**conversational topic**

**Ecology as a Science**

***Ecology*** (also called *bioecology*, *bionomics*, or *environmental* *biology*) is the study of the relationships between organisms and their environment. Some of the most pressing problems in human affairs – expanding populations, food scarcities, environmental pollution including global warming, extinctions of plant and animal species, and all the attendant sociological and political problems – are to a great degree ecological.

The word ecology was coined by the German zoologist Ernst Haeckel, who applied the term *oekologie* to the “relation of the animal both to its organic as well as its inorganic environment.” The word comes from the Greek *oikos*, meaning “household,” “home,” or “place to live.” Thus, ecology deals with the organism and its environment. The concept of environment includes both other organisms and physical surroundings. It involves relationships between individuals within a population and between individuals of different populations. These interactions between individuals, between populations, and between organisms and their environment form ecological systems, or ecosystems. Ecology has been defined variously as “the study of the interrelationships of organisms with their environment and each other,” as “the economy of nature,” and as “the biology of ecosystems.”

Ecology is the union of many areas of study. The main areas are as follows.

*Biogeography* is the study of the geographical distribution of organisms, and it asks questions that parallel those of population ecology. Some species have tiny geographical ranges, being restricted to perhaps only a few square kilometres, while other species have ranges that cover a continent. Some species have more-or-less fixed geographical ranges, while others fluctuate, and still others are on the increase. If a species that is spreading is an agricultural pest, a disease organism, or a species that carries a disease, understanding the reasons for the increasing range may be a matter of considerable economic importance. Biogeography also considers the ranges of many species, asking why, for example, species with small geographic ranges are often found in special places that house many such species rather than scattered randomly about the planet.

*Community ecology* is thinking about such matters as a community, a species, an organism, a population and others. ***An organism*** is any form of life. All organisms of the same kind constitute a ***species***. Each species is composed of smaller units, known as ***populations***: groups of individual organisms of the same species that share the same ***habitat***. Together, they all form a ***community***. The members of a community constantly react with one another and their environment, creating a balanced living system called ***an*** ***ecosystem***, such as an ocean or a rain forest. The study of all these interactions is called ***ecology***.

*Ecosystem ecology* focuses on ecosystems. There are two primary parts of an ecosystem. *The abiotic part* is made up of non-living things, like rocks and minerals, water, and energy. *The biotic component* of the ecosystem consists of 3 distinct groups of organisms – the producers, consumers and decomposers.

The producers are organisms capable of photosynthesis, production of organic material solely from solar lift and carbon dioxide. This organic material serves as a source of both energy and mineral nutrients. Both are required by all living organisms. Examples include both terrestrial and aquatic plants such as phytoplankton.

The consumers are organisms whose very survival depends on the organic material manufactured by the producers. Consumers represent animals of all sizes ranging from large predators to small parasites, such as mosquitoes and flies. The nature of the consumer’s dependence on the producers takes various forms. Some consumers (herbivores such as rabbits) are directly dependent on primary producers of for energy. Others (carnivores such as tigers) depend indirectly on primary producers.

The last group of living organisms is the decomposers. These include micro-organisms such as fungi, bacteria, yeast, etc., as well as a diversity of worms, insects and many other small animals. They all rely on dead organisms for their existence and survival. In their efforts to survive and obtain energy they decompose materials released by plants and consumers to their original elements (C, O, H, N, S, P).

This is what keeps material cycling within the ecosystem. The biotic community together with the physical environment forms are interacting system called ecosystem.