

## The Importance of Studying Ecology

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### Review Article

Received: 15/02/2017

Accepted: 15/04/2017

Published: 22/04/2017

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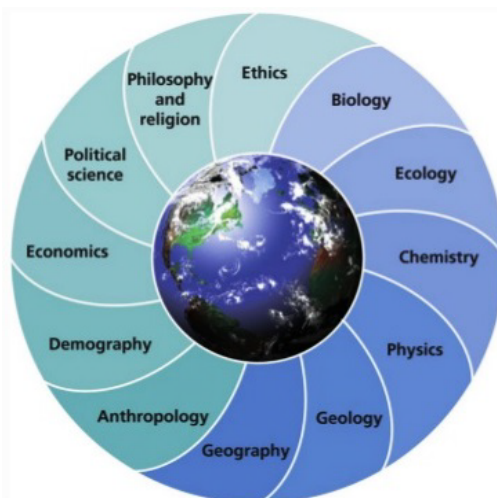
**Keywords:** Ecosystem, Environment,  
Biotic, Biosphere, Species

#### ABSTRACT

Ecology is the scientific study of interaction between organisms and their environment. It includes both biotic and abiotic factors. The level of organization of ecology is in such a way i.e., species, population, community, ecosystem, biome, biosphere. Biomes are the environments that have characteristics of not changing too much over time. There are few biomes in the world like: Aquatic (rivers, streams, lakes, open sea zone, deep sea zone, neritic zone) and Terrestrial (tundra, taiga, grass land, tropical rainforest, and desert). The three basic approaches that conduct the ecological methods are observing, experimenting and modelling. The energy that comes to the earth comes from sun that means sun is the source of energy for the ecosystem. The feeding relationship in ecosystem is food chain and food web. To maintain the ecosystem many biochemical cycles are going on like water, carbon, nitrogen, and phosphorus and limited nutrients. There are various studies related to ecology like bioecology i.e., the study of ecology of both plants and animals whereas the study of communities is synecology and the study of species is known as autecology. The increase in human population demands for the development and utilize the natural resources highly present in environment.

### INTRODUCTION

The science which deals with the study of the biota, their environment and interactions is known as Ecology Ecology derived from the Greek word Oikos meaning habitation, and logos meaning study, i.e., study of the habitations of organisms **(Figure 1)**. This is the study of ecosystem, which describe the relation between the organisms with different habitats <sup>[1]</sup>.The environment of an organism includes both biotic and abiotic factors. These two factors have to coordinate each other to share the resources that are present within the environmental ecosystem <sup>[2]</sup>. To understand about this mutual relationship we have to study ecology. Human being is also the part of ecosystem.



**Figure 1.** Components of environment.

## TYPES OF ECOLOGY

The ecological studies are all about connections of all life forms in earth and their various types of ecology (**Figure 2**).

### Organism Ecology

This is the study of organism respond to stimuli caused by physical environment. The organisms adapt the environment either happily or ignoring away from its effect. A physical change in environment will show the change in behaviour or physical attributes.

### Population Ecology

The natural process is that, all organisms will grow and die. The factors by which they will populate are the size of colony, birth and death rate, population growth rate <sup>[3]</sup>.

### Community Ecology

The association of populations of two or more different species occupying the same geographical area. Competition, mutualisms are key interactions to maintaining a community <sup>[4]</sup>.

### Ecosystem Ecology

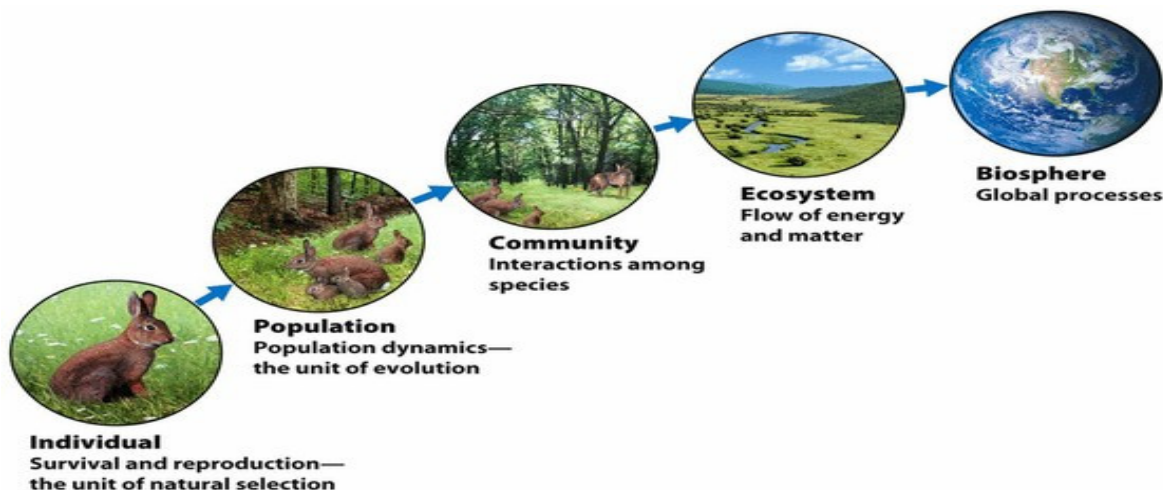
This is the community of living organisms along with non-living environment like air, water, soil.

