



CLIMATE CHANGE – A MAJOR CONCERN FOR FLORA AND FAUNA RICHNESS

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Introduction

Biodiversity refers to the wealth of species and ecosystems in a given area and of genetic information within populations. It is a storehouse of genetic material which forms the basis of untold numbers and quantities of foods, drugs, and other useful products. Extended biodiversity enriches the environment in which they live, provide necessary things that are needed for human beings, improve their life style, health and well being. At ecosystem level, biodiversity provides flexibility for adaptation to changing conditions, such as those induced by human activity.

Flora and Fauna

Flora and fauna refer to plant and wildlife respectively. The indigenous plants and wildlife present in a particular geographical region are often referred as region's flora and fauna which are specific to that region or a time period. For example, a warm region may contain the flora and fauna of tropical to warm-temperate vegetation and exotic species of birds. Flora refers to the goddess of flowers that refer to a group of plants as well as to bacteria. Flora is the root of the word floral, which means flowers. Fauna refers to the animal life or classification of animals of a certain region, time period, and environment. Fauna is the sister of Faunus (a Roman mythological god) a good spirit of the forest and plains. The flora and fauna of any given region is usually explained in biological terms to include the genus and species of plant and animal life, their preferred growing or breeding habits, and their connection to one another in the environment as well. In addition to geographical groupings, environment also helps further classifications of flora and fauna. For example, aquatic flora and fauna of a region refers to the plant and animal life found in the waters in or surrounding a geographic region.

Biodiversity is at threat due to various causes like Habitat loss that includes Road making, Deforestation – Global warming, Floods, Mining, Industrialization, Conversion of forests into agricultural lands and grass lands, Conversion of agricultural lands into cities, human dwellings, parks, botanical gardens, soil erosion, forest fire etc.

Habitat loss:

Laying of roads

The consumption of land, and the consequent loss of natural habitat, is inherent in road development. Where new roads intersect habitat, the area occupied by the road itself is subtracted from the total habitat area available to flora and fauna.

The following examples help us to understand the restriction of habitat available for flora and fauna.

Habitat fragmentation

When a road cuts through an ecosystem, the sum of the two parts created by the cut is less than the value of the initial whole, even when the habitat loss is ignored. By slicing through habitat, roads affect an ecosystem's stability and health. Roads tend to fragment an area into weaker ecological sub-units, thus making the whole more vulnerable to invasions and degradation.



Corridor restrictions

Most animal species follow established patterns in their daily and seasonal movements. The areas, through which they travel on their way to and from feeding, breeding and birthing grounds, and between their seasonal ranges, are known as corridors. When a road intersects or blocks a wildlife corridor, animals are reluctant to cross the road and if they do so mortality occurs due to collisions with vehicles. On busy roads, the death rate for the local amphibian or other slow-moving animal populations can be as high as one in ten.



Aquatic habitat damage

Erosion from poorly constructed and rehabilitated sites can lead to downstream siltation, ruining spawning beds for fish. Human activity can be a major source of nutrients (sewage, animal dung, and eroded topsoil) – Eutrophication – BOD & COD. Alterations of flood cycles, tidal flows, and water levels can upset trophic dynamics by affecting the life cycle of plankton, and have corresponding effects on the rest of the food chain. Constriction of flows at water crossings can make the current too fast for some species.

Increased industrial activities led to pollution causes stress on surface water both from industrial, agricultural and domestic sources. Untreated wastes from processing factories located in cities are discharged into inland water bodies resulting to stench, discoloration and a greasy oily nature of such water bodies. Industrial activities and urbanization in developing countries including India has gradually led to increased problem of waste disposal. Increase in crude oil exploration, refining and activities of other industrial establishments in the Niger Delta has resulted in the wide-scale contamination of most of its creeks, swamps and rivers with hydrocarbon and dispersant products. The major industrial categories in Nigeria are metals and mining, food, beverages and tobacco; breweries, distilleries, textile, leather products, wood processing and manufacture, furniture, pulp and paper industries and chemical and allied industries. Industrial effluents contain toxic and hazardous materials from the wastes that settle in river water as bottom sediments and constitute health hazards to the urban population that depend on the water as source of supply for domestic uses.

