

CONSERVATION OF PLANTS AND ANIMALS (BIODIVERSITY)

WHAT IS BIODIVERSITY

The term biodiversity is commonly used to refer to the variety of life on the earth. More specifically the term is used to describe the number of species of organisms (plants and animals) present in a particular area (habitat). It can also be defined as "the total number of species found living in a given area".

◆ Importance and uses of biodiversity

Organisms are dependent on the environment in which they live. They interact with the environment and the various forms of life present around them. No organism can exist independently. The various forms of life (plants and animals) depend upon each other for their various needs. In this way a balance is maintained in that area. More the number of different kinds of organisms found in a given area, more stable would be the environment of the area.

A brief description of uses of biodiversity is given below.

- ◆ **As source of food :** We consume several species of edible plants and obtain meat, eggs and milk from animals like cow, buffalo and goat etc. Today new plant and animal varieties are being developed with the help of old varieties which provide higher yield and better quality of food.
- ◆ **Drugs and medicines :** Plants are a source of large number of medicines. Aspirin the most commonly used drug was originally extracted from the bark of the willow. Morphine used to reduce pain is obtained from poppy plant and Quinine used to treat malaria is obtained from cinchona tree.
- ◆ **Industrial products :** We get many products from plants such as oil, lubricants, perfumes, fragrances, fibres etc. Animals too provide a wide variety of products such as wool, silk, lac, fur, honey, leather etc.
- ◆ **Tourism and recreation :** People travel from one state to another or from one country to another to see the wildlife in national parks, reserves, zoos and forests.
- ◆ **Aesthetic and cultural benefit :** Gardening, bird-watching, keeping pets and aquariums are a source of joy and recreation. Many plants and animals are considered sacred and worshipped in our country.
- ◆ **Ecological importance :** Biodiversity helps in maintaining the balance in nature. Plants help in capturing the solar energy which gets cycled through the living world through the food chains and also help in recycling of nutrients. They also regulate water cycle and stabilise the soil by preventing soil erosion.

Deforestation and its causes

A large number of different plants and animals are found in forests. Many of them apparently do not appear to be of any use to us, for example wild animals and wild plants. But they, in fact are essential for the well being and survival of mankind. Unfortunately we do not realize this. As a result of this many kinds of plants and animals have disappeared from the face of earth. The major cause of their disappearance has been deforestation. Forests, you know are the places where diverse living organisms (plants and animals) live. When their homes are destroyed they automatically die and disappear.

Deforestation is one of the main causes of various environmental problems. Forests are important part of water cycles and bring stability in the climate of the area. In addition they have large commercial value. The following are some of the important causes of deforestation :

◆ **Procuring land for cultivation**

For growing human population, more food is required. To grow more food, more land is needed. For this forests are cleared.

◆ **Building houses.**

To provide shelter to growing human population more houses, are required. As a result of this new towns, cities are planned. To do this, forests are cleared.

◆ **Industrialization**

For making factories, mills and industries, forests are cleared.

◆ **To obtain wood and timber**

For furniture, house hold things and for fuel and building material, trees are cut.

◆ **Use of wood for industrial purpose**

Consumption of paper has increased manifold. For making paper, wood-pulp is used. Many other wooden things are also needed in industrial uses, for which trees are felled.

◆ **Consequences of Deforestation**

In the last few decades, forests have been cleared indiscriminately for various reasons, some of them have been given above. These have caused a high degree of deforestation. Large scale deforestation has brought many problems before the mankind some of them are cited below

- ◆ It is responsible for the increase in carbon dioxide, temperature and pollution level on the earth. This leads to global warming as carbon dioxide traps the heat of the sun rays.
- ◆ It has decreased the level of oxygen in the atmosphere. Trees purify air by taking carbon dioxide and giving out oxygen during the process of photosynthesis. Less trees means less oxygen.
- ◆ Deforestation affects climatic conditions of the area. Trees emit a large amount, of water in form of water vapour during transpiration. Depletion of water vapour affects cloud formation and results in less rain fall. Due to less rainfall the soil dries up and its nutrient value is affected. The decrease in rainfall also affects the growth of plants and tree which die. This slowly leads to desertification.

