

ECOLOGY

2. COMMUNITY ECOLOGY

Topic : Community

Definition :

community is a group or association of populations of two or more different species occupying the same geographical area at the same time.

The study of the relationships of plants and animals making up a natural community is termed as community ecology or synecology.

In ecology, groups of individuals of any one type of organism having high degree of uniformity in composition and structure and occupying an area of essentially uniform environment is termed as population .

Examples :

Community, also called biological community, in biology, an interacting group of various species in a common location. For example, a forest of trees and undergrowth plants, inhabited by animals and rooted in soil containing bacteria and fungi, constitutes a biological community.

Characteristics of Community:

The community has the following characteristics:

(1) Species diversity:

(2) Interdependence & Coexistence:

(3) Species dominance:

(4) Stratification:

(5) Succession:

(1) Species Diversity:

Various species of plants and animals living in a community exhibit species diversity. Each community consists of different organisms like plants, animals, microbes etc. They differ taxonomically from each other. This species diversity may be regional or local.

(2) Interdependence & Coexistence:

Species occurring in the particular habitat do not live in complete isolation as pure cultures, but they coexist in mutual interdependence .

Interdependence talks about dependability of one species on another ; coexistence focuses on interaction between different species.

The coexisting populations are interrelated and they show some sorts of interaction.

Thallophytes, mosses, ferns and many shade loving herbs that are found on the forest floor are dependent on the forest trees because trees provide shadow and moist conditions. If the trees of forest are removed, the ground vegetation may disappear.

(3) Species dominance:

Not all the species of a community are found in abundance. Only a few species are found in abundance, either in number or in biomass (living weight) while the majority are rare. The common species which are abundant and contain maximum biomass are considered to be dominants. Dominant individuals influence the associated individuals.

(4) Stratification:

In a plant community, the plants, which have some sort of relationship among themselves, may be trees, shrubs, herbs, mosses, lichens and thallophytes. These plants form, more or less, distinct strata or layers or storeys on vertical as well as in horizontal planes. This is characteristically known as stratification. The individuals of different layers represent different "life forms".

The factors causing stratification are as follows:

1. Specific tolerance and adaptations.
2. Chemical reactions between the lay-products and physical stratification.
3. Changes in species structure with time. New organisms take up temporary or permanent position as a direct response to the presence of initial or preexisting population in the area.

(6) Succession:

The changes in the community go on taking place until a complete balance is established between community and environment. This is called succession. Interacting populations of community are characterized by continuous death and replacement and usually by immigration and emigration (one way movement from home range to other habitat) of their individuals. In this way, composition and shape of community remains in changing state.

At complete equilibrium state a stable community is established which is called climax community.

Diversity in Community

It represents the diversity of organisms sharing the same community or habitat ; the existence of many different kinds of plants and animals in an environment.

Usually three levels of diversity are there - genetic, species, and ecosystem diversity.

Genetic diversity is all the different genes contained in all individual plants, animals, fungi, and microorganisms. It occurs within a species as well as between species.

Species diversity is all the differences within and between populations of species, as well as between different species.

Ecosystem diversity is all the different habitats, biological communities, and ecological processes, as well as variation within individual ecosystems.