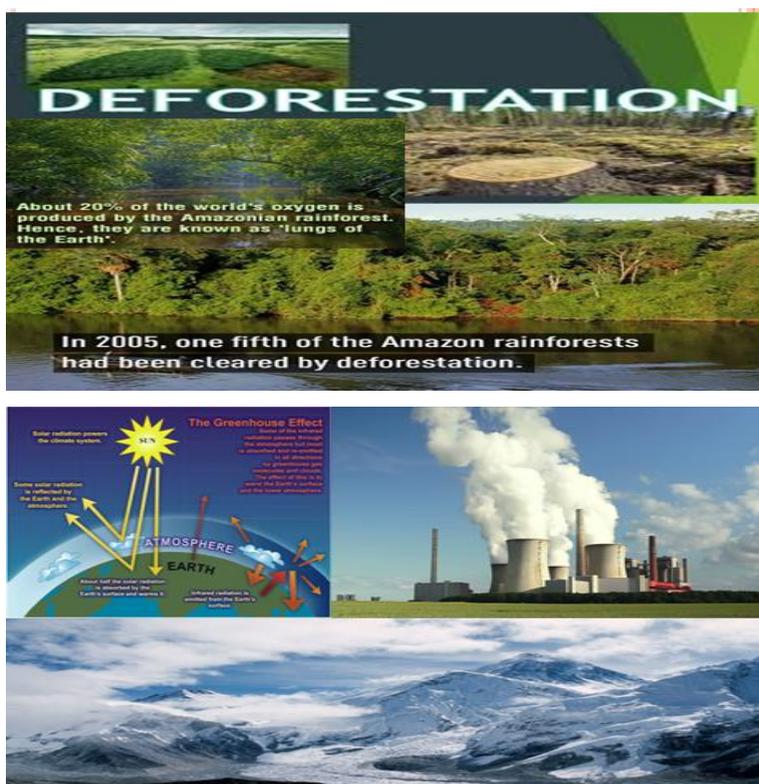


Greenhouse effect

The gases that comprise Earth's atmosphere are semi-transparent to solar energy, allowing about half of the incident sunlight to penetrate the atmosphere to Earth's surface. The surface absorbs the heat, heats up and/or evaporates liquid water into water vapour, and also re-emits energy upward as infrared radiation. Certain naturally-occurring gases and particles particularly clouds absorb most of the infrared radiation. The infrared energy that is absorbed in the atmosphere is re-emitted, both up to space and back down towards the Earth's surface.

The energy channelled towards the Earth causes its surface to warm further and emit infrared radiation at a still greater rate, until the emitted radiation is in balance with the absorbed portion of incident sunlight and the other forms of energy coming and going from the surface. That is what accounts for the 33 °C difference between the Earth's actual surface air temperature and that which is measured in space as the Earth's radioactive temperature.

The greenhouse effect is a process in which radioactive energy leaving a planetary surface is absorbed by some atmospheric gases, called greenhouse gases. Greenhouse gases are carbon dioxide, methane, nitrous oxide etc. The major sources of carbon dioxide emissions are from power plants, burning of coals and fire wood. One of the human-made causes of the Green House effect is deforestation. Deforestation increases the amount of carbon-di-oxide in the atmosphere. Carbon-di-oxide acts as blanket and covers the surface of the earth. It prevents the reflection of radioactive waves into the space. Green house effect results in global warming, melting of glaciers, temperature rise, skin diseases etc.



Deforestation causes of the greenhouse effect. Deforestation is rampant today due to the increase in human civilization. The levels of deforestation have increased by about nine percent in recent times. Greenhouse Gases are released into the atmosphere due to the burning of fossil fuels, oil, coal, wood and gas. These materials



are used increasingly and rampantly in Industries. Therefore Industries are a major cause of the Greenhouse Effect. Deforestation and other land-use changes and industrial and agricultural activities like cement production and animal husbandry also contribute to greenhouse gas build ups.

Conversion of forest into agricultural land or grass lands

Forests conversion involves removing natural forests to meet other land needs, such as plantations, agriculture, pasture for cattle settlements and mining. This process is usually irreversible. To meet the demands of the growing population and supply adequate food facilities the forest is converted into agricultural lands. Felling of trees and destruction of forests causes loss of micro climates needed for the flora and fauna to flourish which in turns leads to biodiversity loss.

Agriculture is the largest single cause of deforestation and severe forest degradation. Except in Africa, large-scale livestock ranching and plantation agriculture are generally overtaking small-scale farming as primary causes of conversion. Soy supplies one-fourth of vegetable oils globally, and demand is expected to rise to 300 million tons by 2020 globally. Global palm oil production is expected to nearly double by 2020. Malaysia and Indonesia dominate the global market for palm oil with 90% of all exports. Half of the world's commercial timber is used for paper production. This wood often comes from plantations that replace native forests. Monoculture (Egs. Grass and golf grounds) too affects the biodiversity. Forest is converted into human dwelling places or factories (encroachment).



Conversion of agricultural lands into human dwellings

To accommodate the growing nuclear families and their needs, each one wanting to have their own homes, the agricultural lands are being converted into homes, buildings, botanical gardens and recreational parks. It affects the ecosystem

and the food chain. Consequences of these effects are loss of biomass, biodiversity and changes in the climate. Concrete jungles prevent flow of fresh and pure air, lack of sanitation, concrete roads affecting percolation of rain water leading to floods. Wastes are dumped into the soil affecting once again the flora and fauna and leading to the graveyard of the fauna.