Conservation of forests and wild life

Forests, as you have seen play a very important part, in maintaining an ecological equilibrium in the environment. It is, therefore, very essential that they are conserved properly. If we can conserve forest, it would also help in the conservation of wild life.

◆ Conservation of forests

Forests can be conserved by taking following steps

- ◆ **Reforestation** : Planting trees on large areas both in plains and hills.
 - ◆ **Prevention of Forest fires** : Protection of forests from forest fires.
 - ◆ **Protection of trees and plants from insects and pests** : Insects and pests destroy trees, plants and other forest products. They must be protected from them.
 - ◆ **Grazing to be controlled** : Excessive grazing in and near the forests should be stopped.
 - ◆ **Use of wood/timber to be discouraged** : Alternatives to firewood and timber etc. should be used.
- Government should frame strict laws for the protection of forests. protection of forests should not be considered as the duty of Government alone. We all should help in the conservation of forests.

◆ Conservation of wild animals

Forests are the natural habitat or homes for a wide variety of plants and animals. Deforestation has affected them very adversely.

Wild animals were either hunted for food, or for their products such as skin, fur, tusks, horns etc., for their commercial or medicinal value. Hunting was considered as a popular sport. Though there is ban on killing of wild animals these days, yet they are illegally poached and killed regularly.

In order to save biodiversity, the best approach is to save and preserve their natural habitats. The government has formulated many rules and laws to protect wildlife. For this they have created wild life sanctuaries, national parks, biosphere reserves etc. These are some of the protected areas where the wildlife is protected and conserved in different parts of the country.

These national parks and wildlife sanctuaries hold some of the most precious species of plants and animals. Some of the important national parks and wildlife sanctuaries are listed in the tables respectively.

Biosphere reserve

Biosphere reserves are the areas meant for conservation of biodiversity. The biosphere reserves help to maintain the biodiversity and the culture of that area. One biosphere reserve may also contain other protected areas in it. For example Pachmarhi Biosphere Reserve consists one national park named Satpura and two wild life sanctuaries named Bori and Pachmarhi.

Flora and Fauna

In a biosphere reserve, you find some animals and plants which normally you may not find in any other area. They constitute its flora and fauna.

◆ Flora

The different types of plants belonging to that area are termed flora. For example sal, teak, mango, jamun, silver ferns and creepers of that area constitute the flora of the area.

◆ Fauna

On the other hand all animals found in that area constitute its fauna, For examples, jackal, bull, wild dog, leopard, species of frogs, insects and others constitute its fauna.

Besides creating protected areas, sometimes special breeding programmes are carried out to increase the number of a particular species. For example, breeding of crocodiles in chennai (Madras crocodile trust bank) has been able to produce more than 8000 crocodiles from just 10 crocodiles.

◆ Threatened, endangered and extinct species

Because of large-scale habitat destruction large number of plants and animals have disappeared and become extinct and many other are waiting to disappear. Before we move further, let us try to know the categories under which these animals are placed. The International Union of Conservation of Nature and Natural Resources (IUCN) have classified the rare animals on the basis of

- ◆ Present and past distribution
- ◆ Decline in the number of populations in course of time.
- ◆ Abundance and quality of natural habitats.
- ◆ Biological and potential value of the species.
- ◆ **Extinct** : A plant or animal species which once existed and flourished on the earth, but got exterminated and can no longer be seen on earth.
- ◆ **Endangered** : Any species in danger of extinction and whose survival is unlikely if the causal factors continue operating is called endangered species.
Examples: Tiger, elephant, rhinoceros, Indian wild ass
- ◆ **Vulnerable** : The species which are likely to move into the endangered category in the near future, if the causal factors continue operating are called vulnerable.
- ◆ **Rare** : Species with small population that are not at present endangered but are at risk of becoming so because of their smaller population. Examples: Pig tailed Macaque, Snow leopard, Hornbill.
- ◆ **Threatened** : Species belonging to any of the categories—endangered, vulnerable or rare are termed threatened. the terms defined above have been provided by IUCN—International Union of Conservation of Nature and Nature Resources. IUCN has listed the threatened species of plants and animals in a book called the 'Red data book''

