VALUE OF BIO DIVERSITY

- **Ten million species on earth**
- **Services-Clean water/fuel/food/fibre/medicine/ climate control/energy /inputs for industries**
- **Failure to conserve bio diversity- inequitable & unsustainable gwt, deeper poverty, new & rampant illness , degradation of envt affecting health of people**

VALUE OF BIO DIVERSITY

- **Bio diversity is a life insurance- provision of eco system goods no one knows the value of different species to mankind.**
- **Biosphere a life support system for humans**
- **- plants, animals, microbes**
- **Provides food, fuel , fodder for livestock, housing material etc.**
- **Billions of small farmers, fishermen, herders, tribals depend on bio diversity**

VALUE OF BIO DIVERSITY

- **We know about few species that exist**
- **Every year few species out of known &unknown are lost**
- **Lack of understanding of complex interrelationship b/w organisms- difficult to determine value of specific species**
- **Removal of seemingly insignificant species can affect ecology**

VALUE OF BIO DIVERSITY

- **1. Direct use value**

- **2.Indirect use value**

- **3. Aesthetic value**

- **4. Ethical value**

VALUE OF BIO DIVERSITY

- *1. Direct value / known as commodity value-* benefit derived directly or indirectly- from harvested product.

- 2.Sub divided into: consumptive/ productive

- *A.* CONSUMPTIVE USE VALUE

- Human welfare related to use of bio resources

- Amount of biodiversity products harvested & consumed directly as food, fuel, drugs , fodder, wool , leather, resin ,wax etc

VALUE OF BIO DIVERSITY

- *i. food value*
- **Consume wild & semi wild plants as food**
- **Uses around 5000 species of plants as food**
- **90 percent of food crops are domesticated from wild plants**
- **200 species of domesticated food crops-less than 20 species meet 85% of food needs**
- **Wheat- rice-corn-2/3 of food**

VALUE OF BIO DIVERSITY

- **Villagers of Indonesia consume 4000 native plants & animals as food**
- **Food derived from fruits, seeds, roots, leaves, flowers etc.**
- **In agri. Bio diversity is used as a source of new crop material for breeding better varieties.**

VALUE OF BIO DIVERSITY

- *ii. Medicinal value*
- **Toxic material derived from plants used as medicine**
- **Peruvians used bark of cinchona to cure malaria-quinine**
- **25% of prescription medicine are derived from 120 plant species**
- **UNDP-value of pharmaceuticals derived from third world plants and animals $30 bln / yr.**

VALUE OF BIO DIVERSITY

- *iii. Fuel value*

- **People near forest obtain fire wood for sustenance- home consumption**

- **Firewood important for cottage inds- bricks, pottery**

- **Asians- firewood main source of fuel**

VALUE OF BIO DIVERSITY

- *iv. Other goods of value*
- **Fodder, variety of natural fibres, thatching material, ornamental plants**
- **Seeds of rudraksh- necklace/ornaments**

VALUE OF BIO DIVERSITY

- **B. PRODUCTIVE USE VALUE**
- **Products derived from wild species and sold in comm. Markets**
- **i. Timber value**
- **Wood harvested from forests is the commonest commodity traded world wide**
- **Timber is a major source of export income in many countries-Malaysia,myanmar, indonesia**

VALUE OF BIO DIVERSITY

- **ii. Fishery value**
- **Fish/ fishery products- great importance in global trade and food security**
- **5 times increase in the landing of aquatic resource- past 4 decades**
- **80%- marine**
- **10/22000 fish species- 35%- main -herrings, sardines**

VALUE OF BIO DIVERSITY

- **2. indirect use value**
- Benefits which do not involve harvesting or destroying bio resources
- Ecological benefits- soil formation, nutrient cycling, waste disposal, air& water purification, education, recreation, aesthetic social& cultural values

VALUE OF BIO DIVERSITY

- **i. Eco system service value.**
- **Services provided by eco system such as- prevention of soil erosion, soil formation, climate regulation, waste disposal, nutrient cycling, water cycling , nitrogen fixation, pollutant absorption , carbon sink, natural pest control , pollination by birds& insects**
- **Estimate: $54 trillion($10^{12}$)**