Soil erosion

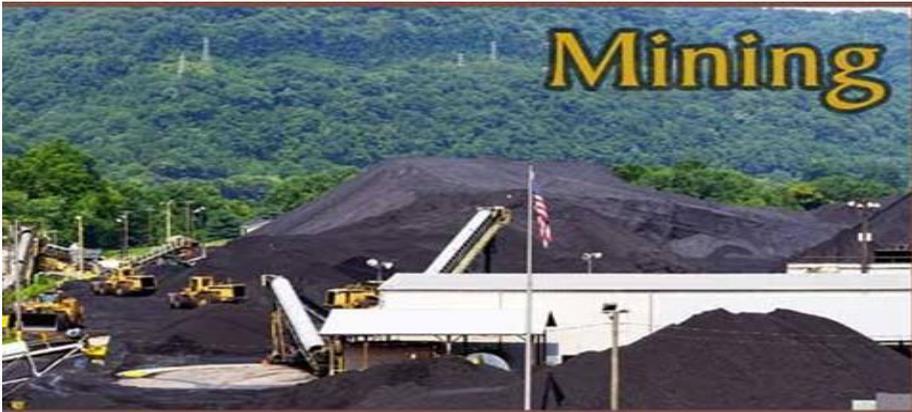
Soil erosion commonly appears after conversion of forests to agricultural land, sweeping away fertile soil and pesticides. When forests are cleared, the exposed topsoil often begins to erode, increasing sedimentation into watercourses (for example, rivers). The situation worsens if there are no forests left along the banks of rivers to hold soil carried by rain. Coffee, cassava, cotton, corn, palm oil, rice, sorghum, soybean, tea, tobacco, and wheat are some of the crops whose cultivation causes soil erosion. Since 1960, an estimated one-third of the world's arable land has been lost through erosion and other degradations. The problem persists, with a reported loss rate of about 10 million hectares per year.

Over the last five decades, increases in agricultural productivity have made it possible to produce more crops on the same amount of land. But because agricultural land is often degraded and almost useless, producers keep moving to more productive land. Globally, the land used and abandoned in the last 50 years may be equal to the amount of land used today. This makes the once fertile lands into desertification of the lands.

Mining

Drilling of the earth and dumping of soil affects soil fertility and leads to desertification. The survival of flora and fauna at the site of mining alters the

atmospheric conditions, causing suffocation, ill health and mortality of the species. The water leached out from the mines is unfit for drinking and for the aquatic organisms to live in it. It also causes various water born diseases including necrosis of cells and its growth in plants.



Forest fires

Naturally caused forest fires are usually started by dry lightning where little to no rain accompanies a stormy weather disturbance. Lightning randomly strikes the earth an average of 100 times each second or 3 billion times every year and has caused some of the most notable wild land fire disasters in the western United States. Most lightning strikes occur in the North American southeast and southwest. Because they often occur in isolated locations with limited access, lightning fires burn more acres than human-caused starts. The average 10-year total of U.S. wildfire acres burned and caused by humans is 1.9 million acres where 2.1 million acres burned are lightning-caused.

The human fire activity is the primary cause of wildfires - having nearly ten times the start rate of natural starts. The average 10-year percent U.S. wildfire starts are 88% human caused and 12% lightning caused. Most of these human fires result from accidental causes. Accidental fires are usually caused by carelessness or inattention by campers, hikers, or others travelling through wild land or by debris and garbage burners. Some are intentionally set by arsonists.





The above mentioned reasons affect the biodiversity of both flora and fauna which causes alarming dangers to look at this matter seriously and take actions. It is our duty to protect mother earth and conserve the natural resources. The following remedies can help us to restore biodiversity and preserve the climate that is suitable for the plants and animals to survive.

Remedies

1. Avoid the use of fossil fuels and rely on gas energy since the carbon compounds emitted by this is comparatively smaller.
2. Reduce the use of plastics as it destroys both atmosphere and land and Turn off computers, fans and bulbs while not in use and this help to reduce the energy consumption.
3. The use of wind power is an efficient method and factories must try to use this as source of electricity where ever possible and Plant as much trees as you can. Trees and plants can protect the atmosphere and soil as it is the best source of oxygen.
4. It is advisable to use sprinklers or drip – irrigation for plants and vegetables. It helps to reduce the loss of too much water at the same time make the surroundings more cool.
5. Vehicles are to be properly maintained so that the fuel consumption is reduced and emission of toxic gases is minimal. Pool a car to office or work place and walk to nearby places.
6. Buy only energy efficient home appliances. Be selective while you purchase and thus reduce the waste of products.
7. Wastes are to be properly treated. Use compost pit to dump degradable waste and recycle the plastic wastes. Proper sewage system is a necessary to protect rivers and lakes. Use water judiciously, as it is going to be a scarce commodity. Protect the rivers and lakes properly.
8. Protect oceans as it is the rich reservoir of vast amount of valuable flora and fauna. Educate the masses so that everyone is aware of the problem his actions causes to ear

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