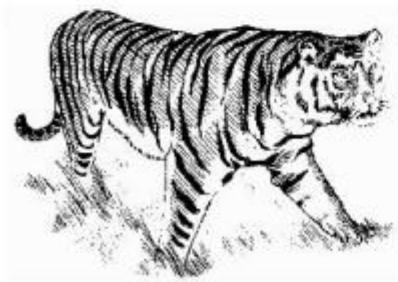


Fig. Tiger (Panthera tigris)

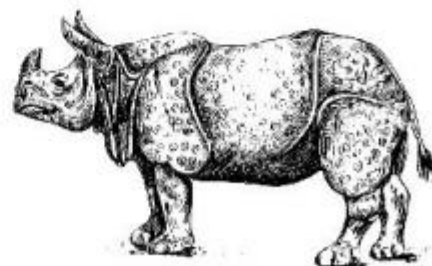


Fig. Rhinoceros (Rhinoceros unicornis)

Some of the important national parks

S. No.	Name of the National Park	Famous for
1	Dachigam national park, J&K Srinagar	Hangul or kashmir stag.
2	Corbett national park at the foothills of Himalayas	Tiger, elephant, leopard and many species of deer.
3	Dudhwa national park, Dudhwa	Swamp deer, tiger and black buck.
4	Kanha national park in Madhya Pradesh	Tiger and Barasingha Deer.
5	Kaziranga national park, Assam	Rhinoceroes, elephant, wild boar, swamp deer, hog deer, tiger, leopard.
6	Marine national park, Gujarat	Coral reefs
7	Bandipur national park, Karnataka	Elephant
8	Desert national park, Thar desert	Desert wolf, desert cat, desert fox, great indian bustard
9	Sunderban's national park, West Bengal	Royal Bengal tiger

Some of the important wildlife sanctuaries

S. No.	Name of the Sanctuary	Famous for
1	Manas Sanctuary	Rich in birds, including ducks, geese, pelicans, storks and golden langur, rare pygmy hog
2	Bharatpur Sanctuary	Famous for water birds and thousands of geese, duck, herons and rare Siberian cranes which migrate to India every year.
3	Gir Sanctuary, Gujarat	Famous for majestic lion, herds of chital, neelgai and sambher.
4	Bhim Shankar Sanctuary (Koyana, Chandoli and Radhangaon, Maharashtra)	It is rich in flora and many kinds of birds
5	Nilgiri Hills, Bandipur, Mudumalai, Bhadra etc., South India	Great tusker, elephant and other mammals
6	Chilka Lake Sanctuary, Orissa	It preserves flora and fauna of coastal regions
7	Point Calimere Sanctuary, Tamil Nadu	It is also famous for coastal region variety of animal and plants
8	Asiatic lion	Panthera leo persica Gir forest

◆ Project tiger

Till the year 1910, India has a huge population of tigers counted as about 40,000. However, due to excessive hunting and deforestation their number came down to only 1820 in 1972. Realising this the central government of India with support from world wild life fund (WWF) set up a project called project tiger. Its objective was to increase their population by developing reserved areas. Initially nine tiger reserves were identified in different parts of the country. Subsequently, the number of tiger reserves was increased to 27 to preserve the key species.

Red Data book

It is a source book which keeps a record of all endangered animal and plants. Separate data books for plants, animals and other different species are being maintained. The data books provide useful information about the animals or plant species which are endangered.

Migration

Migration is a regular periodic two way movement of birds and some other animals from their place of residence to some other place along well defined routes. It is usually linked to seasonal factors such as increase or decrease in day lengths, in springs and autumn etc.

Migratory birds fly from their homes (specific areas) during a particular time of the year because of the unsuitable climate. These birds cover a long distance thousands of kilometres to reach another land where the climatic conditions suit them. They lay eggs in the new place. When the chicks hatch out and are capable of flight, they start moving towards their natural habitats when the climatic conditions become hospitable.

Many birds come to India from distant homes and settle near tanks, sea shore, lakes, rivers and other water bodies. Birds like surkhab, bar headed goose, great cormorant, cranes and many other species come to India during winters and rainy season.

