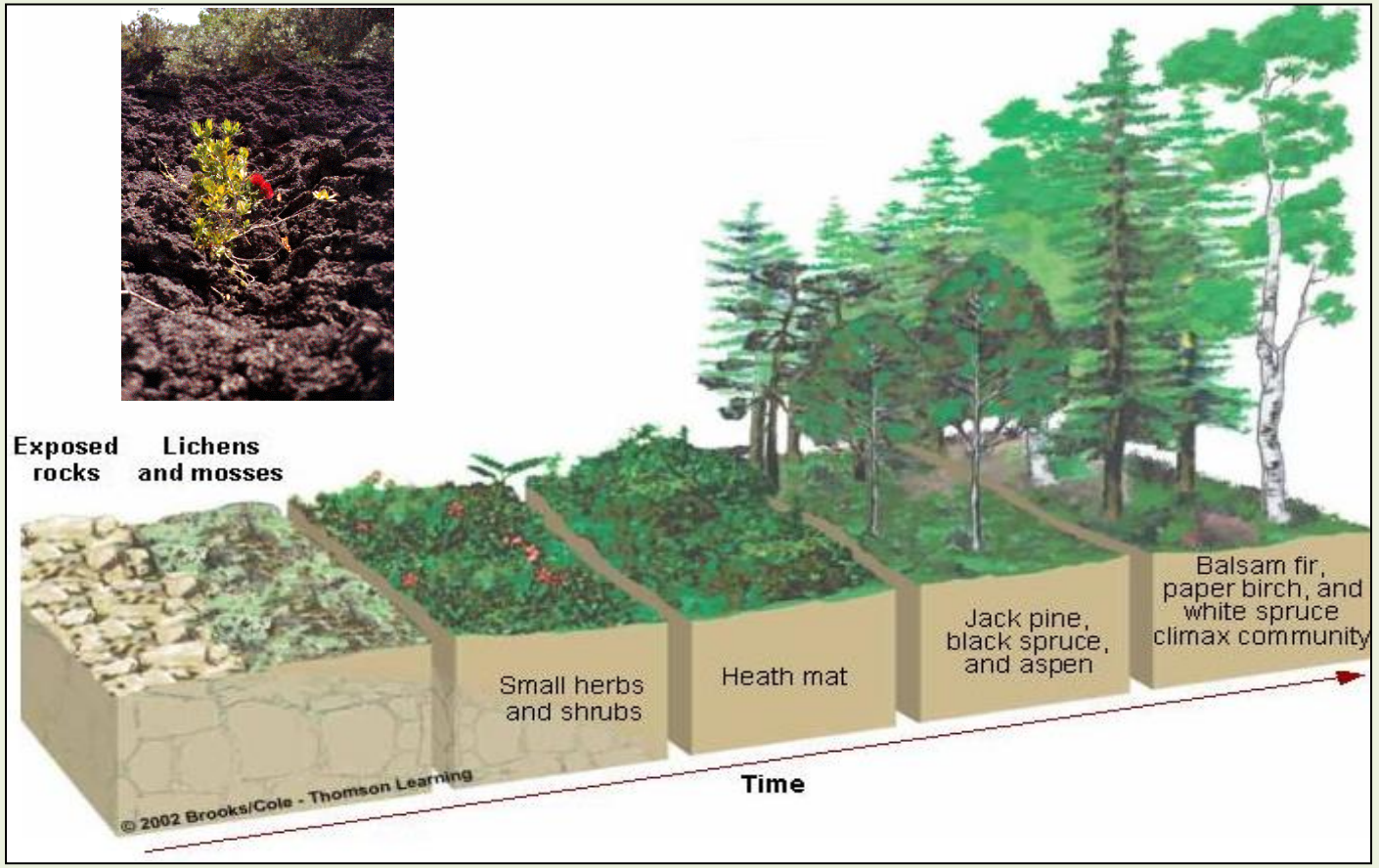
  - Secondary succession refers to a series of community changes which take place on a previously colonized, but disturbed or damaged habitat. For example, land obtained after felling trees in a woodland, land clearance, or fire.

Primary Succession

The development of an ecosystem in an area that has never had a community living within it occurs by a process called PRIMARY SUCCESSION.

An example of an area in which a community has never lived before, would be a new lava or rock from a volcano that makes a new island.

Primary succession is the process by which an area first changes from bare rock into a functioning ecosystem.



