2. OUR ENVIRONMENT

2.1 - Components of Environment

You know that there are many types of things like air, water, soil, plants and animals etc. which are found around us. All these together form our environment and each one of these is a component of our environment. Basically, there are two types of components in an environment – living and non living. Plants and animals comprise of the living components, whereas air, water, soil, light etc. are the non living components.

Make a list of things found around you. Make table 2.1 in your notebook and complete it by using your list.

TABLE 2.1

S.No	Non living component	Living component	
		Plants	Animals
1.			
2.			
3.			
4.			
5.			

You already know that living beings are of two types: plants and animals. You must have noticed that most of the leaves are green in colour, and even stems of some plant are also green. This green colour is because of a green pigment called chlorophyll. Because of the presence of chlorophyll all green plants make their own food in the presence of sunlight and carbon dioxide. Hence, they are known as autotrophs. Animals lack chlorophyll. Then, how do you think they obtain their food? Many animals eat the green plants and are dependent on them for their survival. Such animals are the herbivores, for example: cow, rabbit, and deer. There is another category of animals, which dependent on other animals for their food. They eat other animals. Such animals are called the carnivores, for example wolf, lion, tiger etc. Third types of animals are those, which depend on plants as well as animals for their food, for example man, crow, dog etc. These are the omnivores. Herbivores, carnivores and omnivores cannot manufacture their own food and are hence known as heterotrophs. Since, green plants can prepare their own food with the help of chlorophyll, they are called producers and the animals, which are dependent on plants for food, are called consumers.

