Ecology & Conservation

Now-a-days Ecology & Conservation is a burning p[illegible] this module is setup to have a fair knowledge of the subject and to find out the ways & means to control it. On studying this module you will definitely gain a knowledge of it and its preservation.

Thought for Reflection

As a Scout, you are the guardian of the woods. A Scout never damages a tree by hacking it with his knife or axe. It does not take long to fell a tree, but it takes many years to grow one, so a Scout cuts down a tree for a good reason only or not just for the sake of using his axe, for every tree, felled, two should be planted.

--Baden- Powell

Objectives:

At the end of this Module, you should be able to:

1. Explain the term Ecology.
2. State the areas involved in Ecology.
3. Define the methods of its conservation.
4. Identify what we can do.
5. List out the agencies those who are working on this issue.

ECOLOGY & CONSERVATION

The term Ecology is derived from two Greek words, namely OIKOS and LOGOS. Oakes means 'home' or 'habitation' or 'a place to live in'. Logos means 'study' or 'discourse'. Hence literally speaking, ecology is the study of organisms in relation to their environment.

FORESTS

About one third of the world's land surface is covered with forests. Forests are vast resources for man. They provide: Timber, pulp, fodder, fruit, medicines, firewood, raw materials for industries, shelter for animals, birds etc. Forests help in precipitation (rainfall); recycling of moisture by transpiration; checking floods and soil erosion and in regulating the earth's temperature. The natural forests maintain the fertility of soil by returning the nutrients to the soil through litter. Forests are the main source of fossil fuel, coal etc. It purifies the air by producing oxygen and absorbing carbon-dioxid

Deforestation: At the present rate of environment assault, India is steadily losing more than 1.5 million hectare of good land each year. In other words, every five years, forest cover the size of Haryana vanishes. Destruction of forests leads to serious ecological imbalance. Every tree that felled damages the life support system – the soil, water and climate. Deforestation removes nutrients from the land, increases soil

WATER

Water is very important to life on earth. Our earth is covered with 75% water, of which the oceans and seas hold 97% which is salty. Another 2% is locked up in the ice caps and is thereby unutilisable. Only 1% is found in the rivers and lakes and in the under ground reservoirs, which can be used by man.

Water is used for many purposes such as drinking, cooking, washing, of clothes and utensils, irrigation, livestock management and also in industries and for generating electricity. Each of these activities produces waste in some form or the other. Domestic waste, including sewage, grease, industrial waste, soaps and detergents, fertilizers and pesticides and animal excreta contribute to the pollution of water. This waste discharged into water bodies causes a major environmental crisis.

Due to adverse effects of man's interference with nature, the climate and other phenomena of the earth are getting disrupted and undergoing changes in their patterns to the extent that one part of the country suffers from drought while the other is affected by floods.

SOIL

The roots of plants hold the soil together – protecting it from being washed away or blown off. Soil erosion increases rapidly when vegetative covers is removed. It takes 10 to 2500 years for 2.5 cm of top soil to form. But we can lose the same in as little as 10 years.

If the vegetation is not adequate, most of the rain that falls will run off. It will carry with it valuable top soil and deposit it as silt in ponds, tanks, reservoirs. Siltation chokes the riverbed, reduces its capacity to hold water and increases flooding. In India today, we lose about 600 crore tones of soil by erosion every

Ecology – " Is the study of organisms in relation to their environment".

Soil - Conservation – "Is saving the soil form destruction".

Soil Erosion

Geological Erosion Accelerated Erosion

(Loss of soil due to (Loss of soil due to men's activities).

Natural Forces

Water Erosion	**Wind Erosion**
Rain drop Erosion	Climatic
Gully Erosion	Type of soil
Stream Erosion	Vegetation

Factors affecting erosion by water

- Climate
- Type of Soil
- Vegetation &
- -Topography of land.

EROSION

Deposition **Transportation**

The Geological Cycle

Transportation by River

Chemical transportation	Mechanical Transportation
(Carried in solutions as dissolved solids)	Carried due to the force of current of the flow as sediment.

Transportation by Wind

In suspension	Salutation	Surface creep

Wind Deposition

- Loess – very fertile sediments of Quartz, Feldspar, Mica, and clay deposited by the wind

DEPOSITION

Deposition by Water	Deposition by Wind
1. Due to decrease in velocity. 2. Decrease in Ground slope. 3. Decrease in volume of water. 4. Change in Channels. 5. Chemical precipitation.	⌖ Change in relief of locality. ⌖ Change in Wind velocity. ⌖ Vegetation cover.

"It takes 10 to 2500 years for creating top 25 cm of fertile Soil, but can be lost in few years by floods if vegetation Cover is removed".

Effects of Soil Erosion

1. Heavy floods in the rivers.
2. Lowering of Sub Soil water level.
3. Water logging and decrease in crop yield.
4. Destruction of tender vegetation.
5. Taylor of dams due to silting.
6. Loss of Agricultural land.

In India we are loosing about 600 acres tones of Soil by erosion every year.

Today, millions of people are being born and they have less and less land to live and grow enough food each year. This means increasingly hungry people.

Causes of Soil Erosion

1. Faulty method of Cultivation.
2. Deforestation.
3. Over grazing.

Methods of Preventing Soil-Erosion

Mechanical Measures	Biological Measures
1. Contour Cultivation. 2. Contour bunding. 3. Contour Trenching or Merbandi. 4. Gully Control.	⌖ Change of crop. ⌖ Tree plantation. ⌖ Fixing of sand dunes.

