



Special Issue of First International Conference on Advancements in Research and Development Present Status and Conservation Strategies of Biodiversity in India

Nikhil Agnihotri¹, Sippy Dassani and T.K. Sharma²

Faculty of Science, SKJD Degree College, Kanpur Dehat

Department of Botany and Microbiology, Bipin Bihari P.G. College, Jhansi

nikhil.azolla@gmail.com¹

Abstract

The surroundings in which we live comprises of numerous life forms such as birds, fishes, plants and trees. In simple terms, it is the variability and variety of living organisms together with ecological facilities in which they exist. Over the years, the biodiversity has been facing rapid depletion as a result of habitat loss, excessive exploitation of resources, climatic changes, diseases, pollution, poaching of animals etc. In order to correct this scenario, vital steps for biodiversity conservation have to be taken by public in general along with the government and social organizations. Thus, biodiversity conservation has become a major issue in present times. The term biodiversity was coined as a contraction of biological diversity in 1985. Biodiversity may be defined as the variety and variability of living organisms and the ecological complexes in which they exist. In other words, biodiversity is the occurrence of different types of ecosystems, different species of organisms with the whole range of their variants and genes adapted to different climates, environments along with their interactions and processes. Loss of biodiversity occurs when either the habitat essential for the survival of a species is destroyed, or particular species are destroyed. The former is more common as habitat destruction is a fallout of development. The latter reason is encountered when particular species are exploited for economical gain or hunted for sport or food. Extinction of species may also be due to environmental factors like ecological substitutions, biological factors and pathological causes which can be caused by nature or man. Conservation of biodiversity is protection, upliftment and scientific management of biodiversity so as to maintain it at its threshold level and derive sustainable benefits for the present and future generation.

Key Words: Environment, ecology, climate change, living organisms etc.

1. Introduction

The world-known scientist Thomas Eugene introduced the term biological diversity by combining two words biological and diversity. According to him, bio means life and diversity means different kinds of animals and plants. Later in 1985, W.C. Rosan gave the name of biodiversity which is accepted by the whole world. Today most people in the world like students, eclipse, doctor, professor, teacher, engineer, scientist and

politician are familiar with the word 'Biodiversity'. We often listen or read news related to biodiversity on newspapers or in television. Thus, it is apparent that all the fauna and different types of diversity found on earth is biodiversity. Nature and its conditions, climate, plateau, rivers, mountains, oceans, land, soil and ponds, types of animals and plants that are closely related to each other are called biodiversity.

All living beings must have a characteristic so that they look different from other life forms. When

this variation is seen, it is either due to the colour, form or any other specific trait; whether from Antarctica to the depths of the ocean or the desert Himalayas, many forms of animals or the plant are found with different characteristics. It can be said that every animal and plant is a unique gift of the nature.

Every animal or plant has the natural right to grow freely in nature, but due to human activities, many species have come under threat for survival. In the year 1992, Biodiversity was defined in the Earth Conference held in Rio De Janeiro, according to which biodiversity is different organisms found in water sources and ecosystems on the surface of the earth, the ocean, mountains and other habitat. To conserve biodiversity, the balance of biodiversity in the environment is very important for human life.

2. Vegetative Diversity and India

There are 17 large nations in the world like Australia, Brazil, Congo, Colombia, China, Mexico, South Africa, Indonesia, Venezuela, Peru, Philippines, Malaysia, India and United States of America that have large biodiversity. India comprise only 2.4% of the total land area worldwide but having more than 5% of the total known animals and species of the world. India is ranked 10th in the world based on its botanical diversity, 11th based on limited regional variations and 6th based on crop production. India is a home to about 18,660 flower plants (angiosperm), 82 gymnosperm, 7411 algae, 15396 fungus, 1302 pteridophytes and 1223 viruses. Till now, one third of all known angiosperms are only found in India. The plant genetic diversity of India is also unique. About 50000 varieties of rice, 2200 varieties of mango, 500 varieties of oats and pepper each are found in India, in which 167 species of crops were first grown in India. Among them are rice, cane, banana, lime mustard, ginger, cardamom, turmeric, black pepper, etc.

In India, if we talk about crops varieties, 51 different varieties of grain coarse cereals, 104 species of fruits, 55 species of vegetable and beans, 24 species of fibres containing cereals and of 24 species of oilseed grow in India. One hundred nine varieties of spices are used in the world; out of 75 species grow from India. Out of them, 27 species are widely cultivated in large scale. India is also a leading producer of turmeric,

pepper and cardamom.

Biodiversity of India is very sensitive as world's 34 leading biodiversity sites are in India. It is believed that not only regional species are found there, but highly sensitive biodiversity areas of the world are also found in various regions of India such as the Himalayas, the Sundarbans the Western Ghats etc. World's most ancient native flowering plants are found in the north eastern region of India.

