

# 13

## Environmental Equilibrium

We know about the components of the environment. The environment comprises of living world and nonliving world. The environment means all those living and non living factors affecting the life and growth of living beings. You have the knowledge of it. Let us note down them.



### Biotic components of the environment

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### Abiotic components of the Environment

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### Short note on importance of the biotic and abiotic components of the environment

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You played a game in the unit of food chain to understand the importance of the factors effecting the environment. Hence you must know the importance of the factors in the maintenance of environmental equilibrium



**Now tell, when does the environmental equilibrium get disturbed?**

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Some organism can not adopt to the changing conditions developed due to the imbalance in the biotic and abiotic factors. Hence, their existence threatened and results in to extinction of some species.



**Which animals are found rarely or in small number around you?**

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Those living species are called endangered species which loses their number gradually.

Tiger is our national animal. It is powerful and carnivores animal. It gets its food by hunting herbivores and small carnivores.



**Figure -13.1**

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Hence number of animals get restricted and their equilibrium can be maintained.

- Skin, claws and other organs of the tiger are used for human entertainment. Hence it is hunted.
- The existence of tiger is found in danger due to some reasons.
- This species can be said extinct from Gujarat.
- Lion is a powerful and carnivores animal. It is declared the state animal of Gujarat state. It hunts wild animals to get its prey. Hence equilibrium of other animals can be maintained. The lion is known as the king of forest. It is fortune to watch the king of the forest moving freely in the forest. Unfortunately their numbers is decreasing.



Figure -13.2



**Prepare a list of such endangered animals after discussing with your teacher.**


Reasons for the extinction of such animals :

- Due to deforestation their homes (habitat) are lost and number of their prey reduces.
- Hunted by human beings.
- Inconvenience to their matting and to maintain their health created due to noise pollution and air pollution.





What can be done to protect and nurture such animals?

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Get information, regarding breeding of endangered animals, birds and sanctuaries developed from the book "Specialty of District".



The Asiatic lion is found only in the Geer forest in Gujarat which is one of the eight endangered mammals. While wild ass is found in the Rann of Kachh. A tiger santury is located in Sundarvan, West Bengal.

Albino (White) tiger is found in Reva, MP, After extinction of the tiger in Gujarat, Elephant, Chittah, Kasturi mrug, black buck, Ant eater, desert fox, big Indian squirrel, flying big squirrel, python etc are endangered. Chittah is found to be extinct from India.

Giraffe is the tallest mammal on land, which is found in the Africa. There are total 4 sanctuaries and 22 national parks in Gujarat.

Different kinds of birds are found in the environment. They are strongly bounded to our life.

- Fill up the following table on basis of your surrounding environment.

Birds found in highest number	Birds found in less number or rare	Birds never found

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According to the list prepared by you, some birds are found in less number or found rarely.

- Let us know about such endangered bird species.

**Sarus crane :** Saras is the tallest bird of India. The pair of male and female of this bird remains together for life time. It is believed that when one of them gets died, the other dies in absence of the partner.

- Their food includes grains, plants, small insects, frogs, moluscans and small reptiles etc.
- Marshy lands and glassful fields are their habitat. This bird is found in the villages of Ahmedabad, Kheda and Kutch districts. The number of this bird is decreasing gradually.



Figure 13.3

#### **Vulture :**

- Vulture is a hunting bird. About 15 species of vulture are found in the world and 6 are found in Gujarat.
- Vulture generally feeds on the dead bodies of animals and thus it removes them and helping us to save our environment. Hence they are also known as sweepers.
- They are not found at one place permanently due to inconsistency of food availability. Their population is found mainly in Surat, Valasad and Dang district in South Gujarat.
- Vulture is considered endangered species.



Figure 13.4

#### **Bustard (GHORAD) :**

- Bustard is found in grasslands. This bird is found frequently in the saline marshy lands in Gulf of Kuchh.
- This bird is the state bird of Rajasthan.
- Lala Ghorad Century is specially declared sanctuary in Gujarat for bustard.
- It is also declared endangered due to its decreasing number.



Figure 13.5



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#### Sparrow :

- Sparrow is generally found in the village regions. Hence it is known as local sparrow or village sparrow.
- They eat small insects and grains.
- They use small harmful insects to the crops as their food and hence known as friends of farmers. But their population is also decreasing rapidly.



Figure 13.6

**Prepare a list of birds found on risk of extinction after discussing with your teacher.**




**How are the birds useful to maintain environmental equilibrium?**

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**Reasons for the increase in the numbers extinct, endangered or threatened bird species.**

#### Reasons :

- Habitat lost and food scarcity increases due to tree cutting
- They migrate due to noise pollution, Scarcity of water bodies and lost of natural habitat.
- Their health is lost due to industrialization as well as water, air and soil pollution.
- By eating toxic food due to the use of pesticides and chemical fertilizers used by farmers.



#### **Different types of Birds :**

- **Beautiful birds :** Peacock, parrot, golden back wood pecker etc.
- **Sweet singing birds :** Bulbul, Cuckoo, Hill maina, Daiyak, Shama, Chuudal, lare bird
- **Birds Helpful in seed dispersal :** Vaiya, Bulbul, Chilotro, Tuktukiya, Pigeon, Hariyal etc.
- **Hunter Birds :** Owl, Kite, Vulture,
- **Birds cleaning the environment :** Vulture, Kite, Crow
- **Whistle blower birds :** Kalio koshi, Laila, Kherkhatto, tintodi, maina, bulbul, wild cock etc.

