

Ecological Succession (Part-one)

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Introduction — Biomes are relatively stable and uniform, but the communities within them are not so. The biotic communities always keep on changing in their evolutionary growth from simple to complex and this process is termed Succession or Community Development.

Succession of Communities can be caused either by changes in the environment or by the changes on the surface of the Earth. These both kind of changes directly influence the community of organisms, which thus help to contribute to their own succession.

Definitions & Historical Background: The

idea of Succession was first of all forwarded by Anton Kerner (1863) in his book, "Plant life in the Danube Basin". But, the term Succession was

first of all used by Hult (1885) in the <sup>(Pg 2)</sup> study of Communities of Southern Sweden. Later on, this chapter was greatly enriched by Cowles (1899), Shelford (1913), Clements (1916), Tansley (1939), Whittaker (1953), and Odum (1969).

Regarding its definition, different ecologists have defined it in different ways -

According to Smith (1966), Ecological Succession is an orderly and progressive replacement of one community by another until a relatively stable community occupies the area. Knight (1965), considered it as an orderly sequence of different communities over a period of time in a particular area.

Odum (1971) preferred to call it as 'Ecological Development' and defined it in three parameters -

- orderly process of community dev. involving changes in species structure and community.
- modification of physical environment by community.
- Culmination of a specialized ecosystem in which maximum biomass, species diversity and symbiotic functions between the organisms are maintained.

Causes of Succession: - Since, Succession is a series of

Complex processes, therefore, there may not be a single cause rather a no. of factors work together to bring about Succession. Generally, there are three types of causes —

I Initial or Initiating Causes: — These include climatic and biotic causes. The climatic factors include factors like Erosion, deposit, wind, fire etc., while the biotic factors include various activities of organisms leading to the modification of environment compelling for Succession. These are primarily concerned with production of bare area or naked land.

II Ecesis or Continuing Causes: — These are like migrations, aggregations, competition reactions, which carry out change in features of a community.

III Stabilising Causes: — These are the causes working for the stabilisation of a community. According to Element, climate, of the area is the chief cause of stabilisation.

Trends of Succession: — (i) Immature successional stages or early development commonly have a much higher net productivity than late or mature successional stages.  
(ii) The mature Ecosystem, otherwise, also called as climax, is

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However highly stable and herbivorous, harbours maximum biomass. (1969, Odum). However, the usual trend followed by Succession is —

- a continuous change in Community.
- Increase in the diversity of species.
- Increase in the organic matter and biomass supported by available energy flow.
- Decrease in net Community production.

Types of Succession :- Succession has been classified into various types on the basis of different aspects —

I. Basically, Succession is of two types — either from initial or from intermediate seral stage —

(a) Primary Succession — when a Succession begins with a barren rock or sand dunes or river-delta, glacial debris with production of pioneer-community, then it is termed Primary Succession.

(b) Secondary Succession — It is the Succession occurring upon a disrupted Ecosystem or partly damaged one. Here, organic matter and some organisms from original community will remain. Secondary Succession

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