3. Animal Diversity in India

India is also the world's leading country in terms of diversity of fauna. So far, about 89317 types of animals are identified in India. They comprise of 390 types of mammals, 1225 types of birds, 456 types of snakes, 2546 fish, include 470 types of moulds, 2577 types of protozoa, 68389 types of insects and Arthropodes, and 8329 species of other animals. 2/3 of the world tigers, 60% of wild buffalos and one-horned rhinoceros are found in India only. Gir sanctuary in Gujarat is the only residential place of Asiatic lion. Thus, many species of birds are also found only in India.

4. India's Forests

About 40% of Indian land was covered by forest till 20th century. However, only about 22% of India's area is covered by forests today. India is geographically divided into 10 bio-geographical regions and 26 biological territories and based on botanical diversity, there are 16 types of major forest and 226 types of regional forests in India. Among them, 37% are tropical deciduous and 3.9% are grasslands. About 30% forests include desert, evergreen forests, mountain forests, etc. The most human forms in the world are found in India.

5. The Utility of Biological Diversity

Vegetation has been the basic source of food since the beginning of life on earth. Since the beginning of the existence of human life; various uses of biodiversity have been made, either directly or indirectly. Vegetation has been used in Puja, recitation and religious rituals etc. Thus, use of 2,000 kinds of grains in the Yajurveda is known. There is a description of the medicinal utility of about 500 plants in the Vedas. According to the Botanical Survey of India, more than 10,000 species of plants are used in India in various forms. Food supplements are obtained from 4000 types of plants, medicines are obtained from 8000 kinds of plants and fibers are also extracted from

6000 kinds of plants. Animal feed is obtained from 5000 types of plants; 325 species of plants are used for fishing, 100 plants are utilized for fragrance purpose, 75 plants are used as spices and about 750 plants are also utilized for various purposes.

Presently, about 150 modern medicines have been obtained from trees and plants. 30 of these medicines have been discovered in India. Similarly, more than 70 medicinal trials have been made possible by traditional medicinal knowledge used by tribes of India. Recently collaboration with various government research organizations like National Botanical Research Institute, Central Medicinal and Aromatic Plant Institute an important and effective medicine for curing diabetes, rheumatism and skin diseases have been launched in the Indian market.

6. Biodiversity and Environmental Balance

Biodiversity has special importance in the Earth's environmental balance. Indirectly, biodiversity is essential in maintaining the balance of the environment. Biodiversity is an important contributor to control any area-specific pollution and to keep the reactions stable. Plants release oxygen through photosynthesis and animals take care of water. Hence it comes to the earth that there is a balance between oxygen and carbon dioxide and other gases. Seaweeds play a vital role in this task. Trees contribute 70% to the total oxygen released which further has a special contribution in controlling global warming by reducing the green house effect.

7. Animal Biodiversity and Environmental Balance

Not only plants, but animals also should live freely on the earth for contribution in the balance of the environment. That's why the ancient Indian mystics had linked the conservation of forest flora, nature, forest animals, and religion. The Mahabharata states that we cannot live without dams. Similarly in Manusmriti, it is said that unless the forests of the earth can be protected and the forest is endowed with wildlife, the earth will not be liveable for mankind. Garbage is a major contributor to loss of biodiversity. As a result of the various human activities, huge loss is caused for the environment. The disposal and disintegration of garbage, domestic and industrial waste, animal excreta and plant residues and other wastes is very important today to keep a balance in

the environment and for production of natural fertilizers. Apart from increasing fertility, it also protects against spreading disease by the decomposition of harmful substances. If this is not done, agricultural production in the entire world is assumed to fall by about 25%.

Every organism has a role in nature, different types of organisms provide resources for not only a sustainable development along with keeping the earth balanced and for fulfilling the basic needs of our life, but also for the conservation of nature and biodiversity.

Almost 99% of the people of the country are not aware of the importance of the said animals. For example, owl bats of China have their own ecological and environmental importance. Nearly 99% of India's vultures have become extinct. End of these birds has affected the scattering and pollination of the seeds in large extent. Due to the absence of vultures, stray dogs, animals like rats have started devouring nectar animals. Due to this, their number is also increasing and other problems are also arising. Similarly, many insects found in nature promote organic pollination in bats, flowers, which promotes flowering and fruit production. Though bats are considered useless but a scientific research has revealed that bats devour the larvae of mosquitoes as well as night pollinating animals. The main food of frog is insects and moths and this way the frogs protect the crops from damage by eating harmful pests. Similarly, the main food of snakes found in the fields is the rat. Hence snakes help the farmers by eating mice. The earthworms found on the field continuously feed on the soil, which acts as fertilizer for the crop, as well as making a continuous tunnel in the earthworm bloody, which makes the area's clay soil soft and is vital for the good growth of plant roots.

