



B.Sc. 1st semester Zoology(Honours) Course Code: ZC102T Principles of Ecology



Unit 5: Applied Ecology- Concept of Wildlife conservation (Usefulness, causes and consequences of degradation); Management strategies

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Applied Ecology

The principles of ecology are applied in many ways. There are obvious applications in conservation biology but also in many other areas...

Examples:

Saving endangered species using cloning technology

Using knowledge of life history to evaluate risk of extinction for endangered species


Global climate change and the distribution of diseases

The maximum sustainable yield problem

Plant (and animal) secondary chemicals as potential medicines

- **Aspects of applied ecology include:**
- Agro-ecosystem management
- Biodiversity conservation
- Biotechnology
- Conservation biology
- Ecosystem restoration
- Habitat management
- Invasive species management
- Protected areas management
- Rangeland management
- Restoration ecology

wild·life

1. /'wɪl(d)lɪf/ 

noun

wild animals collectively; the native fauna (and sometimes flora) of a region.

synonyms: (wild) animals, **fauna**, flora and fauna

"the wildlife of Southeast Asia"

Definition of WILDLIFE

2.

: living things and especially mammals, birds, and fishes that are neither human nor domesticated

Wildlife Definition:

3.

Animals living in their natural habitat and not within the possession or control of humans.

Wildlife Conservation

- A *social* process encompassing both lay and professional activities that define and seek to attain wise use of wildlife resources and maintain the productivities of wildlife habitats
 - J. Bailey (1984)
 - Management, administration, education, law enforcement, & research

Wildlife Management

- The application of scientific and technical principle to wildlife populations and habitats to maintain such populations (particularly mammals, birds, and fish) essential for recreational and/or scientific purposes
- Examples of species management: bird banding, trapping and transplanting, land management, wildlife population surveys, vegetation surveys, wildlife extension work and implementation and regulations

Wildlife management

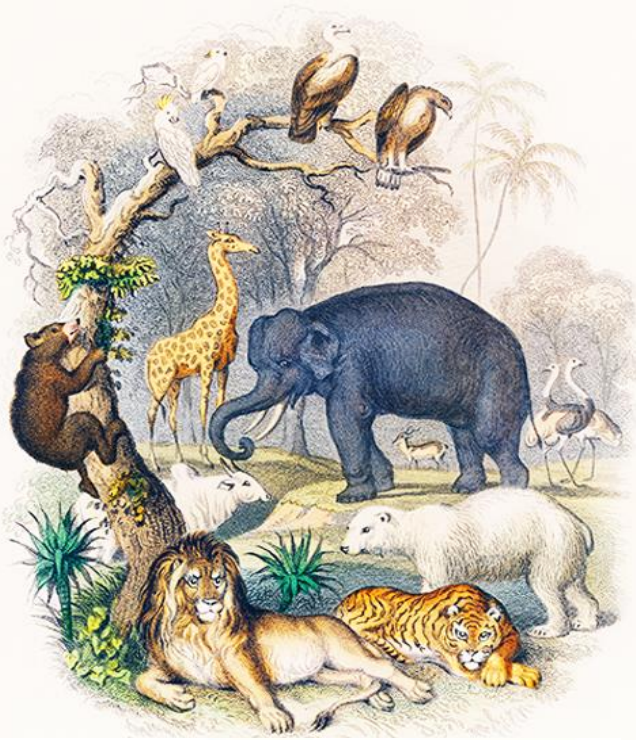
Aims:

- To maintain sustainable and healthy populations of indigenous species
- To meet biodiversity targets
- To reduce populations of over successful species
- To protect populations of vulnerable species
- To protect habitats
- To confront and reduce disease
- To protect livestock, forestry and crops
- To create a balance

WILDLIFE CONSERVATION

Wildlife conservation is the practice of protecting wild species and their habitats in order to prevent species from going extinct. Major threats to wildlife include habitat destruction/ degradation/ fragmentation, over exploitation, poaching, pollution and climate change.

