

Biodiversity

The term biodiversity encompasses variety of biological life at more than one scale. It is not only the variety of species (both plant and animal) but also the variety of genes within those species and the variety of ecosystems in which the species reside.

The number and variety of plants, animals and other organisms that exist is known as biodiversity. It is an essential component of nature and it ensures the survival of human species by providing food, fuel, shelter, medicines and other resources to mankind. The richness of biodiversity depends on the climatic conditions and area of the region. All species of plants taken together are known as flora and about 70,000 species of plants are known to date. All species of animals taken together are known as fauna which includes birds, mammals, fish, reptiles, insects, crustaceans, molluscs, etc.

Historical aspect -

In the context of conservation science the term 'biodiversity', a contraction of 'biological diversity', is relatively young. 'Biological diversity' in its current sense began to be used in the early 1980s, with interest in the concept elevated by publications such as 'Limits to Growth', which discussed the implications of unrestricted population and economic growth on the environment. Use of the term has ranged from a focus on species richness (number of different species in a location/sample) to greater emphasis on ecological and genetic diversity. The specific origin of the word '**biodiversity**' is often attributed to **W.G.Rosen** in 1985 during planning for the 'National Forum on Biodiversity' which took place in America later that year. The proceedings of the forum were published by E. O. Wilson in 1988 in a book entitled 'Biodiversity', which is likely to have initiated the widespread use of the word. Initially the term biodiversity was used more in political forums than scientific ones, progressing over time to become a term used to symbolise the concept of the "richness of life on earth". Importantly, biodiversity does not exclusively refer to species richness. It also encompasses diversity at a wider scale meaning that differences in the genetic makeup of populations is important. Endemism has a key role to play in this context because endemic species are restricted to small areas and provide pockets of particularly high genetic diversity.

The concept of biodiversity continues to evolve and more recently it has been included in the idea of ecosystem services in that it is a form of 'natural capital' and thus underpins the functioning of ecosystems. Biodiversity itself is not generally considered an ecosystem service but rather supports environmental functions.

Importance -

The increasing use of the term biodiversity is being driven by the fact that, in an ecological context, global biodiversity itself is being lost at an alarming rate . Although it has been shown that the significant global biodiversity loss that has occurred over the timeframe of human existence has not stopped global human population increase , there is clear evidence that biodiversity loss can affect the well-being of society and have negative economic impacts .

Biodiversity underpins ecosystem function and the provision of ecosystem services. Biodiversity loss therefore threatens the provision of goods and services provided by ecosystems. Reduction in biodiversity can affect decomposition rates, vegetation biomass production and, in the marine environment, affect fish stocks . It is predicted that a reduction in marine productivity means that fisheries will not be able to meet the demands of a growing global population . In addition to the gradual decline in environmental function linked to reductions in biodiversity, it has been suggested that there is a risk that at some point a threshold will be crossed and a catastrophe may occur. Research has highlighted that biodiversity loss could rival the problems of carbon dioxide increases as one of the major drivers of ecosystem change in the 21 century . Whether from environmental collapse or gradual decline in function, our ability to adapt to a changing world may be considerably reduced if the environment on which we rely does not contain sufficient biodiversity to evolve and continue to support our needs

Biodiversity in oral cavity

Every human body contains a personalized microbiome that is essential to maintaining health but capable of eliciting disease. The oral microbiome is particularly imperative to health because it can cause both oral and systemic disease. The oral microbiome rests within biofilms throughout the oral cavity, forming an ecosystem that maintains health when in equilibrium. However, certain ecological shifts in the microbiome allow pathogens to manifest and cause disease. Severe forms of oral disease may result in systemic disease at different body sites. Microbiomics and metagenomics are two fields of research that have emerged to identify the presence of specific microbes in the body and understand the nature of the microbiome activity during both health and disease. The analysis of the microbiome and its genomes will pave the way for more effective therapeutic and diagnostic techniques and, ultimately, contribute to the development of personalized medicine and personalized dental medicine.



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