Primary Succession

Starts with the arrival of living things such as Lichens. They do not need any Soil to survive

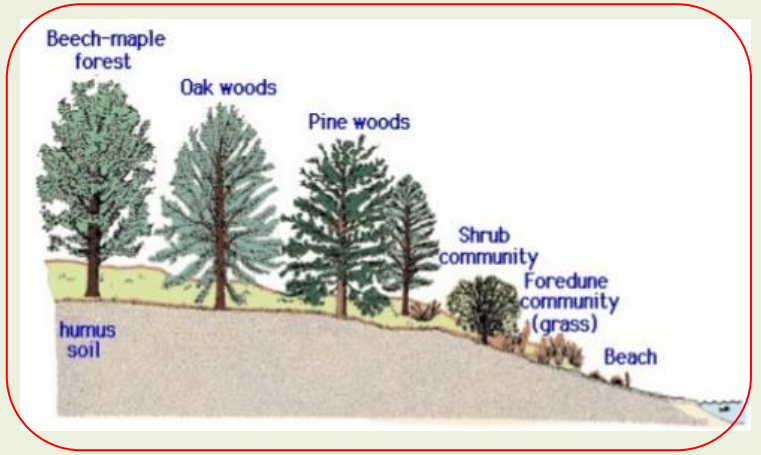
Pioneer Species

- When lichens die, they decompose, adding small amounts of organic matter to the rock to make soil.
- Simple plants like mosses and ferns can grow on this new soil

Primary Succession: Continue…

- The simple plants die, adding more organic material.
- The soil layer thickens, and grasses and other plants begin to take over.

- These plants die, and they add more nutrients to the soil.
- Shrubs and trees can survive now, on this soil.



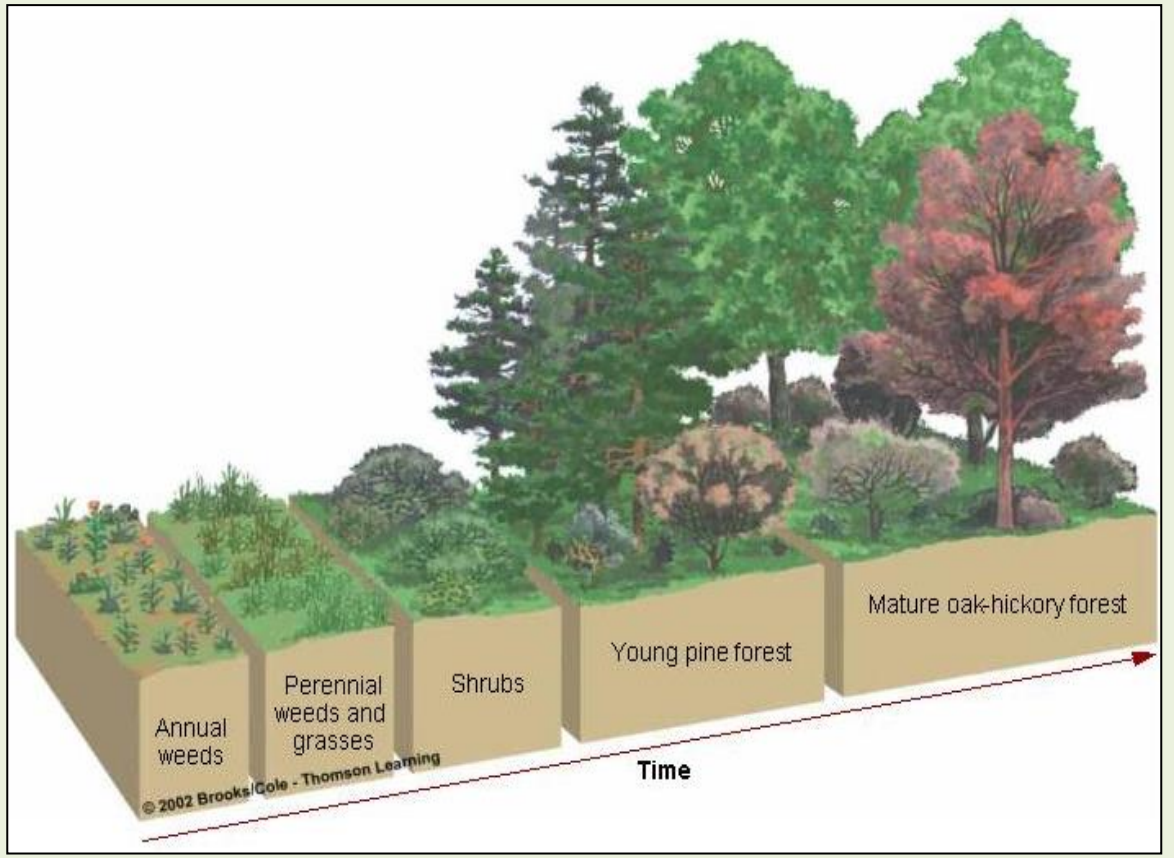
- Insects, small birds and mammals can now begin to move in.
- What was earlier only bare rock, now supports a variety of life