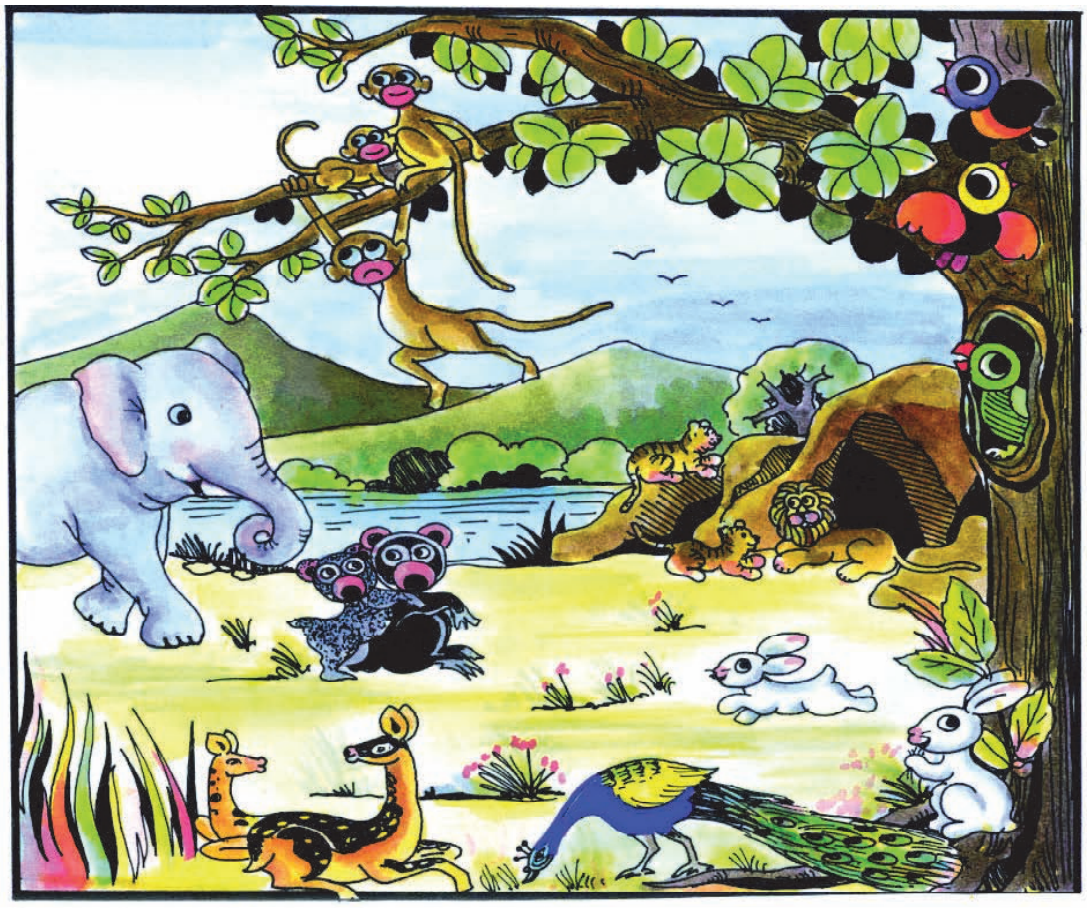


Figure 2.1 Living Component of the Environment

Identify the producers and consumers from figure 2.1.

Now let's play a game to understand how each constituent of environment is dependent on each other.

2.2 - Game of Environment-Web of life

Preparation for game

Your teacher should make 25 cards of 10cm length and 5cm breadth each. These cards can be made from old post cards, wedding invitation cards or even from drawing sheets. On one card your teacher will put the name of any thing from the list given below. Like this, 25 names would be written on 25 cards.

Sun, soil, water, grass, frog, grass hopper, air, light, river, pea plant, mango tree, algae, wheat plant, snake, vulture, monkey, lion, deer, fish, crocodile, temperature, peacock, rabbit, man, mineral salts.

It is not necessary to write only these 25 names. If you wish you can remove any of the names from the list and put names of your choice instead. It is also not mandatory to play this

game with 25 students only. The number of students can be less than 25 or even more. Also make a ball with thin rope used to stitch the sacs. The length of the rope should be around 250 ft.

Teacher will give one card to each student who is playing the game, that child will put it on his chest so that everybody else can see it. This way each child will get a name. Now all the players will stand in a group, when the teacher instructs, living being will move to the left and non- living things to the right hand side. Now, all the living things will form a group on the left side of the teacher and all the non- living things will form another group on the right side of the teacher. Now plants and animals will also separate. Now all the players will sit in the circle in any order. The rest of the students will stand behind them and watch the game. Each student/player sitting in the circle will say 5 sentences about himself/herself. The one who has the Sun's card will talk about the Sun, the one who has *rivers* will talk about river, the one who has *snake* will talk about snakes etc.

The player who has got *Sun's* card will start the game. He will take the ball of rope in his hand and tie it on the middle finger of any of his hands and then throw the ball to any child to whom he feels sun could be related to. Like, if he feels that sun could have a relationship with a *mango tree*, he can throw the ball to the mango tree. The child who is acting as a mango tree can throw the ball further to someone; he feels he could be related to *monkey, water or soil*. Each child should tie the rope tightly before throwing it further. Rope should be held tightly between two children. One player may get the ball more than once or many times. This way the game will continue till all the rope is utilized.

You will observe that because of relationship between the different components of the environment, a web like thing is formed between them. All the living and the non-living components are dependent on each other. Let us see how our environment is effected by the absence of any one of these components.

Now, all the players should loosen the rope from their fingers one by one and then again tie it tightly. What do you observe when even one player loosens the rope from his finger? Does the web become loose? This loosening of net indicates the absence of any one component of the environment.

Is there any component whose absence will not make any difference?

Who eats whom? Game of Food Chain

Now all the students should remove the rope from their fingers and again make a ball of the rope. Let the name cards be still attached to you. The student with *algae* card should now stand in front of everybody. Who eats *algae*? Let us presume it is the *fish*. Now the student with the fish card should stand next to the student with the algae card and hold his hand. Who eats fish? There can be many answers to this question. Let us presume that the human beings are

eating the fish. Now the student with the human being card should hold the hand of the student with the fish card.

