BIODIVERSITY

Dr. Vijay K. Khorwal

CHE 110: Environmental Studies

Unit - 3

Biodiversity

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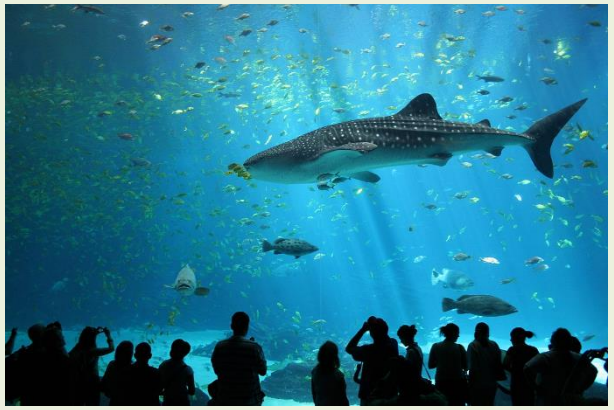
Ex-situ Conservation

Aquaria:

- The aquaria are mainly used for the threatened and endangered fresh water species.



Zoo:

- In the past, zoos were mainly display facilities for the purpose of public enjoyment and education.
- As large numbers of the species traditionally on display have become rarer in the wild, many zoos have taken on the additional role of building up numbers through captive breeding programmes.

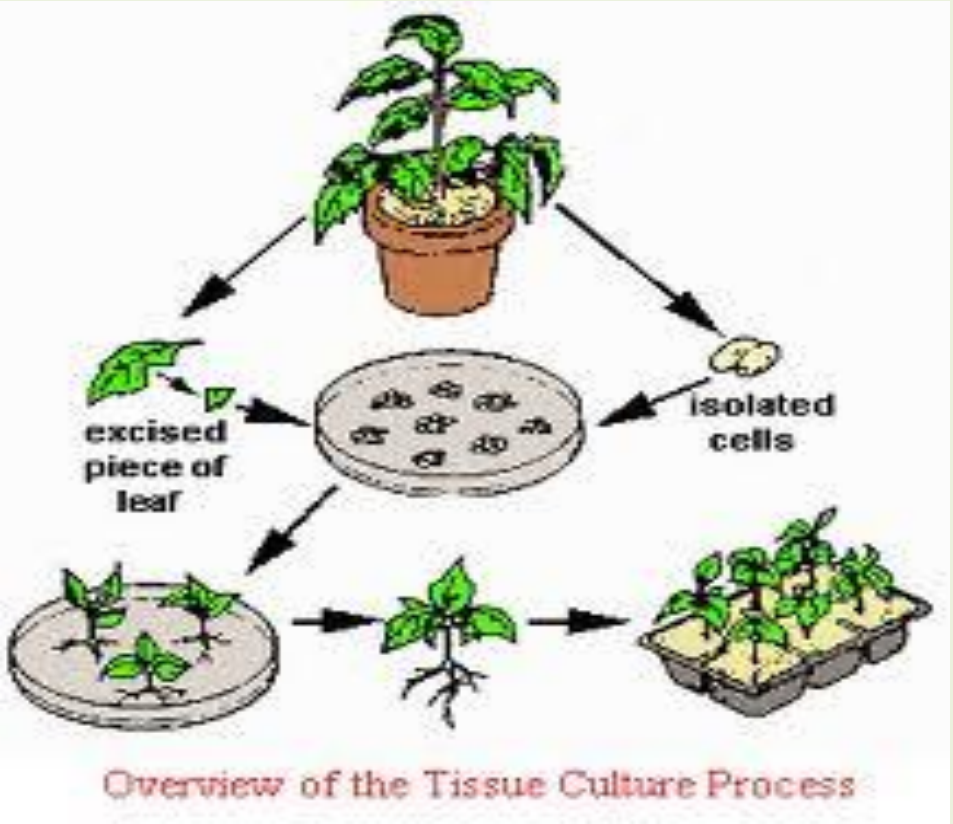
Ex-situ Conservation

Botanical Gardens:

