

1.3.4 VALUES OF BIODIVERSITY

1. Consumptive use:

Drugs: Many plants are used in primary health care. 70% of modern medicines are derived from plant and plant extracts.

Penicillin – fungus is the source – Antibiotic

Quinine – Chincona bark - Malaria treatment

Morphine – Poppy bark – Analgesic

Fuels: Fire woods are directly consumed by villagers.

Food: A large number of wild plants and wild animals are consumed by human beings as food.

2. Productive use:

Biodiversity products have commercial value. These products are marketed and sold. These are derived from animals and plants.

Animal products: Silk from silk worm, Wool from sheep, Musk from musk deer, Leather from animals

Plant Products: Wood for paper and Plywood, Cotton for textile industry, Pearl for pearl industry

3. Social value:

It refers to the manner in which the bio-resources are used in the society. These are associated with the social life, religion and spiritual aspects of the people.

e.g., Holy plants : Tulsi, Lotus, Neem trees

Holy animals : Cow, snake, bull, peacock

4. Ethical value:

It means that a species may or may not be used but its existence in nature gives us pleasure.

e.g., Holy river : River Ganga

Holy tree : Tulsi, Vengai

5. Aesthetic value:

The beautiful nature of plants and animals insists us to protect the biodiversity. Ex) eco-tourism, colour of butterfly, flowers etc.

6. Optional value:

The optional value of biodiversity suggests that any species may be proved to be a valuable species after someday.

1.3.5 BIODIVERSITY AT GLOBAL, NATIONAL AND LOCAL LEVELS

Global Level:

Conservative estimates of the existing biodiversity is ten million species, but if estimates for insects are correct then it could be around 30 million species, we have till now enlisted about 1.4 million species.

It includes among others about 98% birds, 95% reptiles and amphibians, 90% fish and about 85% higher plants known to exist on this Earth.