JEYATHASAN THUVARAKA



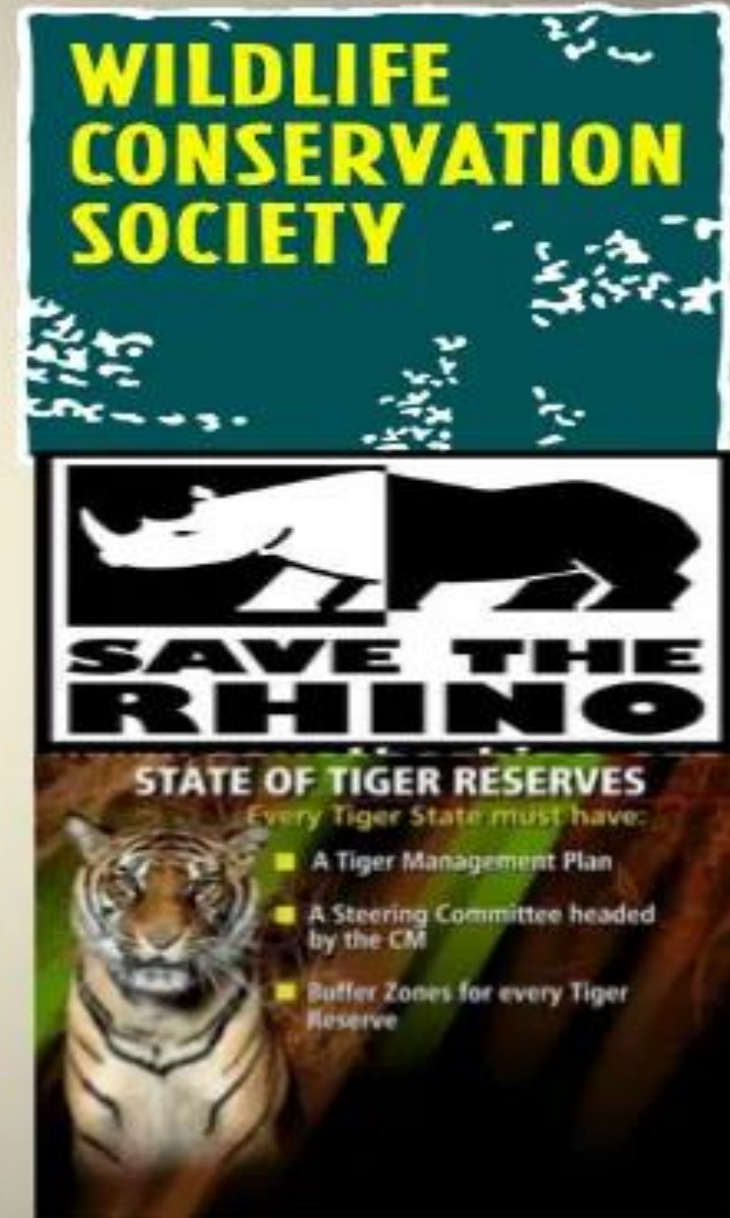
IMPORTANCE OF WILD LIFE CONSERVATION

- **Beauty**
- **Economic value**
 - Timber , fur, tusk, ivory, leather, honey etc
- **Scientific value**
 - Gene pool for the scientists to carry breeding programmers in agriculture, animal husbandry and fishery
- **Maintain Ecological Balance**
- **Eco- Tourism.**



GOVT ROLE IN CONSERVATION OF WILDLIFE

- ❖ Wildlife protection act 1972
- ❖ Project tiger 1972-73
- ❖ Forest protection act 1980-88
- ❖ Anti poaching agencies
 - ✓ State wildlife dept
 - ✓ State forest dept
 - ✓ Ministry of environment and forest
 - ✓ Army (IF APPLICABLE)
 - ✓ Police
 - ✓ Border security force
 - ✓ Coast guards
- ❖ Wildlife conservation society



Techniques and methods of wildlife conservation

❖ **Conversation strategy:**

- The strategies developed by the conservation Biological Diversity (CBD) are as follows:
- All efforts to be made to conserve threatened species.
- All endangered species should be protected.
- The wild life must be protected both in natural habitat and artificial habitats by establishing zoological and botanical gardens or parks.
- Varieties of useful food crops, plants, animals and microbes should be preserved for national and international breeding programs.
- The wild plants and animals should be conserved as a gene bank for the later.
- The habits of animals should be guarded and well protected.
- A protected area to be established to preserve the habitat or migratory or wide ranging animal species.
- Unique ecosystem should be conserved on top priority basis.
- Ecosystem to be determined for exploited species during productive periods.
- International trade and commerce to be prohibited in the areas of wild animals and plants.