- Botanical gardens are used for the conservation of rare and endangered plant species for study and research of specific plant characters and for disseminating scientific information and experiences to promote sustainable development.
  - Pollen Bank
  - Seed Bank
  - Sperm Bank
  - Ova Bank
  - Gene Bank

Ex-situ Conservation

- Tissue Culture Technique:
  - Tissue culture refers to a special technique used for asexual propagation in plants a very small piece of shoot apex ,leaf section or even an individual cell is cut and placed in a sterile culture in a test tube, petri dish.
- DNA technology:
  - DNA of plant or animal cell or a part of it to be conserved. DNA technology can provide an innovative and effective approach for biodiversity conservation



Overview of the Tissue Culture Process

Ex-situ Conservation

- Advantages
  - Organisms are completely protected from predation and poaching
  - The species survive longer and may breed more offspring than usual
  - The quality of offspring may be improved by genetic techniques
  - Breeding of hybrid species is possible.
- Disadvantages
  - Animals may not behave as normal making reproduction difficult
  - Animals may not survive reintroduction into the wild
  - Overprotection may result in loss of natural occurrence.

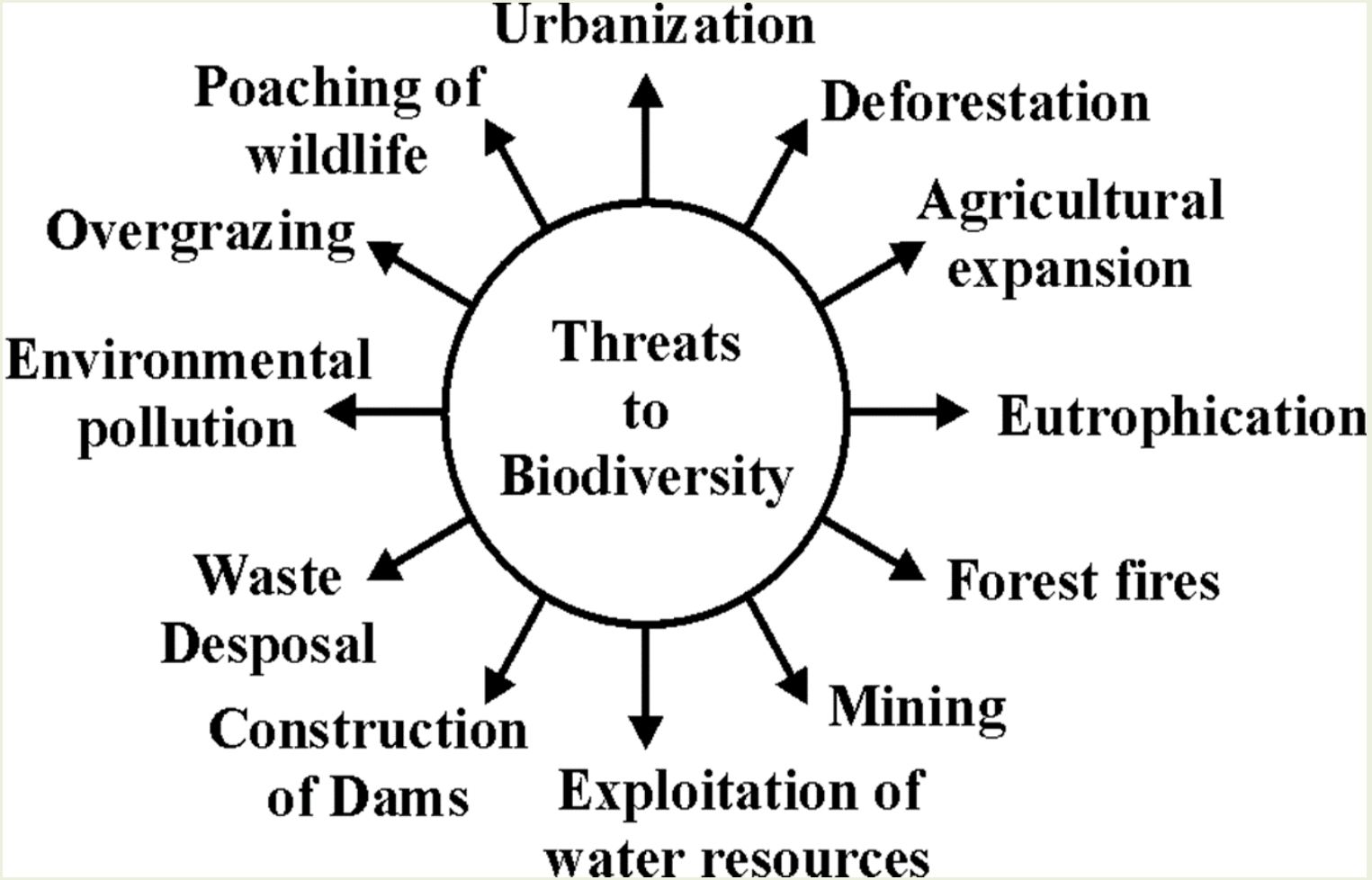
Man-wildlife conflict

- Sometimes we come across conflicting situations when wildlife starts causing immense damage and danger to man and under such conditions it becomes very difficult for the forest department to pacify the affected villagers and gain local support for wild-life conservation.
  - Elephant is one of the holy animal in India, especially in Kerala but due to elephant attack some 500 people are killed by each year.
  - The Corbett National Park of Uttarakhand is famous for notable man-eaters leopard, responsible for at least 400 attacks on humans.