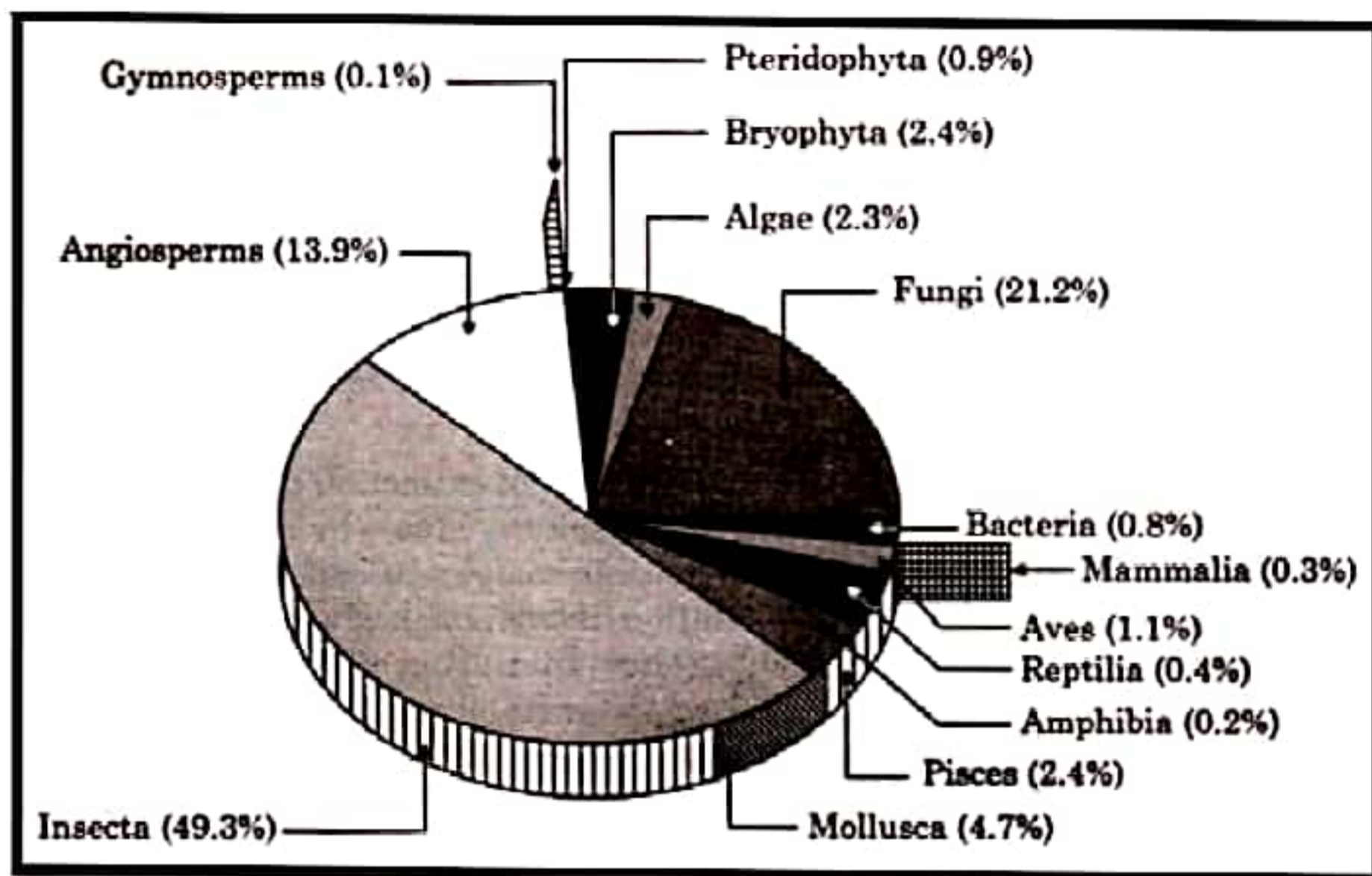
Form of Life	Known Species	Estimated Total Species
Insects and other arthropods	874,161	30 Million species, extrapolated from surveys in forest canopy in Panama, most believed to be unique to tropical forests.
Higher plants	248,400	Estimates range from 275,000 to 400,000 at least 10.15% species believed undiscovered.
Invertebrates (excludes arthropods)	116,873	True invertebrates may number millions of species. Nematodes, eelworms, and roundworms may each comprise more than one million species
Lower plants (fungi and algae)	73,900	Not available
Micro organisms	36,600	Not available
Fish	10,056	21,000 assuming that 10% fish remain undiscovered, the Amazon and Orinoco rivers alone may account for 2,000 additional species.
Birds	9,040	Known species probably account for over 98% of all birds.
Reptiles and Amphibians	8,962	Known species probably account for over 95% of all reptiles and amphibians.
Mammals	4,000	Known species probably account for over 95% of all mammals.
Total	1,390,992	10 million species considered a conservative estimate. If insect estimates are accurate, total exceeds 30 million.

Known and Estimated diversity of life on earth

National and Local Level:

India has over 108,276 species of bacteria, fungi, plants and animals already identified and described. Out of these, 84 percent species constitute fungi (21.2 percent), flowering plants (13.9 percent), and insect (49.3 percent). In terms of the number of species, the insecta alone constitute nearly half of the biodiversity in India.

These species occur on land, fresh and marine waters, or occur as symbionts in mutualistic or parasitic state with other organisms. In the world as a whole, 16, 04,000 species of Monera, Protista, Fungi, Plantae and Animalia have been described so far. However, it is estimated that at least 179, 80,000 species exist in the world, but as a working figure 122, 50,000 species are considered to be near reality. Percentage of Different Biota in India.