### Landscape Ecology

The exchange of energy, materials, organisms and other products between the ecosystems is known as landscape ecology.

### Global Ecology

The effect of change in energy and matter exchange on the function and distribution of organism in environment <sup>[5]</sup>.



**Figure 2.** Hierarchical organization of ecology.

## TYPES OF ENVIRONMENT

The term environment describes the sum total of physical, chemical and biotic conditions surrounding and influencing the living organisms (**Figure 3**). Environment is classified into 3 types <sup>[6]</sup>.

### Biotic (Biological)

Biotic elements refer to the biological component of the ecosystem, having the population of plants, animals and microorganisms. The biotic component of the ecosystem consists of 3 groups of organism, the producers, consumers and decomposers. The producers are the organisms those are capable for photosynthesis (plants). The consumers depend on the producers (all herbivores).The decomposers are the organisms that are rely on dead organisms for their existence (bacteria, virus, and yeast).

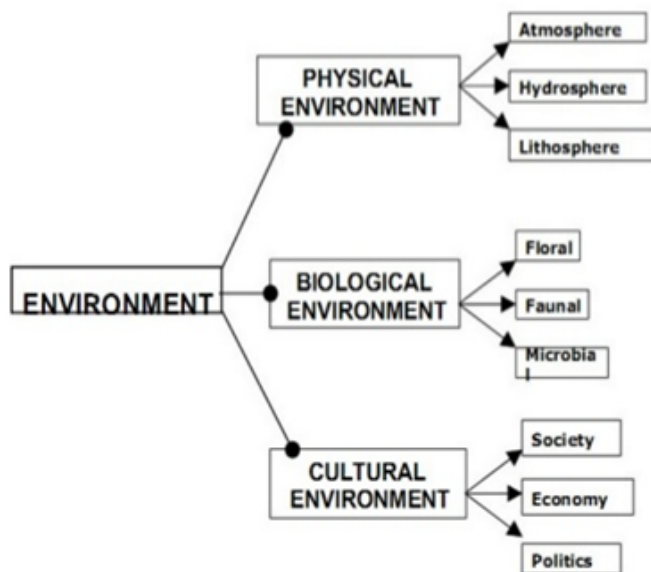


Figure 3. Classification of environment.

### Abiotic (Physical)

It includes the flow of energy necessary to maintain any organism, the physical factor (climate, temperature, rain, snow, hills) that affects it and the supply of molecules required for its life functions (carbon, hydrogen, nitrogen, sulphur, phosphorus).

### Cultural

The interaction between human and environment also influence the ecosystem. Background of different cultures put different values on natural world.

## IMPORTANCE OF STUDYING ECOLOGY

### Environmental Conversation

By studying ecology, the emphasis is put on how every organism needs other for peaceful coexistence. Having no ideas on ecology will responsible for degradation of land and environment, which is the living place of other species leading to their destruction [7-9].

### Resource Allocation

All plants and animals have roles in the environment as they sharing limited natural resources such as air, minerals, space. Lack of ecological studies may be the cause of deprivation and looting of these natural resources.

### Energy Conservation

The entire living organism needs energy such as nutrition, light, radiation etc. So lack of ecological studies will be the cause for destruction of the energy resources. Oil, coal, and natural gases are the non-renewable sources which will destruct the ozone layer.

### Eco-friendliness

It helps to appreciate living among the organisms; this will follow natural order of things.

## DISCUSSION

Ecology is the key word in the world as the world tries to mitigate the destruction that is already rife in the ecosystem. As ecology is the interactions between organisms and their habitat and we are all the part of ecosystem, we have study about the ecology that we can avoid our actions having unintended consequence [10]. If we want to conserve and protect nature and prevent the extinction of species, we need to know how they all fit together, what their habitat requirements are, how they influence each other, what the minimum population sizes are to ensure their survival, etc. For survival of species, natural areas, as well as agricultural sustainability, ecology is important. Without a good knowledge of ecology, the study of other fields will be useless and the human species will extinct.

## **CONCLUSION**

Nature and environment are commonly used terms for the ecology. Man is seen as a sort of geological force reshaping landscape, favouring some kinds of organisms and destroying others, changing the very composition of the atmosphere and starting new chain of radio activity with atomic explosions.

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