Due to uncontrolled use of chemical fertilizers and pesticides, while the frog disappeared from the fields and frogs from the ponds, the use of methyl iso-cyanide has also threatened the existence of vultures. Due to the conversion of caves by the Chhattisgarh government into a tourist place, the habitat of bats is in danger. Owls are also in crisis, bees that contribute significantly to pollination are also falling prey to global warming. Many species of Tilly are also suffering from crisis and are moving towards extinction. Birds like Parrots,

crows, sparrows etc. play an important role in the type and propagation of plants like Peepal, Banyan etc., thus each organism contributes in the conservation of diversity.

8. The Current Crisis in Front of Biodiversity

Currently, due to urbanization, industrialization and increasing number of vehicles, the air, water and environmental pollution are constantly increasing. The amount of carbon dioxide on the earth is increasing continuously which has led to the increase of earth's temperature and glaciers' melting rate. Ever since humans started exploiting the earth and natural resources in the name of development, it has caused many problems for biodiversity. In India, 71% of the people believe that human is responsible for global warming and distribution.

Many medicinal plants are not grown but are collected from the forests. Due to the uprooting of these plants from their native region, they have also been threatened with their termination. Similarly, excavating activities in mineral resources regions, excessive mining work and construction of railroads as well as uncontrolled grazing of livestock in particular region have created a biodiversity crisis in many places. Besides this, making it more commercially profitable and giving priority to growing species has also adversely affected the growth of vegetation.

The presence of exotic weeds like garlic, lemongrass, hyacinth, solitary acacia, eucalyptus, etc. has become a major threat to biodiversity in many places today. Foreign weeds grow from multi-third, causing many local plants to face an existential crisis. In the name of tree plantations, trees like luxuriant Acacia UK were promoted for about the last 4 decades, leading to ecological imbalance. Exotic weeds grow very fast, causing an existential crisis to many local plants. Some plants naturally have such low fertility and disease resistance that they are soon destroyed due to disease, either they do not manufacture properly or they are not scattered properly.

Presently, biodiversity is getting badly affected due to population growth all over the world. India, China, Indonesia, Pakistan, Bangladesh etc. have continuously increasing population which leads to threat of mass extinction of thousands of trees and plant species. Urbanization and industrialization

also leads to depletion of water resources either drying up or plagued by pollution. The main reason for this is believed to be the destruction of the natural sites found in their flora. For example, the pteridophytes, which can grow at a height of 2200 feet in India, are now found at an altitude of 2900, while the species of lichens which were once found at a height of 2900 feet, are now found at a height of 3500 feet.

It is well known fact that 2/3 tigers of the world are found in India and it is believed that a tiger requires 20 square kilometres of forest area for smooth distribution and livelihood. But at present, even 5 square kilometre forest area is not available for the tigers. As a result, the incidents of conflicts between tigers and human are constantly increasing. The cases of entry of elephants, bisons and leopard into urban and populated areas are also increasing. Due to the human activities, most leopards, tigers and one-horned rhinoceros are being killed in India. Similarly, smuggling of many species of snake-like beetles, turtles, pangolin etc. is also continuously increasing, due to which they are continuously decreasing in number.

Countries like Brazil, Colombia, Venezuela, Bolivia are considered as safe countries biodiversity in terms of area and population, as compared to India and Indonesia, but the fire in the Amazon forests in 2019 burned this recognition of Amazon which are known as the lungs of the earth. Millions of hectares of forests including Brazil and Bolivia were burned and destroyed due to fire in Amazon forests spread over 11 countries. As a result, due to the whirlwind, a large area of the sky remained dark in the sky. Similarly, heavy damage has been caused in the forests of America, Russia, Australia, Spain and India.

9. Importance and Need of Biodiversity Conservation

In present times, the exploitation of nature and biodiversity is being carried out across the whole world in the name of development. In India and all over the world, concrete buildings, highway bridges and cutting trees are considered as symbols of development. In 2019, due to the crisis of water in Chennai, the hotels refused to give rooms to customers, while Dhabas and eateries preferred customers who wanted to get the food packed and carry instead of having lunch or dinner at the

eatory itself. This was because the dhabas and the restaurants have no water available to feed the customers and to wash the dishes.

Similarly, in summer season, the rise in temperature led to lack of water and dryness, while the excess rain water goes in vain. This is the cruel result of exploitation of nature, environment and biodiversity. So at present, development and better coordination must be established among the people. Earlier there was no relation between development and biodiversity. But due to the development, huge loss to the environment is being caused.

Conclusion

Without the conservation of biodiversity, modern development is insignificant. This concept of development in the environment is causing harm to nature and mankind. The development was emphasized without conserving the environment and the biodiversity which has resulted to huge ecological losses for the earth. However, since we now know that the environment is very important for human's survival, India and the whole world taken several measures for biodiversity conservation. The emphasis is on conserving the animals in their natural habitats and in National Parks of the protected area. Similarly, conservation in residential areas like the donation to zoo vegetation is also being encouraged, besides promoting the breeding of crocodiles, turtle, whole musk deer etc. which are included in the qualification category. In addition, biodiversity conservation can also be done through seed bank, gene bank etc.

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