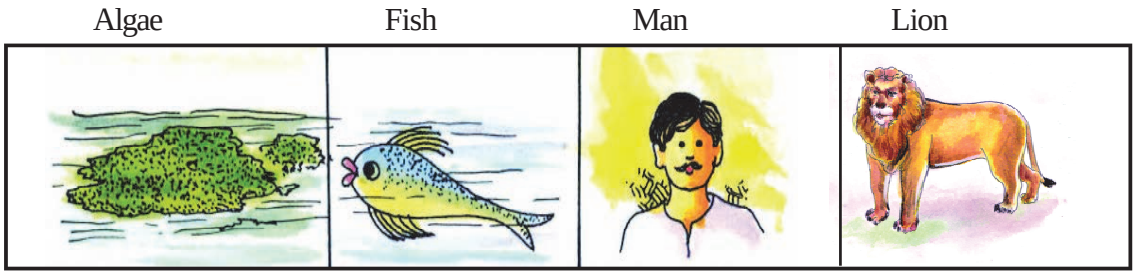


Figure 2.2 Food Chain

Who eats human beings? If the answer is the *lion*, then the student with the lion card should stand on the left side of the child with the human being card and also hold his hand.

Now, you will observe that a chain is formed between animals that eat other animals and are also being eaten. This is called a 'Food Chain.'

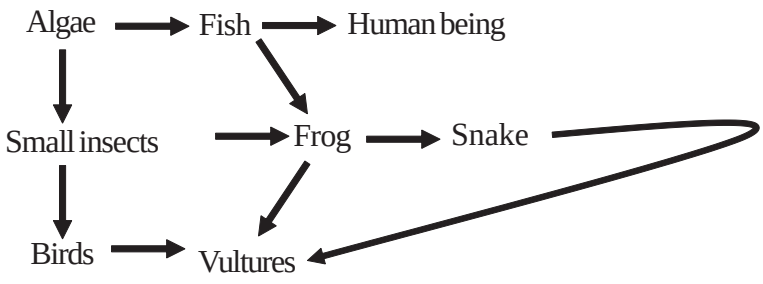
Algae → Fish → Human beings → Lion

Here, an algae is a producer and fish, human beings and the lion are the consumers.

Now, think about similar food chains and show them in the class.

All the students should note these food chains in their note- books and should also try to make different food chains whose components are not given in the list.

You are aware that one organism is eating more than one organisms. So the same organism can be a part of more than one food chain. This way many food chains can be associated to form a web or a net like structure. Such a structure is called a food web.



Let us see how living components are dependent on each other.

We use many things in our daily life. Out of these we get some from plants and some we get from the animals.

Prepare Table 2.2 in your notebook by listing the things, which we obtain from the plants and animals.

TABLE 2.2

Things obtained from plants	Things obtained from animals
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Apart from food, living beings are also dependent on plants for many other things. Like birds make their nests on trees. Many small insects also inhabit the trees. Small insects or even birds perform pollination in many flowers. Some seeds and fruits get stuck on to the bodies of birds and animals and are transported to different areas. This is called dispersal of seeds. In this way all other plants and animals are dependent on each other.

2.3 - Environmental Pollution

In the game WEB OF LIFE you have seen that absence of any one component of the environment or even the loosening of rope by any one component effect the environment. Now, let us see how all this happens. Air, soil, water etc are such components, which are associated with other components also.

2.3.1 - Air Pollution

If you loosen the rope of the air component, then what would it mean? You would have seen that the smoke emitted by vehicles, leads to irritation in our eyes and a feeling of general discomfort. If at home also, smoke accumulates, we do not feel comfortable. It is because this smoke contains many poisonous gases, which pollute the air. Smoke from the factories also pollutes the air. Like wise if there is too much dust in the atmosphere, then also air becomes polluted and is harmful for living beings.

Have you noticed garbage heaps of dried leaves on the roadside? Most of the time these are burnt. Farmers too often burn the husk, dried leaves and part of crop plants in their fields after harvesting. Burning of these produces harmful gases and smoke which pollute air. Hence, it is necessary not to burn waste material and not let anyone burn it.

Think of ways by which you can reduce the air pollution and put your thoughts in your notebooks.

2.3.2 -Water Pollution

Water is essential for all living beings. Can any living being live without water? Just think, what kind of water would be good for a living being- clean or polluted?

Water from drains, sewage etc. and also poisonous water from industries joins the river or ponds to make them dirty and polluted. Because of this many living beings die and many human beings and animals become sick.

Think and write ways of checking pollution.

Rain Water Harvesting

One way of increasing the availability of water is to collect rainwater and store it for later use. Collecting the rain water in this way is called rain water harvesting. The basic idea behind rain water harvesting is "Catch water where it falls".