Percentage of Different Biota in India

Taxon	Number of Species	Percentage
Bacteria	850	0.8
Fungi	23,000	21.2
Algae	2,500	2.3
Bryophyte	2,564	2.4
Pteridophyta	1,022	0.9
Gymnosperms	64	0.1
Angiosperms	15,000	13.9
Insecta	53,430	49.3
Mollusca	5,050	4.7
Pisces	2,546	2.4
Amphibian	204	0.2
Reptilia	446	0.4
Aves	1,228	1.1
Mammalian	372	0.3
Total	108,276	100.00

Number of Species of Bacteria, Fungi, Plants and Animals

1.3.6 INDIA AS A MEGADIVERSE NATION

Megabiodiversity is a concept first proposed in a paper at the Smithsonian's 1988 biodiversity conference. This approach looks at biodiversity priorities by political units, in this case sovereign nations, rather than by ecosystems. It recognizes that a very small number of units (17 countries out of a global 200+) are home to an inordinately large share of world's biodiversity (USA, Mexico, Columbia, Venezuela, Ecuador, Peru, Brazil, Democratic Republic of Congo, South Africa, India, Madagascar, Malaysia, Indonesia, China, Philippines, Papua New Guinea and Australia).

Most of the megadiversity areas are large, but several, such as those in Madagascar, the Philippines and Ecuador pack high diversity into relatively small land areas. They have enormous responsibility at the same time, they should consider the biodiversity to be one of their most important long term economic assets.

INDIA

India is the seventh largest country in the world and has the second largest population. There is much diversity in the geographical features: the towering Himalayas and the extensive river plains in the north, the Thar desert in the west, the Deccan Plateau in the centre and the south, the coastal plains to the east and west and the numerous islands. The country has 26 states and 6 union territories.

The rising population has forced the rural poor to borrow against the future by depleting the natural resources. It was reported that the population reached one billion people in 2000, comprising about 16% of the world's population. The problem is further compounded by the high cattle population, estimated to be 450 million; most of these animals have a very low productivity but are allowed to graze freely in forest areas, causing the degradation of forests. It was estimated that the cattle population was 18% of the cattle population in the world. This has led to severe erosion, loss of soil, and floods in the lower plains, in addition to the destruction caused by shifting cultivation. As a result, the demographic and economic landscape of the country is plagued with poverty and underemployment.

Agricultural productivity is only 1 ton per ha against the actual capability of 4 ton per ha. How to achieve the optimum land use, including soil and moisture conservation measures, are the main challenges confronting the policy and decision-makers. To reverse the process of degradation and for the sustainable development of forests, the Government has prepared the National Forestry Action Programme (NFAP). Sixty percent of the forests are located in ecologically sensitive zones. These forests need to be managed in a way to ensure that they are ecologically protected and maintained, as well as sustained at the highest productivity level to meet the growing population's burgeoning demands for fuel, food, fodder, and timber.

India is one of the 17 mega diversity countries, commanding 7% of the world's biodiversity and supporting 16% of the major forest types, varying from alpine pastures in the Himalayas to temperate, sub-tropical, tropical forests, and mangroves in the coastal areas. But nearly half of the country's area is degraded, affected by the problems of soil degradation and erosion. The most common forms of degradation are wind and water erosion, and salinity. About 146 million ha are affected by wind and water erosion, and 7 million ha have become degraded due to excessive salts. About 8.5 million ha are under water logging and about 10 million ha are affected by shifting cultivation.

According to the Government statistics, nearly 22%, or 65 million ha, of the country's land have been recorded as forests, but only 19.5% have forest or tree cover, which is much less than the goal of 33% set by the National Forest Policy, 1988.

India currently has 80 National Parks. These National Parks in turn houses largest number of tigers found in the world, largest number of one-horned rhinos found in the world, now almost extinct Asiatic Lions, and a large percent of elephants. These wildlife animals are but only a part of more than 500 species of mammals that have made India their natural

home. Apart from the mammals, India is also blessed with over 2000 species of birds, over 500 species of reptiles and amphibians and around 30000 species of insects including colorful butterflies.