VALUE OF BIO DIVERSITY

- **Ii.Social cultural & religious service**
- **Related to social life, customs, religion etc.**
- **In India, fruits , leaves roots, flowers are used for religious purposes- tulsi, neem etc.**

VALUE OF BIO DIVERSITY

- **3. Aesthetic value**
- **There is a value to the goodness and beauty of nature**
- **It is closely attached to natural envt.**
- **Eco tourism, bird watching, wild life viewing,, gardening, pet keeping**
- **People spent much money to visit wilderness**
- **Willingness to pay= value**

VALUE OF BIO DIVERSITY

- 4 ethical value
- Existence value of bio diversity- life is to be preserved
- Live & let others to live
- Ahimsa paramo dharma
- All species have the right to exist
- Feel hurt when we know passenger pigeon & dodo are not on earth
- Kangaroo, giraffe, zebra must exist even if we do not derive anything from them

THREATS TO BIO DIVERSITY

- 1. habitat loss & degradation
- * primary cause of bio diversity loss- leading killer of species
- *Red book IUCN 73% loss of species- due to habitat destruction
- * 100 species lost each day
- Loss threat to- 89 percent of threatened bird species 83% of mammals &91% of plants.

THREATS TO BIO DIVERSITY

- **Cutting of trees , filling wetland, burn forest natural habitats of plants, animals & micro organisms are lost.**

- **Main causes- ag.activities, harvesting, mining, fishing,logging, deforestation ,urbanisation, ind. Devt. Infra devt.**

- **Millions of hactares of forests converted into ag. Land, pstures etc.**

- **Greatest loss last 150 yrs due to population gwt.**

THREATS TO BIO DIVERSITY

- **2 habitat fragmentation**
- **Large continuous habitats divided into small & scattered patches**
- **Habitats surrounded by crop lands, plantations, urban areas.**
- **Isolated by roads, fields, towns, canals.**
- **population of species get separated into isolated groups- inbreeding depression, high infant mortality, env. Stresses- extinction**

THREATS TO BIO DIVERSITY

- **3. poaching of wild life**
- **Poaching is illegal trade of endangered & rare species of animals and plants and products thereof.**
- **Include endangered animals – birds, mammals- and rare medicinal plants.**
- **Global illegal trade in wild life is second only to trade in drugs- smuggling of wild life , their products- hide, fur, meat, tusk horn**

THREATS TO BIO DIVERSITY

- 4. introduction of exotic or alien species
- Entry of a non native newly entering species in a geographical region- loss of native species
- Exotic species – biological pollutants leads to habitat alteration & degradation
- Exotic species may kill or eat native species
- Exotic species- biological cancer.

THREATS TO BIO DIVERSITY

- **5. over exploitation of bio resources**
- **Over exploitation- reduces its population size-extinction**
- **Over use of frogs and plant species – threatens their existence**
- **Extraction of wild medicinal plants, hunting of whales eg of over exploitation**

THREATS TO BIO DIVERSITY

- **6. pollution & disturbances**
- **Env. – a major reason for habitat destruction**
- **Pollution alters natural habitats- eliminate sensitive species**
- **Excessive use of pesticides in crop lands gets washed out – destroying aquatic species**
- **Industrial wastes- pollute water bod ies, estuaries etc- affect biotic component**

THREATS TO BIO DIVERSITY

- **Cadmium pollution – ducks etetai etai disease in fish- affects swans cranes**
- **Natural disturbances & manmade disturbances such as fire also affect**
- **7. Diseases- disease causing organisms such as pathogens also affect.**
- **Human activities cause spread of disease in wild species**

THREATS TO BIO DIVERSITY

- **8. genetic assimilation**
- **Some rare and endangered wild life are threatened by genetic assimilation- cross breed with closely related species that are numerous and vigorous**
- **Opportunistic plants or animals when introduced in new habitats by humans may overwhelm local species. Hatchery raised trout-stronger than local**

THREATS TO BIO DIVERSITY

- 9. Other factors.
- 1. distribution range- smaller the distribution range- greater threat of Of extinction
- 2substitutionexisting species may be replaced by another during the course of evolution
- 3. reproductive rate- larger organisms-tiger elephant low reproductive rate
- 4. status in food chain- higher- greater chance of extinction.
- 5.degree of specialisation- greater-more vulnerable