

# *ECOLOGICAL SUCCESION*

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# *Ecological succession*

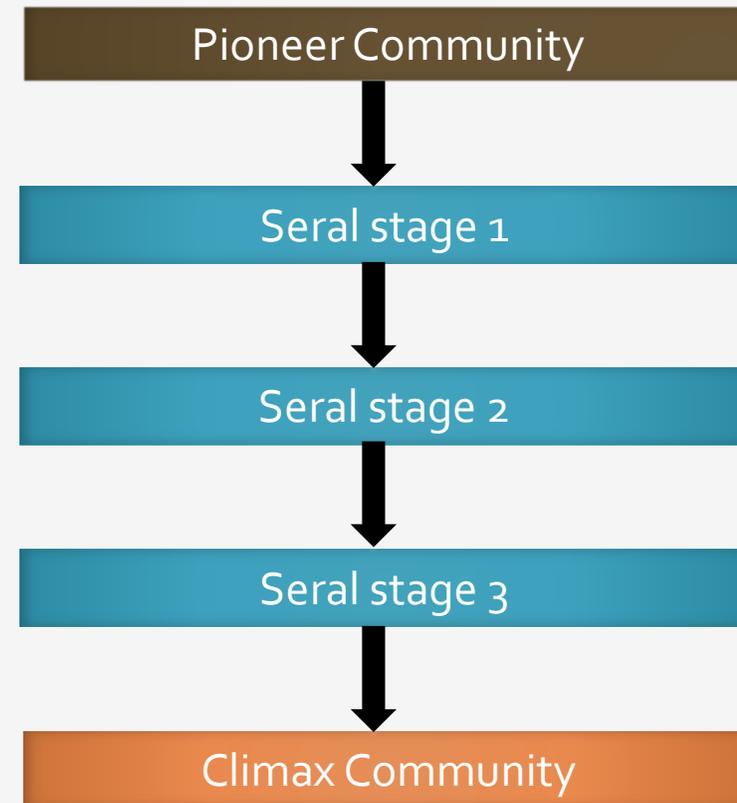
- Coined by Hult 1885
- The natural process by which the same locality become successively colonised by different groups or communities.
- Characteristics of Ecological succession
  - It is an orderly process of change in the species structure and community, and is predictable.
  - It is a physical environment based biological process
  - It ends in a stabilized ecosystem – Maximum biomass and symbiotic functions between the organisms are maintained
  - Climax community maintains dynamic equilibrium with the environment

- Causes of ecological succession
  - Climatic causes – Eg :Drought, Flood, Lightning...
  - Topographic causes – Any thing related to soil and substratum – Eg : Landslides, Soil erosion...
  - Biotic causes – By any living organism including mankind
- Types of ecological succession
  - Primary succession – Succession begins from primitive substratum where there were previously no any kind of living matter. .
  - Secondary succession – It begins from previously built up substrata with already existing living matter. The vegetation of such area has been destroyed due to climatic, topographic or biotic factors
  - Autogenic succession – the developing community brings a change in the environment which becomes unsuitable for them, but opens the way for the growth of another plant community.
  - Allogenic Succession – The change in habitat is due to external factors rather than internal factors. Eg : Climate
  - Induced Succession – A succession which is controlled and motivated by mankind.
  - Autotrophic succession – Succession which is dominated by autotrophic communities.
  - Heterotrophic Succession – Succession which is dominated by heterotrophic organisms.
  - Retrogressive succession – Backwardly moving Succession.

# General Process of Succession



- The first community is called **Pioneer community**.
- The final community is called **Climax community**.
- The intermediate stages are called **seral stages**.



# Various steps of Succession on a sterile habitat

- Nudation – Development of a sterile or virgin area is called nudation.
  - Catastrophic agencies
  - Manmade
- Invasion – It refers to the arrival and settlement of some organisms on the bare area.
  - The first invaders are called Pioneers.
  - **Invasion comprises 3 steps**
  - Dispersal or migration – The transfer of a species from one area to a new area.
    - It occurs through reproductive units
  - Ecesis – The adjustment followed by establishment of migrated plant species into the new area.
  - Aggregation – As a result of reproduction, the number of species increases and they close to one another.

# ***Competition and reaction***

- Struggle for existence
- Inter and intra specific competition
- modification of physical environment by dominant species – Reaction
- Migration of more complex species to the area
- competition between old and new species
- Introduction of animals to the community
- Further modification of environment
- This process continues until a stable and climax community is developed

# *Climax or stabilization*

- ✓ After a long process of competition, the final community becomes **stable and in equilibrium** with climate.
- ✓ The final community is known as **climax community**.
- ✓ The stage is known as **Climax stage**.
  
- **Characteristics of climax community**
  - Soil is nutrient rich in both organic and inorganic matter.
  - Species having long life and resistance to the external disturbances predominate.
  - Species diversity will be very high and food chain become complex
  - Biomass is maximum and is in steady state
  - The community is in perfect equilibrium with the abiotic environment of that area.

# *Classification of Succession*

- Hydrosere – beginning in aquatic environment
- Xerosere – beginning in xeric or dry habitat
- Lithosere – beginning on rock surface
- Psamosere – beginning on sandy habitat
- Halosere – Beginning on salty habitat.