◆ Recycling of paper

Do you know how paper is made? It is made from the pulp of trees. The consumption of paper over the year has grown manifolds. Do you know that 17 full grown trees are required to make one tonne of paper?

We should not, therefore, waste paper. We can recycle used paper 5 to 7 times. Recycling of paper again and again can save many trees. If all of us save one or two sheets of paper everyday, over a period of one year we save many trees from destruction.

◆ Reforestation

Reforestation is a process by which a destroyed forest can be turned into a forest. Reforestation can be achieved by the following methods

- ◆ Restocking the destroyed forest by planting new trees mostly of the same species.
- ◆ If trees have to be cut, then double the number of trees need to be planted.
- ◆ Sometimes a destroyed forest can grow into a new forest over a period of time if left undisturbed.

We have already done tremendous damage to our natural wealth—the forest. If we want to maintain again the green wealth, and want the well being of all concerned, we must protect our forests.

◆ How to bring about co-existence between man and wildlife

Co-existence between man and wildlife is possible to a great extent only when we understand their value, utility and needs. But this would be possible only when we are not greedy, selfish and at the same time care for them. We must also understand that we may fulfil our short-term needs by exploiting them, but if we want humans to survive as a species, we should take proper care of them. Our very survival depends on them. They provide us all that we need. We should learn to co-exist.

◆ **The National Forest Policy**

The national forest policy framed in 1952 by government of India aimed to cover one third of total land area of the country under forests. In 1980, the national policy was revised and named as Forest Conservation Act. This act aimed at preservation and conservation of national forests and meeting the basic needs of the people.

EXERCISE - 1

SINGLE CORRECT ANSWER TYPE QUESTIONS

- Q.1** The “Sangai” of Manipur is a
(A) Great pied hornbill
(B) Back-necked crane
(C) Brow antlered deer
(D) aetienlated python
- Q.2** Dechigam sanctuary is located in
(A) W. B. (B) M.P.
(C) J. & K. (D) Rajasthan
- Q.3** Sarus is also known as
(A) crane (B) spotbill
(C) plovers (D) flamingoes
- Q.4** Which one of the following pairs of geographical areas show maximum biodiversity in our country ?
(A) Kerala and punjab
(B) Sunderbans and Rann of kutch
(C) Eastern ghats and west bengal (D) Eastern himalaya and western ghats
- Q.5** The Giant panda feeds mainly on the leaves of
(A) Banana (B) Mulberry
(C) Pomegranate (D) Bamboo
- Q.6** According to IUCN red list. What is the status of red panda (*Ailurus fulgens*)
(A) Extinct species
(B) Vulnerable species
(C) Endangered species
(D) Critically endangered species
- Q.7** Biodiversity Act of India was passed by the parliament in the year
(A) 1992 (B) 1996
(C) 2000 (D) 2002
- Q.8** Hoolock Gibbon (India's only ape) is found in :
(A) Kanha National Park
(B) Bharatpur Birds Sancturay
(C) Kaziranga National Park
(D) Jim Corbett National Park

Q.9 Match List I with List II and select the correct answer using the codes given below the lists

List I	List II
A Rhino	1 Thar desert
B Wild ass	2 Karnataka
C Solth bear	3 Mount Abu forests
D Bison	4 Foot hills of Himalaya

(A) A = 2, B = 3, C = 1, D = 4

(B) A = 4, B = 1, C = 3, D = 2

(C) A = 1, B = 2, C = 3, D = 4

(D) A = 3, B = 4, C = 2, D = 1

Q.10 Species listed in Red Data Book are

- (A) Threatened (B) Endangered
(C) Rare (D) All of these

Q.11 Bandipur National Park is associated with

- (A) Tiger (B) Deer
(C) Elephants (D) Rhinoceros

Q.12 Which of the following is not an endangered species ?

- (A) Peacock
(B) Indian Rhino
(C) Asiatic lion
(D) Great Indian bustard

Q.13 Periyar wildlife Sanctuary is located in :

- (A) Kerala (B) Tamil Nadu
(C) Karnataka (D) Andhra Pradesh

Q.14 Asiatic wild ass is found in

- (A) Ladakh
(B) Rann of Kutch
(C) Thar desert
(D) Garhwal mountains of Himalayas

Q.15 Which of the following is an endangered species of India ?