Secondary Succession

SECONDARY SUCCESSION begins in habitats where communities were entirely or partially destroyed by some kind of damaging event.

Because these habitats previously supported life, secondary succession, unlike primary succession, begins on substrates that already bear soil. In addition, the soil contains a native seed bank.

Since the soil is already in place, secondary succession can take place five to ten times faster than primary succession.



Secondary Succession

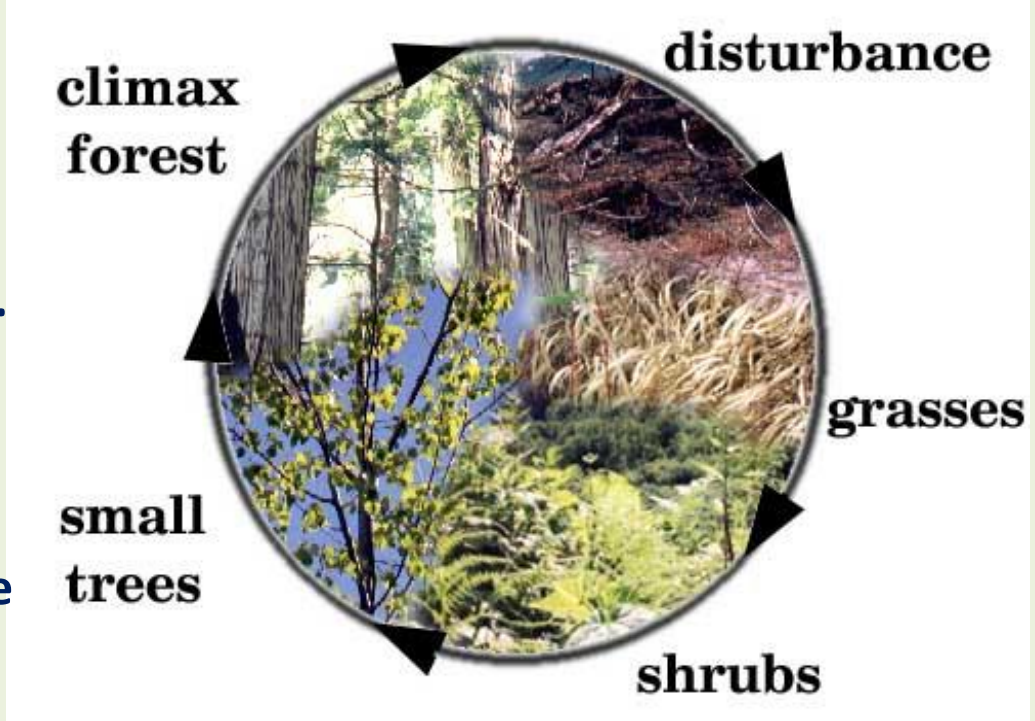
The process of re-stabilization that follows a disturbance in an area, where life has formed an ecosystem

Secondary Succession occurs on a surface where an ecosystem has previously existed. It is the process by which one community replaces another community which has been partially or totally destroyed, might be by natural process such as floods, earthquake etc.

Succession will continue until the environment reaches its final stage – the ***Climax Community***

The Circle of Life in Secondary Succession

- A climax community is a mature, stable community that is the final stage of ecological succession.
- In an ecosystem with a climax community, the conditions continue to be suitable for all the members of the community.
- Any particular region has its own set of climax species, which are the plants that are best adapted for the area and will persist after succession has finished, until another disturbance clears the area.



These are Climax Communities

Succession starting on different types of area

- Hydrarch / Hydrosere
  - Pond, swamp, bog
- Mesarch
  - Area with adequate moisture
- Xerarch / Xerosere
  - Lithosere: On bare rock
  - Psammobog
  - sere: On sand
  - Halosere: On saline soil