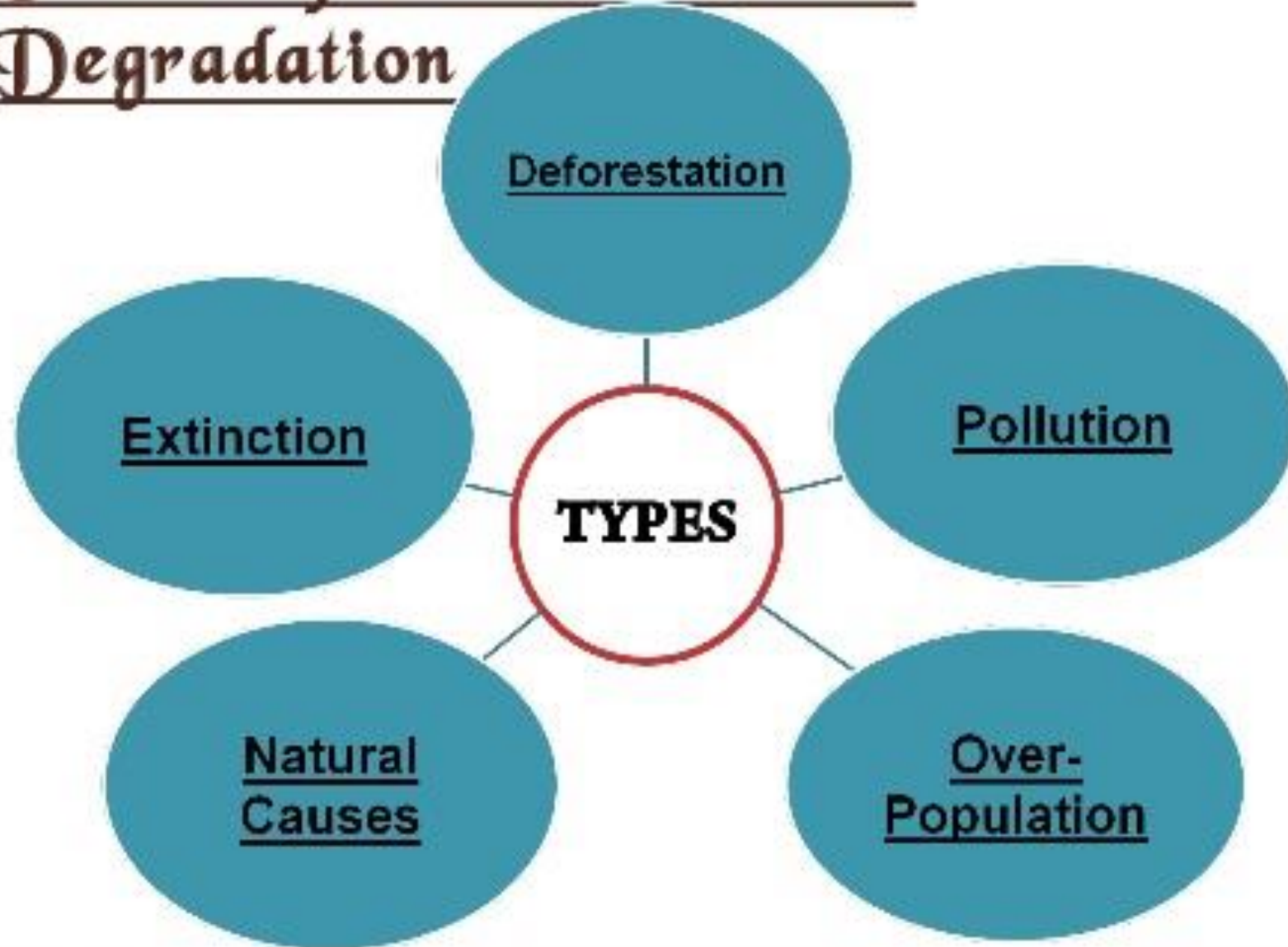
National and international conservation bodies

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora, also known as the Washington Convention) is a multilateral treaty to protect endangered plants and animals. It was drafted as a result of a resolution adopted in 1963 at a meeting of members of the International Union for Conservation of Nature (IUCN). The convention was opened for signature in 1973 and CITES entered into force on 1 July 1975. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species in the wild, and it accords varying degrees of protection to more than 35,000 species of animals and plants. In order to ensure that the General Agreement on Tariffs and Trade (GATT) was not violated, the Secretariat of GATT was consulted during the drafting process.



