

## Chapter – 5: Conservation of Plants and Animals

- Earth – habitat – lots of plants, animals, other organisms
- Ecosystem – made of biotic and abiotic components
- All plants together – flora – all animals, microbes together – fauna
- Flora, fauna together – biota

### Biodiversity

- Biodiversity – variety of organisms, plants, animals – particular area
- Forest – habitat – birds, tigers, monkeys, tall trees, small shrubs, insects, ants, etc
- This diversity – natural treasure – represent life
- Biodiversity – cannot be replicated artificially – scientists – try and recreate ecosystem – result – not as efficient
- Biodiversity – imp. natural resource – need to be preserved
- Use of biological system – beyond renewability – degradation of resources

### Endemic and Migratory Species

- Endemic species – plants and animals – particular area - not found anywhere else naturally
- Sal, mango – endemic flora – Pachmarhi Biosphere Reserve – Bison, Indian giant squirrel – endemic fauna
- Endemic species – very imp. – maintain biodiversity
- Factors affecting –
  - Destruction of habitat – natural or human activities
  - Increase in human population
  - Introduction of new species
- Some animals – especially birds – travel from place to place – seasonal patterns – migration
- Reason for migration –
  - Favourable temperature –
    - Winter season – migrate to warmer places
  - Facilitation of reproduction –
    - Fishes – freshwater to saltwater – vice versa – lay eggs (give birth)

### Significance of Forests

- India – 1/5<sup>th</sup> area – forest cover
- Forests – useful – following reasons –
  - Provide – useful products – timber, latex, resins, gums, medicinal plants, etc
  - Provide habitat – wild animals, birds
  - Maintain water cycle – loose extra water – transpiration – form clouds
  - Maintain balance – oxygen and carbon dioxide
  - Recharge – groundwater – control floods
  - Control soil erosion – roots bind soil
  - Regulate global temp.

- Woods – different trees – different purpose

## **Human Activities and the Environment**

- Industrialization, overpopulation, increased consumption of resources – uncontrolled depletion of natural resources
- Past years – increased concern – environment – negative effects
- Some human activities – imbalance in nature – serious problems – global warming, pollution of air, shortage of natural resources – fossil fuels, minerals, etc

### **Deforestation**

- Large scale cutting of trees
- Trees – used for wood, medicines, rubber, etc
- Increasing industries, population – demand for forest products increased – more trees cut down
- Large areas – cleared down – make space – housing, agriculture, industries
- Such activities – effects – very serious –
  - Physical properties of soil – changes –
    - Trees – bind the soil
    - Trees – cut down – top soil – washed away easily – wind, water
    - Soil – loses fertility – become barren
    - Slowly – fertile land – converts to desert – desertification
  - Reduced rainfall –
    - Water cycle – water from plants – convert to vapour – transpiration
    - Reduction in plant life – water cycle disturbed
    - Area – less rainfall – natural balance disturbed
  - Imbalance of atmospheric gases –
    - Carbon dioxide – released during respiration – used by plants – photosynthesis – release oxygen – used by humans, animals – respiration
    - Deforestation – create imbalance – amount of CO<sub>2</sub> – increased
  - Changes in climate –
    - Increased CO<sub>2</sub> – increased temperature – global warming – greenhouse effect
    - Climate change – all over the world – very concerning
  - Natural calamities –
    - Soil erosion – land dry and brittle – more landslides
    - Rainwater – not absorbed – cause floods
  - Scarcity of products –
    - Variety of products – made of forest produce – so common
    - Sooner – shortage of products – alternatives should be found
  - Degradation of habitat –
    - Forest – provide habitat – lots of flora and fauna
    - Loss of flora – affect fauna – vice versa

### **Hunting of animals**

- All animals – big or small – part of food chain
- Animals – imp. source – food, clothing, fuel, medicines, etc – hunted by humans – necessity, pleasure, sport

- Animals – hunted – uncontrolled manner – some species – endangered – some others – wiped out (extinct)
- High rate – animals became extinct – last 150 years – very concerning
- Many species – evolved, became extinct – regular basis – several hundred millions years – BUT – recent years – extinction rate – much higher
- Animal hunting, poaching – known as main sources – BUT – other factors – loss of habitat, changing weather patterns, etc – extinction

## **Conservation of Flora and Fauna**

- Conservation – very imp. – importance recognised on global level
- Many efforts – global level – protect, preserve – flora, fauna

### **Conservation of forests**

- Forests – valuable resources – need to be conserved
- Ways to conserve them –
  - Controlling deforestation –
    - Control large scale deforestation
    - Forest reserves – large areas – protected through laws – prevent deforestation
  - Recycling paper –
    - Recycling – proper use of forest products – conserve forests
    - Recycling paper – saves forests – also saves – energy and water
    - Use of harmful chemicals – produce paper – reduced
  - Reforestation –
    - Deforestation – very serious problem – solution – reforestation
    - Planting trees – large scale – afforestation
    - Reforestation – restocking forests – planting new trees
    - Planted trees – same species – already found in the area
    - Deforested area – left undisturbed – reforested naturally

### **Conservation of biodiversity**

- Biodiversity – imp. role – maintain balance of nature
- Different living organisms – interact with each other – depend on each other
- Also, imp. role – regulate chemistry of atmosphere – maintain water cycle
- Responsible – recycle nutrients – provide fertile soil
- Ways to conserve them –
  - Legal measures – protect endangered species –
    - IUCN – International Union for Conservation of Nature
    - Responsible – assess, maintain data – related to – endangered flora, fauna
    - Issued a list – Red List – focus on these issues
    - Data of species – mentioned in Red List – recorded in Red Data Book
    - Many nations – laws against hunting – restricted land development – creating protected areas – National Parks
  - Protected areas –
    - Areas – dedicated to protection and maintenance – biological diversity, natural and cultural resources

- These areas – managed through – legal or other effective means
- Several areas – protect rare species
- Following benefits –
  - Maintain population – native species or sub-species
  - Conserve genetic diversity – existing species
  - Possible for species – shift – respond to environmental changes

### **Various protected areas**

- Biosphere Reserves –
  - Protected areas – special category – people – imp. part of system
  - At present – 13 Reserves
  - Consist 3 zones –
    - Core –
      - Undisturbed, legally protected ecosystem
      - No human activity
    - Buffer –
      - Surround core area
      - Limited human activity allowed
    - Manipulation –
      - Outermost part
      - Maximum human activity
  - Role –
    - Conserve wild population – natural ecosystem
    - Preserve traditional lifestyle – tribals
    - Conserve genetic resources
- National Parks –
  - Area – reserved for – betterment of wildlife – forestry, grazing, cultivation – not permitted
  - 104 national parks
  - Notable –
    - Gir National Park – Asiatic Lions
    - Kaziranga National Park – Rhinoceros
    - Corbett National Park – Tigers
    - Kanha National Park – Tigers
- Sanctuary –
  - Protection to faunas only
  - Operations – harvesting, collection of forest produce – permitted – as long as – do not interfere
  - 543 sanctuaries
  - Out of all national parks and sanctuaries – 27 – selected for ‘Project Tiger’ – launched in 1973 – protect tigers
- Zoological Parks –
  - Also called zoos – areas – animals protected – kept in special cages (enclosures)
  - Animals – dependent on authorities – daily food
- Botanical Gardens –
  - Endangered species of flora – protected, stored here
  - These plants – cultivated under controlled conditions