**INTRODUCTION**

***“We have to take care about nature as much as nature is taking care about us. Nature is very kind with us. And if you want to enjoy the gifts of nature and the promises of nature, we have to defer to nature and its need, its rules, its norms.”* -*Shimon Peres***

The present era may well be designated as the era of ecological crisis that has threatened the life support system as a whole .Humankind is, thus, involved in what has been called **specide**, killing of species. The rapid destruction of ecosystems, as well as decline in quality and quantity of natural resources has lead to a concern for their conservation. Conservation of ecosystem is nothing but securing the existence of man on this planet .It is the **management, for the benefit of all life** **including humankind, of the biosphere so that it may yield the highest sustainable** **benefit to the present generation, while keeping its potential to meet the needs &** **aspirations of future generations.**

One of the major challenges for the conservation biology today is to enhance the level of protection of ecosystem and biological diversity in landscapes increasingly dominated by human beings. Habitat alteration , over-exploitation, pollution etc. are going to threaten the global biological resources . This has led to the fast depletion of biodiversity in different ecosystems and adversely affected the ecological balance. Therefore, for the conservation of the environment, many laws were enacted from time to time.

**WHAT IS BIODIVERSITY?**

A wide variety of living organisms including plants, animals and micro-organisms with whom we share this planet earth makes the world a beautiful place to live in. Living organisms exist almost everywhere from mountain peaks to the ocean depths; from deserts to the rainforests. They vary in their habit and behavior, shapes, sizes and colors. The remarkable diversity of living organisms form an inseparable and significant parts of our planet however, the ever increasing human population is posing serious threats to bio-diversity.

Biodiversity or Biological diversity is a term that describes the variety of living beings on earth. In short, it is described as degree of variation of life. Biological diversity encompasses microorganism, plants, animals and ecosystems such as coral reefs, forests, [rainforests](http://www.conserve-energy-future.com/Importance-layers-and-types-of-rainforests.php), deserts etc. Biodiversity also refers to the number, or abundance of different species living within a particular region. It represents the wealth of biological resources available to us. It’s all about the sustaining the natural area made up of community of plants, animals, and other living things that is begin reduced at a steady rate as we plan human activities that is being reduced by habitat destruction. In biodiversity, each species, no matter how big or small has an important role to play in ecosystem. Various plant and animal species depend on each other for what each offers and these diverse species ensures natural sustainability for all life forms. A healthy and solid biodiversity can recover itself from variety of disasters. The basic components of Biodiversity include:

**· Genetic Biodiversity**: Genetic variation within populations or species.

**· Species Biodiversity**: Number of species within an area.

**· Ecosystem Biodiversity**: Variation among the ecosystems, communities.

Some common terms associated with biodiversity include:

**Genetic** - variation between individuals of the same species. This includes genetic variation between individuals in a single population, as well as variations between different populations of the same species. Genetic differences can now be measured using increasingly sophisticated techniques. These differences are the raw material of evolution.

**Species** - species diversity is the variety of species in a given region or area. This can either be determined by counting the number of different species present, or by determining taxonomic diversity. Taxonomic diversity is more precise and considers the relationship of species to each other. It can be measured by counting the number of different taxa (the main categories of classification) present.

**Ecosystem**- Communities of plants and animals, together with the physical characteristics of their environment (e.g. geology, soil and climate) interlink together as an ecological system, or 'ecosystem'. Ecosystem diversity is more difficult to measure because there are rarely clear boundaries between different ecosystems and they grade into one another.

**Why is Biodiversity Important?**

Biodiversity has a number of functions on the Earth. These are as follows:

* ***Maintaining balance of the ecosystem:*** Recycling and storage of nutrients, combating [pollution](http://www.conserve-energy-future.com/various-pollution-facts.php), and stabilizing climate, protecting water resources, forming and protecting soil and maintaining eco system balance.
* ***Provision of biological resources:*** Provision of medicines and pharmaceuticals, food for the human population and animals, ornamental plants, wood products, breeding stock and diversity of species, ecosystems and genes.
* ***Social benefits:*** Recreation and tourism, cultural value and education and research.
* ***Biodiversity and food:*** 80% of human food supply comes from 20 kinds of plants. But humans use 40,000 species for food, clothing and shelter. Biodiversity provides for variety of foods for the planet.
* ***Biodiversity and human health:*** The shortage of drinking water is expected to create a major global crisis. Biodiversity also plays an important role in drug discovery and medicinal resources. Medicines from nature account for  usage by  80% of the world’s population.
* ***Biodiversity and industry:***Biological sources provide many industrial materials. These include fiber, oil, dyes, rubber, water, timber, paper and food.

