



Concept of Ecosystem

Unit 3 Lecture 1

Concept of ecosystem

The ecosystem is the basic functional unit in ecology, since it includes both organisms and abiotic environment, each influencing the properties of the other and both necessary for maintenance of life as we have it on the earth.

From the trophic stand point, an ecosystem has two components, an **autotrophic component**, in which fixation of light energy, use of simple inorganic substances, and build up of complex substances predominate and the **heterotrophic component**, in which utilization, rearrangement, and decomposition of complex materials predominate.

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The space-time separation leads to a convenient classification of energy circuits into

1. A grazing circuit
2. An organic detritus circuit

It is convenient to recognize the following components as comprising the ecosystem:

Inorganic substances

Organic compounds

Climate regime

Producers

Macro-consumers

Micro-consumers

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The key living components (producers, phagotrophs, and saprotrophs) may be thought of as the three “functional kingdoms of nature” since they are based on the type of nutrition and the energy source used.

From the functional stand point an ecosystem may be conveniently analyzed in terms of the following:

- ❖ Energy circuits,
- ❖ Food chains,
- ❖ Diversity patterns in time and space,
- ❖ Nutrient cycles,
- ❖ Development of evolution, and
- ❖ Control (cybernetics)

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Example of an ecosystem

The Pond – let us consider a pond as a whole as an ecosystem. Pond ecosystem may be reduced to the several basic units

1. Abiotic substances
2. Producer organisms
3. Macro-consumer organisms
4. Saprotrophic organisms