

Class 11 Geography Notes Chapter 14 Biodiversity and Conservation

The average half-life of a species is estimated at between one and four million years, and 99 per cent of the species that have ever lived on the earth are today extinct.

Biodiversity is not found evenly on the earth. It is consistently richer in the tropics. As one approaches the polar regions, one finds larger and larger populations of fewer and fewer species.

Genes are the basic building blocks of various life forms. The diversity in gene in a species is called genetic biodiversity.

Human beings genetically belong to the homo sapiens group and also differ in their characteristics such as height, colour, physical appearance, etc., considerably. This is due to genetic diversity. This genetic diversity is essential for a healthy breeding of population of species.

Genetic diversity has given a great contribution in development of human culture. In a similar way human species has also contributed in maintaining natural diversity at genetic, species and ecosystem level.

Different species of ecosystem are busy in one activity or the other. Without activities they can neither survive nor develop.

Ecosystem evolves and sustains without any reason. That means, every organism, besides extracting its needs, also contributes something of useful to other organisms.

Ecological functions are important for ecosystem function and human survival. The more diverse an ecosystem, better are the chances for the species to survive through adversities and attacks, and consequently, is more productive. Just like a species with a high genetic diversity, an ecosystem with high biodiversity may have a greater chance of adapting to environmental change. In other words, the more the variety of species in an ecosystem, the more stable the ecosystem is likely to be.

Biodiversity as we have today is the result of 2.5-3.5 billion years of evolution. Before the advent of humans, our earth supported more biodiversity than in any other period.

Since, the emergence of humans, however, biodiversity has begun a rapid decline, with one species after another bearing the brunt of extinction due to overuse. The number of species globally vary from 2 million to 100 million, with 10 million being the best estimate.

For all humans, biodiversity is an important resource in their day-to-day life. One important part of biodiversity is 'crop diversity', which is also called agro-biodiversity. Biodiversity is seen as a reservoir of resources to be drawn upon for the manufacture of food, pharmaceutical, and cosmetic products.

Since the last few decades, growth in human population has increased the rate of consumption of natural resources. It has accelerated the loss of species and habitation in different parts of the world.

Tropical regions which occupy only about one-fourth of the total area of the world, contain about three-fourth of the world human population. Over-exploitation of resources and deforestation have become rampant to fulfil the needs of large population. As these tropical rain forests contain 50 per cent of the species on the earth, destruction of natural habitats have proved disastrous for the entire biosphere.

Natural calamities such as earthquakes, floods, volcanic eruptions, forest fires, droughts, etc. cause damage to the flora and fauna of the earth, bringing change to the biodiversity of respective affected regions. Pesticides and other pollutants such as hydrocarbons and toxic heavy metals destroy the weak and sensitive species.

The International Union of Conservation of Nature and Natural Resources (IUCN) has classified the threatened species of plants and animals into three categories for the purpose of their conservation: (a) Endangered species (b) Vulnerable species and (c) Rare species.

Biodiversity is important for human existence. All forms of life are so closely interlinked that disturbance in one gives rise to imbalance in the others. If species of plants and animals become endangered, they cause degradation in the environment, which may threaten human being's own existence.

The Government of India along with 155 other nations have signed the Convention of Biodiversity at the Earth Summit held at Rio de Janeiro, Brazil in June 1992.

Government of India passed the Wild Life (Protection) Act, 1972, under which national parks and sanctuaries were established and biosphere reserves declared.

There are some countries which are situated in the tropical region; they possess a large number of the world's species diversity. They are called mega diversity centers. There are 12 such countries, namely Mexico, Columbia, Ecuador, Peru, Brazil, Democratic Republic of Congo, Madagascar, China, India, Malaysia, Indonesia and Australia in which these centers are located.

Hotspots are defined according to their vegetation. Plants are important because these determine the primary productivity of an ecosystem. Most, but not all, of the hotspots rely on species-rich ecosystems for food, firewood, cropland, and income from timber. In Madagascar, for example, about 85 per cent of the plants and animals are found nowhere else in the world. Other hotspots in wealthy countries are facing different types of dangers.

Class 11 Geography Notes Chapter 14 Important Terms:

- **Biodiversity:** Biodiversity refers to the varieties of plants, animals and micro-organisms, the genes they contain and the ecosystems they form. It relates to the variability among living organisms on the earth, including the variability within and between the species and that within and between the ecosystems.
- **Species:** Groups of individual organisms having certain similarities in their physical characteristics are called species.
- **Genetic biodiversity:** Genetic biodiversity refers to the variation of genes within species.
- **Species diversity:** Species diversity refers to the variety of species. It relates to the number of species in a defined area. The diversity of species can be measured through its richness, abundance and types.
- **Ecosystem diversity:** The broad differences between ecosystem types and the diversity of habitats and ecological processes occurring within each ecosystem type constitute the ecosystem diversity.
- **Hotspots:** Some areas are richer in species than others. Areas rich in species diversity are called hotspots of diversity.
- **Exotic species:** Species which are not the natural inhabitants of the local habitat but are introduced into the system, are called exotic species.
- **Sensitive species:** Pesticides and other pollutants such as hydrocarbons and toxic heavy metals destroy the weak species. These are called sensitive species.
- **Mega diversity centre:** There are some countries which are situated in the tropical region; they possess a large number of the world's species diversity. They are called mega diversity centres.
- **IUCN:** The International Union of Conservation of Nature and Natural Resources is an international organization which published information about species under the red list.
- **Endangered species:** Endangered species includes those species which are in danger of extinction. The IUCN publishes information about endangered species world-wide as the red list of threatened species.
- **Vulnerable species:** Vulnerable species includes the species which are likely to be in danger of extinction in near future if the factors threatening to their extinction continue. Survival of these species is not assured as their population has reduced greatly.
- **Rare species:** Rare species are those species whose population is very small in the world and they are confined to limited areas or thinly scattered over a wider area.