WILD LIFE

All living things play a part in the huge and complex web of life. Each has a role of its own in the balance. If wild life is exterminated, the balance will break down.

The decline and depletion of wild life is caused by : deforestation; hunting, poaching; conversion of wild life habitats into house sites, into transport routes, agricultural land, industrial sites etc.; establishment of hydroelectric projects; population; natural calamities such as flood, drought, fire, epidemics etc.

During the last 200 years about 106 species of animals and 139 species of birds have become extinct. Now it is estimated that about 600 species of birds and animals are going to become extinct if proper protective measures are not taken. These species are called endangered species (e.g. Musk deer, tiger, peacock, gain squirrel etc.).

POLLUTION

Pollution is defined as "an undesirable change in the physical, chemical and biological characteristics of air, land and water that may harmfully affect human life and desirable species".

Certain substances of factors may affect the normal functioning ho human life and domesticated species when introduced into the biosphere. These substances are called pollutants.

Important Pollutants are :

- Deposited matter (smoke, soot, dust, tar etc.,)
- Gases (methyl, isocyanate, nitrogenoxide etc.,)
- Chemical components (hydrogen fluorides, detergents etc.,)
- Biocides (pesticides, inssecticides, fungicides etc.,)
- Fertilizers (urea, ammonium sulphate etc.,)
- Radioactive substance,
- Noise,
- Heat
- Sewage.

Not only human beings but even plants, trees and animals are affected by population.

Between heights of 20 to 30 kms from the ground the earth's atmosphere is covered by what is called **Ozone Layer.** A few kilometers thick, this layer is spread over the entire globe and shields all living things below from the sun's ultra violet rays. The destruction of this layer could create an effect over the earth very similar to the artificial heat in a green house. It is estimated that by the 2000 AD, the increase in Carbon dioxide content of the air will be nearly 25%. This will result in an appreciable warming up of the earth and is very likely that this will cause the melting of polar ice caps resulting in rise of nearly 60 feet on the sea level. Coastal regions and low lying areas all over the world will be flooded and will go under water.

WARFARE

While thousands of people, particularly children die of hunger daily, 19 times more millions are spent annually or armament that on the total amount of state development aid of all Western industrialised countries taken together. These arms represent a threat to life even then they are never applied as they waste financial resources needed to support the struggle against hunger and poverty and injustice. In this way the increasing armament does not create more security but less.

WHAT WE CAN DO :

We must remember that soil and water are precious and scarce resources. Let us take care that on every piece of land less soil is eroded and less water wasted.

Plant more. Save soil, Save water. Protect Soil :

Prevent cutting trees.

Prevent over grazing.

Cover land with vegetation.

Check erosion by bounding.

Save Water:

Avoid wastage of any king

Make small reservoirs for water

Protect plants

Recharge ground water.

Green the Earth:

Allow the nature to re-generate

Gross grass, shrubs, trees, nature plants, and see them thrieve.

<u>ORGANISATIONS THAT WORK ON ECOLOGY & CONSERVATION</u>

1. IUCH-The international Union for Conservation of Nature and Natural Resources.
2. WWF- World Wide Fund for Nature (formerly World Wild Life Fund).
3. Centre for Environment Education and Vikram A Sarabai Science Community Centre, Ahmedabad.
4. Natural History Association, Bombay.
5. Solidarity Environmental Group, Madras.
6. C.P.R. Environmental Group, madras.
7. The environment Society, Madras.
8. Wild Life Conservation Society, Trichy.
9. Forest Research Institute, Dehradun.
10. Global Environmental.

Conclusion:-

Perhaps you are now aware of the subjects and learnt about the ways and means to conserve it. Some of the questions will help you to answer the subjects thoroughly.

Here are the questions:

1. What you know about Ecology ?
2. What are the factors involved in Ecology ?
3. What is deforestation ?
4. What is the percentage of water is found in Earth ?
5. What percentage of water is found in different forms ?
6. What do you understand by pollution ?
7. What factors involved in pollutant save?
8. What are the effects of soil erosion ?

9. What we can do to preservesoil erosion ?
10. Name some organization that works on Ecology &Conservation ?

Reference Books :

1. Scouting for Boys. B-P.
2. Nature lore. NHQ.

Try to find out the answers you have given :

1. Ecology is the study of organisms in relation to their environment.
2. Forest, Water, Soil, Wild-life. Air, Warfare etc.
3. Deforestation removes nutrients from the land, increases soil erosion and decreases the ability of the land to hold and conserve water.
4. Our earth is covered with 75% water.
5. The oceans and seas hold 97% which is salty. Another 2% is locked up in the ice capsand is thereby unutilisable. Only 1% is found in the rivers and lakes and in the under ground reservoirs, which can be used by man.
6. Pollution is defined as "an undesirable change in the physical, chemical and biological characteristics of air, land and water that may harmfully affect human life and desirable species".
7. **Important Pollutants are :**

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8. **<u>Effects of Soil Erosion</u>**

- Heavy floods in the rivers.
- Lowering of Sub Soil water level.
- Water logging and decrease in crop yield.
- Destruction of tender vegetation.
- Taylor of dams due to silting.
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9. Methods of Preventing Soil-Erosion

Mechanical Measures	Biological Measures
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