

Paper II A  
Community structure (Part II)

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Composition of Community

It comprises the following parameters-

1. Size: Communities may be large or small. Larger one extends over areas of several thousands of square kilometers as forests, others such as deserts etc. are comparatively smaller with dimensions in hundreds of kilometers and still others such as meadows, rivers, ponds, rocky plateaus etc. covering a more restricted area. Very small sized communities are the groups of microorganisms in such microhabitats as leaf surface, fallen log, litter, soil etc.

2. No. of Species: - The no. of species in communities vary greatly. Charles Elton (1927) calculated that the community of a British river included species of invertebrates, in addition to fish, amphibians, populations of

152

Algae, protozoa, bacteria and rooted aquatic plants. In contrast to this, he found a community on a sandy beach consisting of only five species of invertebrates, in addition to fish, amphibians, populations of algae, protozoa, bacteria and rooted aquatic plants. M.C. Daeb & his coworkers (1980, 1981 and 1984) studied the composition of a biotic community in some tropical pastures of Sambalpur, India and found that it consisted of 22 grasses and other herbaceous species (the primary producers), 5 species of earthworms, 25 of tick-bearing protozoa, 15 of nematodes, and 7 of micropods. At one site of river Rs, Orissa, the community consisted of 1 species of rooted plant, 32 of phytoplankton, 20 of zooplankton and 7 of fish species. (Ker et al 1987; Daeb et al. 1988)

3 Dominants — In each community, there occurs diverse species. All these species are not equally important but there are only a few overtopping species which by their bulk and growth modify the habitat and control growth of other species of the

(Pg 3)

Community, thus, forming a kind of characteristic nucleus in the Community. These species are called dominants. Generally, in most of the Communities, only a single species is particularly conspicuous and dominant and in such case community is called by the name of dominant species.

According to Clements and Shelford (1935), dominance is most commonly expressed in the reactions of an organism to its habitat. Community dominant sustains the full impact of the climate or the environment but modify this effect for other organisms within the community by tempering light, moisture, space and other conditions. Only those other organisms that find these modified physical conditions tolerable can exist within the community. Furthermore, dominants are ordinarily the most prominent species in the community, make up its greater mass of living material (biomass) and serve as the major source of food, substrate and shelter for the animals that are present. In a forest community, trees are dominant. They decrease light intensity,

[Pg-17]

In case the relative humidity, intercept precipitation, monopolize most of the moisture and nutrients in the soil, decrease wind velocity and furnish shelter and food for animals. Grasses play a similar, though less conspicuous, role in prairie communities, sedges, rushes and cattails in marsh communities.

4<sup>th</sup> Ecological amplitude :- The range of environmental conditions which a taxon can tolerate is called ~~the~~ Ecological Amplitude. The composition of a biotic community in any habitat is dependent upon the frequency of environmental conditions in that habitat and the ecological amplitude of species populations. Thus, the climate and other abiotic and biotic conditions of a habitat determine the type of community which survives and develops.

### Structure or stratification of a community

The communities exhibit a recognizable pattern in the spatial arrangement of the members of the community. Also called as stratification, in which organisms are distributed.

unevenly throughout the biotic community. Hence stratification is a community result following factors -

- a) Specific tolerations and Adaptations -
- b) chemical reactions taking place between the by products and physical stratification.
- c) Other organisms take up temporary or permanent residence as a direct response to the presence of initial residents. The stratification in community may be horizontal or vertical and is different in aquatic and terrestrial habitats.

1. Horizontal Stratification :- A community may be divided horizontally into subcommunities, which are units of homogeneous life forms and ecological relations. This horizontal division constitutes the zonation in the community. In shallow ponds, the zonation is very little. But, in deep ponds and lakes, there may be recognized three zones viz, Littoral zone, limnetic zone and Profundal Zone. In each zone, organisms differ from each other. Further, in case of animal communities of rocky sea shore, there are three distinct zones - (i) Balanus Zone.

(ii) Littoral Zone or Intertidal Zone  
 (iii) Holes & Cracks in the rocks.  
 Savagely shore dwelling marine animals, Control is Part II