



Notes

15.6.1 In-situ methods

- i) **Protection of habitat:** The main strategy for conservation of species is the protection of habitats in representative ecosystems. Currently, India has ninety six National Parks, five hundred Wildlife Sanctuaries, thirteen Biosphere Reserves, twenty seven Tiger Reserves and eleven Elephant Reserves covering an area of 15.67 million hectares or 4.7 % of the geographical area of the country. Twenty one wetlands, thirty mangrove areas and four coral reef areas have been identified for intensive conservation and management purposes by the Ministry of Environment and Forests, Govt. of India.

• National parks and sanctuaries

India is unique in the richness and diversity of its vegetation and wildlife. India's national parks and wildlife sanctuaries (including bird sanctuaries) are situated Ladakh in Himalayas to Southern tip of Tamil Nadu with its rich bio-diversity and heritage. Wildlife sanctuaries in India attract people from all over the world as the rarest of rare species are found here. With 96 national parks and over 500 wildlife sanctuaries, the range and diversity of India's wildlife heritage is unique. Some of the main sanctuaries in India are:

The Jim Corbett Tiger Reserve- Uttaranchal, Kanha National Park, Madhya Pradesh, Bandhavgarh National Park- Madhya Pradesh, Kaziranga National Park- Assam, Gir National Park- Gujarat etc.

Wildlife lovers eager to see magnificent Bird Sanctuary at Bharatpur, Rajasthan as it is the second habitat in the world that is visited by the Siberian Cranes in winter and it provides a vast breeding area for the native water birds, Great Indian bustard is found in the Indian deserts. In western Himalayas, one can see birds like Himalayan monal pheasant, western tragopan koklaks, white crested khali pheasant, griffon vultures, lammergeiers, choughs, ravens. In the Andaman and Nicobar region, about 250 species and subspecies of birds are found, such as rare Narcondum horn bill, Nicobar pigeon and megapode. While the national parks and sanctuaries in South India, too. For e.g. Madumalai in Tamil Nadu and Bandipur Tiger Reserve and Nagahole National Park in Karnataka.

Many National Parks and Sanctuaries have been established to preserve wildlife in their natural environment. Some of them are given below along with important species found there.

- Kaziranga sanctuary (Assam) – One-horned rhinoceros
- Manas sanctuary (Assam) – Wild buffaloes
- Gir forest (Gujarat) – Lions, chital, sambar, wild bears
- Kelameru bird sanctuary (Andhra Pradesh) – Pelicans and marine birds
- Dachigam sanctuary (Jammu and Kashmir) – Kashmir stags, Himalayan tahr, wild goats, sheep, antelopes.
- Bandipur sanctuary (Karnataka) – Indian bison, elephants, langurs
- Periyar sanctuary (Kerala) – Elephants, barking deer, sambhar
- Kanha National Park (Madhya Pradesh) – Tiger, leopards, wild dogs



Notes

A number of zoos have been developed in the country. These zoological parks have been looked upon essentially as centres of education about animal species and recreation. They have also played an important role in the conservation of endangered animal species such as the Manipur Thamin Deer (*Cerus eldi eldi*) and the White winged Wood Duck (*Cairina scutulata*). Notable successful examples of captive breeding are those of Gangetic gharial (*Gavialis gangeticus*), turtles and the white tiger.

- (ii) **Gene Banks :** *Ex-situ* collection and preservation of genetic resources is done through gene banks and seed banks. The National Bureau of Plant Genetic Resources (NBPGR), New Delhi preserves seeds of wild relatives of crop plants as well as cultivated varieties; the National Bureau of Animal Genetic Resources at Karnal, Haryana maintains the genetic material for domesticated animals, and the National Bureau of Fish Genetic Resources, Lucknow for fishes.
- (iii) **Cryopreservation:** (“freeze preservation”) is particularly useful for conserving vegetative propagated crops. Cryopreservation is the storage of material at ultra low temperature of liquid nitrogen (-196°C) and essentially involves suspension of all metabolic processes and activities. Cryopreservation has been successfully applied to meristems, zygotic and somatic embryos, pollen, protoplasts cells and suspension cultures of a number of plant species.
- (iv) **Conservation at molecular level (DNA level):** In addition to above, germplasm conservation at molecular level is now feasible and attracting attention. Cloned DNA and material having DNA in its native state can all be used for genetic conservation. Furthermore, non-viable material representing valuable genotypes stored in gene banks can all be used as sources of DNA libraries from where a relevant gene or a combination of genes can be recovered.

Legal measures : Market demand for some body parts like bones of tiger, rhino horns, furs, ivory, skins, musk, peacock feathers , etc results in killing the wild animals. **The Wildlife Protection Act (1972)** contain provisions for penalties or punishment to prevent poaching and illegal trade. India is also a signatory to the **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**. The Convention entered into force on 1st July, 1975. In addition to this, India is also a signatory to **Convention on Biological Diversity (CBD)**, which it signed on 29th December, 1993 at Rio de Janeiro during the Earth Summit. The Convention has three key objectives:

1. Conservation of biological diversity,
2. Sustainable use of biodiversity and
3. Fair and equitable sharing of benefits arising out of the utilization of genetic resources.

The CITES and the CBD are international initiatives. Government of India have also passed the Biological Diversity Act, 2002, the details of this acts is given in lesson 23.



Notes

Biological Diversity Act, 2002

- This Act provides for setting up of a National Biodiversity Authority (NBA), State Biodiversity Boards (SBB) and Biodiversity Management Committees (BMC) in local bodies.
- All foreign nationals organizations require prior approval of NBA for obtaining biological resources and/or associated knowledge for any use.
- Similarly, Indian nationals or organizations will require to give prior intimation to the concerned SBB about any biological resources being imported for commercial use. The SBB may prohibit the import if found to violate the objectives of conservation, sustainable use and benefit sharing.
- However, local people and communities of the area, including *Vaid*s and *Hakims* will have free access to use biological resources within the country for their own use, medicinal purposes and research.
- While granting approvals, NBA will impose terms and conditions to secure equitable sharing of benefits.
- There is an enabling provision for setting up a framework for protecting traditional knowledge.
- The monetary benefits, fees and royalties, as a result of approval by NBA are to be deposited in National Biodiversity Fund which will be used for conservation and development of areas from where the resource has been accessed, in consultation with local self government.
- World Wide Fund for Nature (WWF) and World Conservation Union supports projects to promote conservation and appropriate development of Biosphere Reserves.

**INTEXT QUESTIONS 15.4**

1. What are the main conservation strategies?

2. Name two important tiger reserves.

3. Expand WCS.

4. What are the main functions of biosphere reserve?

5. Expand the following:
i. NBPGR ii. NBG, iii. CITES, iv. IUCN, v. CBD, vi. NBA.