- (A) Fox (B) Elephant
(C) Horse (D) Indian wild ass

Q.16 The organization which has been publishing the 'Red Data Book' is

- (A) National Wildlife Action Plan
(B) International Union for Conservation of Nature and Natural Resources
(C) National Environmental Engineering Research Institute
(D) Convention on International Trade in Endangered Species of Wild Fauna and Flora

- Q.17** 21st March is
(A) World Forest Day
(B) World Animal Day
(C) World Environment Day
(D) World Habitat Day
- Q.18** 'Chipko Movement' is connected with
(A) Project tiger
(B) Plant breeding
(C) Plant/forest conservation
(D) Conservation of natural resources
- Q.19** The national bird of India is
(A) The hornbill
(B) Black swan
(C) House sparrow
(D) Peacock
- Q.20** The Ranthambore national park is located in
(A) Rajasthan (B) Gujarat
(C) Uttar Pradesh (D) Maharashtra
- Q.21** Indian Rhinoceros is protected in :
(A) Gir National Park
(B) Corbett National Park
(C) Bandipur National Park
(D) Kaziranga National Park
- Q.22** Corbett National Park is present in :
(A) Himachal Pradesh and famous for birds (B) Punjab and home for antelopes
(C) Uttaranchal and is famous for tigers (D) Rajasthan and is home for black buck
- Q.23** Kaziranga Wildlife sanctuary is located in
(A) Uttar Pradesh
(B) Gujarat
(C) Jammu and Kashmir
(D) Assam
- Q.24** Asiatic lion is confined to
(A) Gir National Park
(B) Dudhwa National Park
(C) Jim Corbett National
(D) Bandhavgarh National Park
- Q.25** National Wildlife Protection Act was formulated during
(A) 1972 (B) 1974
(C) 1976 (D) 1978

EXERCISE - 2

FILL IN THE BLANKS TYPE QUESTIONS.

- Q.1 Species which existed previously but can no longer be seen are called
- Q.2 Variety of life on earth is called
- Q.3 Project tiger was supported by an organisation known as
- Q.4 Migratory birds fly to far away places because ofchanges
- Q.5 Manas sanctuary is in(stock)

VERY SHORT ANSWER TYPE QUESTIONS.

- Q.6 Name the site of conservation of Hangul ?
- Q.7 Girforest in Gujarat is famous site for the conservation of which animal ?
- Q.8 Kajiiranga national parks is in which state ?
- Q.9 One horned rhinoceros is conserved in which national parks.
- Q.10 Name the sanctuary in India famous for migratory birds.

SHORT ANSWER TYPE QUESTIONS.

- Q.11 What are endangered species ?
- Q.12 Distinguish vulnerable and Rare species ?
- Q.13 What is Red data book ?
- Q.14 What do you understand by flora and fauna ?
- Q.15 What are Biosphere reserves ?

LONG ANSWER TYPE QUESTIONS.

- Q.16 What is the importance of Biodiversity ?
- Q.17 Explain the major causes of deforestation ?
- Q.18 Explain the methods to conserve forest and wild life ?
- Q.19 What are threatened species. Explain with example ?
- Q.20 List the steps taken by the Govt. to conserve wild life

ANSWER KEY

EXERCISE-1

Q.No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ans.	C	C	A	D	D	C	D	C	B	D	A	A	A	B	D	B	A	C	D	A
Q.No.	21	22	23	24	25															
Ans.	D	C	D	A	A															

EXERCISE-2

FILL IN THE BLANKS TYPE QUESTIONS.

- Sol.1** Extinct
- Sol.2** Biodiversity
- Sol.3** WWF
- Sol.4** climatic
- Sol.5** Assam
- Sol.6** Dachigam national park
- Sol.7** Asiatic lion
- Sol.8** Assam
- Sol.9** Kajiranga national park
- Sol.10** Bharatpur sanctuary in Rajasthan