Techniques of rainwater harvesting:-

1. The rainwater is collected from the rooftop to a storage tank, through pipes. This water may contain soil from the roof and need filtering before it is used. Instead of collecting rainwater in the tank, the pipes can go directly into a pit in the ground. This then seeps into the soil to recharge or refill the ground water (fig 2.3).

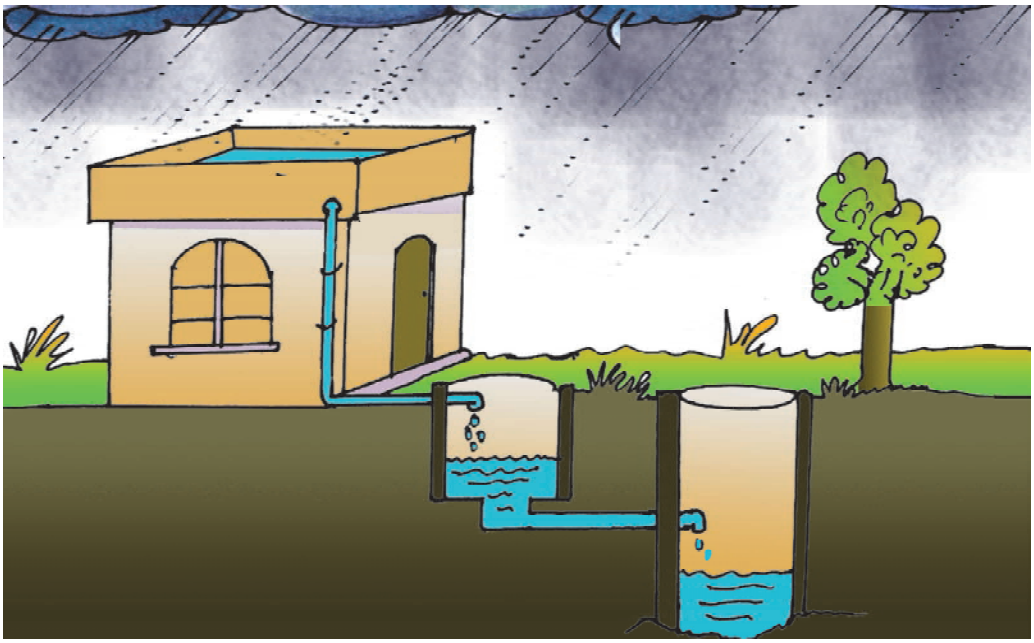

Fig 2.3 Rooftop rain water harvesting

2. Another option is to allow water to go into the ground directly from the roadside drains where rainwater gets collected.

2.3.3 -Soil Pollution

With increasing population, there is an ever-increasing demand for food everyday. Because of this demand, different types of fertilizers, insecticides etc are being used to increase the produce. Of these there are certain minerals, which when present in excess, pollute the soil and reduce its fertility. Hence, it is being advised to use natural manures like cow dung to increase the fertility of the land.

Visit the gardens and fields around you and prepare a list of natural and synthetic manures being used in them.

2.3.4 -Sound Pollution

Now we shall talk about a different type of pollution. Those of you who live in cities would have seen that vehicles start plying on the roads early in the morning. The engines and the horns of these vehicles produce a lot of sound.

Make a list of sources of sound that make a high-pitched sound.

If we are continuously exposed to high pitch sounds, then our ability to hear is reduced or even we can become deaf. Sound pollution also affects our health. We become more irritable which can lead to headaches and other types of sickness.

Think of ways of reducing sound pollution and note them in your notebooks.

2.4 - Forest Conservation, Tree Plantation And Protection of Wildlife

Human beings are constantly trying to raise the standard of living. To lead a comfortable life, we are destroying the environment and directly or indirectly harming the forests and wildlife.

Life of living organisms in the forests has become unsafe because of the large number of trees which are being cut. You have earlier learnt about the food chain and absence of any one organism from the food chain breaks it. This leads to an imbalance in nature. To maintain a balance in nature, trees should not be cut and new tree plantations should be taken up. To protect the forests and the forest animals, Sanctuaries and National Park have been made. Find out how many national parks and sanctuaries are present in Chhattisgarh?