  - The largest Swamp and mangroves forest of India is also home to over 500 Bengal tigers, who killed from 50-250 people per year in India and Bangladesh.

Causes of Man-animal conflicts

- shrinkage of habitat
- Man-eating tendency
- Food scarcity
- Electric wiring
- Lack of corridors
- Inadequate compensation to the farmers.

Threats to biodiversity



This PPT should be used as reference only. Reading books (mentioned in syllabus) is mandatory for the preparation of the examinations.

Major biogeographic habitats of India

	Biogeographic zone	Biotic province
1	Trans-Himalayan	Upper region
2	Himalayan	North-west Himalayas, West Himalayas, Central Himalayas, East Himalayas
3	Desert	Kutch, Thar, Ladakh
4	Semi-Arid	Central India, Gujrat-Rajwara
5	Western Ghats	Malabar coast, Western Ghat mountains
6	Deccan Peninsula	Deccan plateau, Chhota Nagpur, Central highlands
7	Gangetic plain	Upper Gangetic plain, Lower Gangetic plain
8	North-east India	Brahmaputra Valley, North-eastern hills
9	Islands	Andaman Islands, Nicobar Islands, Lakshadweep Islands
10	Coasts	West coasts, East coasts

India: A Mega-diversity nation

- Conservation International identified 18 mega-diverse countries in 1998. India is one of them.
- Few of the fields of diversity of India are:
  - Geographical diversity
  - Climatic diversity
  - Biodiversity
  - Habitat diversity
  - Cultural diversity

Phyto-geographical regions of India

- On the type of flora, India has been divided into following zoogeographical regions:
  - The Western Himalayas
  - The Eastern Himalayas
  - Western Deserts
  - Gangetic Plains
  - Central India
  - Western Coast
  - Deccan Plateau
  - North-East India
  - Andaman and Nicobar Islands

Zoo-geographical regions of India

- On the type of fauna, India has been divided into following zoogeographical regions:
  - Himalayan Region
  - Malabar Region
  - Nilgiri Region
  - Northern Plains
  - Desert Lands
  - Deccan Plateau Region