ECOTONE, EDGE EFFECT AND ECOLOGICAL SUCCESSION

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Ecotone

• was coined from a combination of eco(logy) plus -tone, from the Greek tonos or tension (a place where ecologies are in tension).

• The zone of transition along the edges of two adjacent ecological communities.
**Edge effect –**

An “edge” is the boundary or interface between two biological communities or between different landscape elements. - refer to the changes in population or community structure that occur at the boundary of two habitats.

As the edge effects increase, the boundary habitat allows for greater biodiversity.
Types of Edge effect-

- **Inherent**—Natural features stabilize the border location.
- **Induced**—Transient natural or human related activities, subject borders to successional changes over time.
- **Narrow**—One habitat abruptly ends and another begins.

Types of Edge Effect -

- **Wide (ecotone)**—Substantial distance separates border from point where physical conditions and vegetation do not differ from interior of patch.
- **Convoluted**—Border is non-linear.
- **Perforated**—Border has gaps that host other habitats.
Ecological Succession –
the process by which the structure of a biological community evolves over time.

Two types of Ecological Succession are described below.
- Primary Succession – community changes which occur on an entirely new habitat which has never been colonized before.

- Secondary Succession - community changes which take place on a previously colonized, but disturbed or damaged habitat

- Climax
  The final or stable community
Characteristics of Climax Community-

- The vegetation is tolerant of environmental conditions.
  - It has a wide diversity of species, a well-drained spatial structure, and complex food chains.
- The climax ecosystem is balanced.
- Individuals in the climax stage are replaced by others of the same kind.
- It is an index of the climate of the area.
Types of climax -

• **Climatic Climax** - one of the ecological climaxes possible in a particular climatic area whose stability is directly due to the influence of climate

Edaphic Climax - an ecological climax resulting from soil factors and commonly persisting through cycles of climatic and physiographic change

**Catastrophic Climax** - Climax vegetation vulnerable to a catastrophic event such.

**Disclimax** - When a stable community, which is not the climatic or edaphic climax for the given site, is maintained by man or his domestic animals, it is designated as Disclimax (disturbance climax) or anthropogenic subclimax (man-generated)
Subclimax - The prolonged stage in succession just preceding the climatic climax.

Preclimax and Postclimax
• Preclimax - if the community has life forms lower than those in the expected climatic climax,
• Postclimax - a community that has life forms higher than those in the expected climatic climax
THEORIES

Monoclimax /Climatic Climax Theory- an invention of the American ecologist F.E. Clements. - This states that every region has only one climax community, toward which all communities are evolving and that, given sufficient time and freedom from interference.

Polyclimax Theory -. A.G. Tansley. - community are controlled by soil moisture, minerals, ions, activity of animals, topography, and other factors.

Climax Pattern Theory - proposed by Whittaker (1953) - recognizes a variety of climaxes governed by responses of species populations to biotic and abiotic conditions. - the total environment of the ecosystem determines the composition, species structure, and balance of a climax community.