In our Chhattisgarh, major vegetation comprises of *Sal, Teak, Beeja, Delbergia, Bamboo, Tendu, Mahuaa, Sarai, and Cotton.* Rabbit, Cheetal, Sambhar, Kotari, Nilgai, Bison, Elephant, Bear, Lion, Leopard, Panther, Wolf, Fox are the predominant species of wild animals. Birds include Maina, Cuckoo, Doodhraj, Peacock, Crane etc. Different species of snake like Cobra, Karat, Python, Dhaman etc. are also found here. Tribes inhabit the forests of the state. Their lives are totally dependent on these forests. Our state is a good example of animal biodiversity.

2.5 What if it Rains Heavily?

The time, duration and the amount of rainfall varies from place to place. In some parts of the world it rains throughout the year while there are places where it rains only for a few days. However, excess of rainfall may lead to many problems. Heavy rains may lead to rise in the level of water in rivers, lakes and ponds. The water may then cause floods. Flood causes extensive damage to crops, domestic animals, property and human life. During floods, the animals living in the water also get carried away with the waters. They often get trapped in mud and die when floodwater recedes. Many pathogens are also grow at that time which cause diseases.

What happens if it does not rain for long period?

Can you imagine what would happen if it does not rain in a region for a year or more? The level of water in ponds and wells of the region would go down and some of them may even dry up. This may lead to drought. The soil continues to lose water by evaporation, therefore it becomes dry.

In drought conditions, it is difficult to get food and fodder. You might have heard about drought occurring at some places, through television and news paper. Are you aware of the difficulties faced by the people living in these areas? What happens to the animals and the vegetation in these conditions? Collect information and find out about this by talking to your teachers, friends and parents. Discuss about your role in both the situations with your friends.

We know that only a small fraction of water available on the earth is fit for use. The number of people using water is increasing with rising population. Hence, it is very important that water is used carefully; we should take care not to waste water.

WE HAVE LEARNT

- Living and non living components together form the environment.
- Living and non living components in the environment are interdependent.
- Light, temperature, water, air and soil are the non-living constituents of the environment.
- Plants and animals are the living constituents of the environment.
- Living and non-living are components dependent on each other for food, shelter and protection.
- Producers and the consumers form the food chain.
- Polluted air, polluted water, polluted land and sharp sound, pollute the environment.
- By checking the environmental pollution, Tree plantations and Conservation of animals, a balance is maintained in nature.
- Excessive rains may cause floods while lack of it for long period may cause drought.

EXERCISE

1. Using the living organism mentioned make at least three food chains:

Grass, lion, cow, small fish, wolf, fox, peacock, vulture, kite, crow, frog, beetles, zooplanktons, big fish, crane, snake, mongoose, algae, green plants.

2. Complete the food chain:

i. Green grass → ……. → Peacock

ii. Plants → Rabbit → ……

iii. Algae → ……. → Crane

3. Answer the following questions:

i What is an environment?

ii What is the difference between producers and consumers?

iii Living and non-living components of environments are dependent on each other. Explain.

iv What do you understand by a food chain?

v. What happens if there is scanty of rainfall?

4. Explain briefly:

a. Air pollution b. Water pollution c. Sound pollution

d. Tree-plantation e. Conservation of forests and their wild life.

f. Damage due to heavy rainfall

5. Give the names of two herbivores and carnivores which are easily found in your area.

6. Write the names of birds and snakes found in Chhattisgarh.

7. Write about the measures taken for the protection of wild animals.

8. According to Budhram drivers of vehicals emitting smoke should be charged a penalty. Do you agree with this statement, give reasons for your answer.

THINGS TO DO

1. Visit with your teacher and friends, a field/garden/river/pond or playground located near your school. Collect information and construct various possible food chains in these regions.
2. Display environment related informations, news, puzzles, slogans, stories, pictures, posters, cartoons etc. on the bulletin board of your school. You can make these cartoons or pictures yourself or collect these from magazines.
3. Organise environment day in your school and discuss the importance of environment with your friends.
4. List five activities by which you can save water. Describe the method of each activity.
5. Prepare a poster on ways of saving water and display it on notice board of your school.
6. Under the guidance of your teacher make a plan what would you and your peer group do if nearby area faces draught or flood.