**LOSS OF BIODIVERSITY**

Species are now becoming extinct at an alarming rate, almost entirely as a direct result of human activities. Previous mass extinctions evident in the geological record are thought to have been brought about mainly by massive climatic or environmental shifts. One estimate calculates that a quarter of all species on earth are likely to be extinct, or on the way to extinction within 30 years. Another predicts that within 100 years, three quarters of all species will either be extinct, or in populations so small that they can be described as "the living dead". The following are the reasons:

**Destruction of Habitat:**

The natural habitat may be destroyed by man for his settlement, agriculture, mining, industries, highway construction, dam building etc. As a consequence, the species must adapt to the changes in the environment, move elsewhere, starvation or disease and eventually die.

**Over-hunting**

Over-hunting has been a significant cause of the extinction of hundreds of species and the endangerment of many more, such as whales and many African large mammals. Most extinction over the past several hundred years are mainly due to over-harvesting for food, fashion, and profit.

**Habitat loss, degradation, fragmentation**

As deforestation increases the main cause of mass extinctions caused by human activity. In the New World tropics, lowland, seasonal, deciduous forests began to disappear. The forested regions most easily converted to agriculture, and with a more welcoming climate.

**Domino effects**

Domino effects are especially likely when two or more species are highly interdependent, or when the affected species has a strong connection to many other species.

**Pollution**

Pollution from chemical contaminants certainly poses a further threat to species and ecosystems. While not commonly a cause of extinction, it likely can be for species whose range is extremely small, and threatened by contamination.

**Climate change**

A changing global climate threatens species and ecosystems. The distribution of species (biogeography) is largely determined by climate, as is the distribution of ecosystems and plant vegetation zones (biomes). Climate change may simply shift these distributions but, for a number of reasons, plants and animals may not be able to adjust. The pace of climate change almost certainly will be more rapid than most plants are able to migrate.

**Natural Calamities:**

Natural calamities, such as floods, draught, forest fires, earth-quakes, volcanic eruptions, epidemics etc. sometimes take a heavy toll of plant and animal life. Floods are frequent in moist tropical regions of the world which inundate much of the ground vegetation, trap a large number of animals while leading away soil nutrients. Failure of monsoon in succession for two or three years dries up ground vegetation and as the subsurface water table recedes trees are also affected. With plant life animals also suffer.

Forest fires in densely wooded localities often reduce to ashes a large number of plant and animal species and so do earthquakes. Volcanic eruptions may at times completely destroy plant and animal life in its surrounding areas. Epidemics sometimes destroy large portions of a natural population. In nature such episodes are usually confined to specific plant or animal populations as the pathogen is often specific to particular species or group of species.

**CONSERVATION OF BIODIVERSITY**

*Conservation is the protection, preservation, management, or restoration of wildlife and natural resources such as forests and water. Through the conservation of biodiversity and the survival of many species and habitats which are threatened due to human activities can be ensured. There is an urgent need, not only to manage and conserve the biotic wealth, but also restore the degraded ecosystems.*

Conservation is the planned management of natural resources, to retain the balance in nature and retain the diversity. It also includes wise use of natural resources in such a way that the needs of present generation are met and at the same time leaving enough for the future generations. Conservation of biodiversity is important to:-

* Prevent the loss of genetic diversity of a species
* Save a species from becoming extinct
* Protect ecosystems damage and degradation

**CONSERVATION STRATEGIES**

Conservation efforts can be grouped into the following two categories:

***1. In-situ*** (on-site) conservation includes the protection of plants and animals within their natural habitats or in protected areas. Protected areas are land or sea dedicated to protect and maintain biodiversity. It is the process of protecting an endangered plant or animal species in its natural habitat, either by protecting or cleaning up the habitat itself, or by defending the species from predators. It is applied to conservation of agricultural biodiversity in agro forestry by farmers, especially those using unconventional farming practices. In-situ conservation is being done by declaring area as protected area.

***2. Ex-situ*** (off-site) Ex-situ conservation is the preservation of components of biological diversity outside their natural habitats. This involves conservation of genetic resources, as well as wild and cultivated or species, and draws on a diverse body of techniques and facilities. Such strategies include establishment of botanical gardens, zoos, conservation of gene, pollen seed, tissue culture and DNA banks.