Causes of Environmental Degradation



Factors Responsible for the Depletion of Wildlife

- 1) Loss of Wildlife Species-** Eventually leads to Extinction of a Particular Set of Animal Species. Normally in The Wild, if the Animals do not get adequate Food or Water during a Famine or drought they will perish without Human or a Country's Forest Department's assistance.
- 2)** Similarly, in Forest Fires, Many Plants, Trees, Birds, Reptiles, Insect species & Animals get Engulfed by fire – So they will also lose their lives if the Forest fires are not doused on time.
- 3) Deforestation and Habitat Loss** due to Developmental Works & Timber related Tree felling carried out by Human beings also cause untold damage to an Ecosystem and Many Animals are deprived of their Forests and a Safe abode.

4) Hunting and Poaching of Animals also causes a Depletion of a Species of animals in number count.

5) Uncontrolled Fishing and Over Exploitation of Marine resources by Humans are also responsible for Extinction of Aquatic & Amphibious varieties of Animals & reptiles.

6) Releasing Toxic Pesticides & Industrial Effluents leads to Toxicity of Water bodies like Rivers, Lakes & Water bodies and a Lower Biochemical Oxygen Demand will result in Elimination of Aquatic life.

7) Introduction of invasive species, such as new predators and food competitors, overhunting, and other influences.

All of these causes lead to Depletion of Wild animals and their Former Habitats (Forests, Grasslands, Plains, Valleys) are completely Wiped out and taken over by Human beings for Real Estate Projects, Railways, Roads, Industries, Aerodromes, Yards etc.

So Greenhouse Effect will come into play, Ozone Layer Depletion and Global Warming with Climate change will become the Order of the Day with Scanty Rainfall, Drought, Smog, and Acid Rains Everybody is Bound to Suffer in Future due to these wrongful methods being followed.

Basically, if there are No Big Carnivores, then The Forest will be Full of Herbivores and Over Grazing will occur, and The Primary Producers like Grass, Plants & shrubs will dwindle. The Humans will be Lesser afraid without The Carnivorous animals, and they will take over The Wild areas – Similarly, If there are No Primary Producers or Herbivores, then The Pure Carnivores will not find food to survive.

So if The Wild has to Survive, then it must have Wild Animals in its Abode as a Balanced Ecosystem and a Vice versa i.e. if The Animals have to Survive, they will Definitely Need a Natural Habitat to Sustain their living.

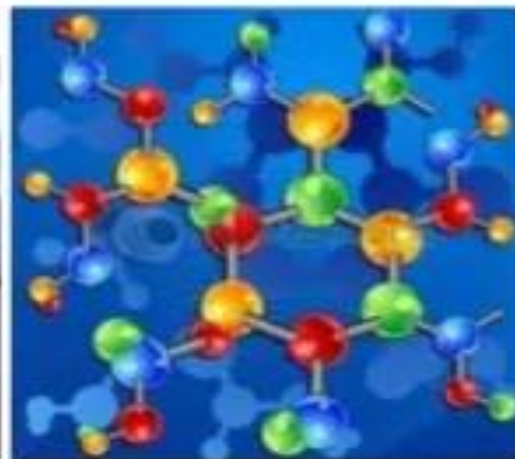
EFFECTS OF WILDLIFE DEPLETION

- Unbalance food chain and ecosystem.
- Reduction in rare wild animals.



- Impact on bio-diversity.
- Loss of economic value.

- Danger to human life.
- Loss in genetic information.