#### **There are five bird sanctuaries in Gujarat**

- The biggest aviary of India is situated at Indroda Sanctuary, Gandhinagar.
- There are total 9000 genera of birds found in the world. among them-1230 in India and 479 in Gujarat.
- Bustard is second heaviest flying bird of the world and it is on the threshold of extinction.
- Bat is a mammal, it is not a bird.
- Sense to smell is weak in birds but they have very powerful eyesight.
- Previously illness of animals was treated with a drug named Diclofenake. But when such dead bodies of animals were eaten by vultures they got died, hence, government has banned this drug.

**World Wet Land Day- 21, February**

**World Sparrow Day – 20, March**



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Many variations are found in aquatic organisms. They play valuable role to balance the environment.



**Prepare a list of aquatic animals.**

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There may be turtle, crab, water cat, fish, crocodile like animals in your list. Water food chain get broken when existence of some aquatic animals is under threat. Some genera become extinct when such imbalance occurs. Let us have introduction of fish.

#### **Whale Shark :**

We are aware of the name 'fish' There are thousands of fishes found in the world.

- Some people do not have proper information about whale shark. It is known as whale.
- Actually whale is classified as mammal. Whereas whale shark given in the picture is classified as marine fish.
- Gujarati fisherman call them Maghra
- This fish is the biggest shark of the world. Due to its huge body, it is known as whale shark.
- It takes small fishes and other small aquatic animals as its food.
- A special oil is extracted from its liver which is used to prepare some medicines.
- It is also known as Kalpmatsya as its all organs are useful.



**Figure 13.7**



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- Department of environment and forest of India has banned the hunting of whale shark.

#### Factors insecure the existence of aquatic organisms :

- Many birds, fishes and other aquatic organism get destroyed due to petroleum pollution in oceans.
- Hunted by fishermen :



- Oil is extracted from shark liver. It is used in medicines as sharkoferol or shark capsules,
- The longest dolphin is known as “Killer Whale” or “Arko”
- Perfume material known as ambergrease is produced from the intestine of a whale, generally known as sperm whale.
- Countries Earn foreign exchange by selling fish products.
- Gujarat is the first proud state of India by declaring 457.92 square km area as a sanctuary and marine national park near Jamnagar and gulf of Kutch to protect marine animal world and their habitat.

We found that due to various reasons, existence of some species found in danger. Environment friendly, always helpful, providing shelter, and food to many organisms, such trees are our great friends. Their numbers are also decreasing rapidly. All these things are known to you.



**Prepare a list of trees found rarely or in few number surrounding you**

Tree found less in number .....

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Tree which are not at all found, .....

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It may happen that some of you may not have heard the name of mangrove.  
We will know some thing about Mangrove today.

#### **Mangrove :**

- Mangroves are found in the marshy saline areas of sea shore.
- These type of trees are able to survive in the conditions like high salinity, scarcity of oxygen, and minerals as well as the effects of oceanic waves.
- There are many species of mangroves, Each one is used in different ways.
- Wood of mangroves, is used as fuel, to prepare doors windows, cup boards etc. Tannin can also be extracted from its bark by cutting it.
- It stops the soil erosion of seashore.
- They are helpful to aquatic birds to build nests, as well as in breeding.
- Humns is prepared naturally around the mangroves.
- Bacterial and fungal colonies develop on the dried up leaves of mangrove, which are used as food by protista.
- Herbivore insects and mangrove crabs eat leaves of mangroves.

#### **Reasons for decreasing number of mangroves :**

- Storm
- Deforestation by men for various purpose
- Due to the grazing activities by cattle keepers some of the seedling get destroyed.



**Figure 13.8**





**Thus plants are very useful to us, what can we do to protect and conserve trees?**

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- 32 Species of mangrove out of 44 Asian species are found in India.
- 11 species of mangrove are found in the gulf of Kuchh from 13 species found on the western shore of India.
- Marshy land of Mangrove is a very productive one where 8 ton humus is produced per year per hectare.
- Surrounding area of mangrove is a breeding site for many marine organisms, which includes many animals like bivalves, insects, molluscs, amphibians, mycids, crabs, lobsters, Ostracods, shrimps and others.
- About 105 species of fish, 20 species of jellyfish and 229 species of crabs are found in Indian mangrove forest.

#### **The means to maintain environmental and natural equilibrium :**

- We should stop deforestation and grow more and more trees and rear.
- We should protect air, water and soil against pollution and destroy those harmful waste property.
- We should carefully use chemical fertilizers and pesticides.
- Prepare natural pesticides using herbs if possible
- We should nurture environment by protecting useful insects, birds and animals.
- We should stop hunting of animals. birds etc.

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- We should provide proper space to animals by developing national parks and sanctuaries.
- Special projects should be launched to protect endangered species. We should be helpful to the government projects like 'Project Tiger, Lion Protection', 'Deer Protection'
- Such arrangements should be developed in which coexistence of man with other organisms can be maintained, if the future of living world is safe only in that case existence of human is possible.
- The problem like heavy rain, draught, extreme heat, earthquake, tsunami, global warming occurred due to the environmental imbalance are dangerous for human existence.
- Only Mankind is responsible for these types of problems.
- Hence it is our own duty to protect and nature the environment.

*Environment will save us if we save the environment*

*Nature will protect us if we protect the nature.*



- Q.1** What type of problems occur due to environmental imbalance?
- Q.2** Write importance of environmental equilibrium.
- Q.3** Which type of efforts would you do to conserve the environmental equilibrium?
- Q.4 Do this :**
- (1) Prepare an album of pictures of extinct animal and bird species.
  - (2) Get additional information by visiting your nearby national park, sanctuary, wet lands or forest.