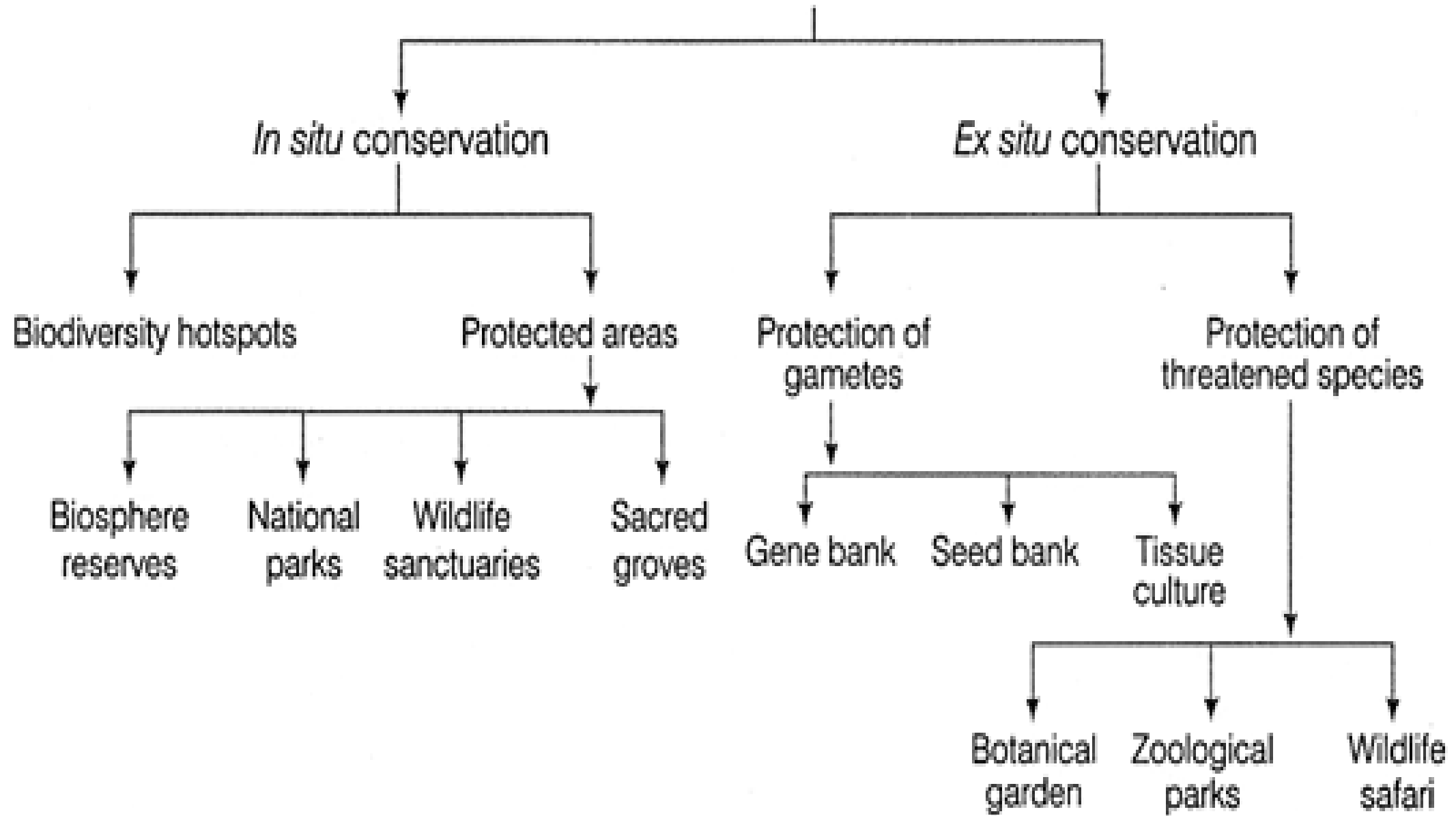


Techniques and methods of wildlife conservation

❖ **Methods of conservation:**

- **Protection by law** : Laws should be enacted to protect wild life. The Indian law for wild life conservation came into force in 1972 as the **Indian wild life protection Act**.
- **Establishment of protected Areas**: It is essential to establish wild life sanctuaries, national parks and biosphere reserves to protect wild life. These places provide ideal condition for wild life.
- **Restoration of Original habitat**: Restoration of original habitat to be built in the deforested areas. Every year **Vanmahostav** to be observed.
- **Better living condition**: The animals are to be encouraged to live under the cover of thick grass or bushes and trees.
- **Educating common people**: Common people to be educated for the conservation and protection of wild life. This is the most effective method of preserving wild life.
- **Training of wild management**: Training of wild life forest officers, wild life ecologists is essential for conservation wild life.

Biodiversity Conservation



Kaziranga National Park

- Location :- Assam
- A world heritage site, Located on the edge of the Eastern Himalaya biodiversity hotspot, the park combines high species diversity and visibility .
- The park is large breeding populations of **tigers**, **elephant** , **wild water buffalo** , and **swamp deer** .



Biosphere Reserves- Nokrek



Biosphere Reserves- Nilgiri