

Primary objective of Astore Sanctuary. (2)marks

Primary objective

The sanctuary is home to a small population of the near threatened species, Markhor. Markhor is National animal of Pakistan. It is a large species of wild goats unique to this region of the world

Species Survival Commission (SSC) aim statement.2 marks

Aim:

“To conserve biological diversity by developing and executing programmes of study, save, restore and manage wisely the species and their habitats”.

Cholistan Wildlife Sanctuary.2 marks

Cholistan Wildlife Sanctuary is part of the Cholistan desert

Location:

Cholistan desert. In the South Eastern portion of Punjab

Area:

660,921ha

Name any two dams of Pakistan (2) marks

- 1) Tarbela dams,
- 2) warsak dam,
- 3) khan pur dam
- 4) Mangla Dam
- 5) Hub dum

Game reserve .2 marks

Game Reserve: An area where regulated hunting & shooting is allowed

Define game reserve. 3 marks

Definition:

“A game reserve is an area wherein controlled hunting and shooting is permitted on permit basis”

A game reserve (wildlife preserve) is a large area of land where wild animals live safely or are hunted in a controlled way for sport.

1. In the game reserves the major focus is specifically the animals.
2. If hunting is prohibited, a game reserve may be considered a ”Nature Reserve”
3. Wherein all aspects of naturally-occurring life in the area are considered.
4. Most of the areas in game reserves have created to provide habitat protection for animal species commonly referred to as game (hunnable species for sport or meat)

SIGNIFICANCE of Khunjerab National Park? (5) marks

Khunjerab National Park was established on 29 April 1979.

Location:

- Gilgit Baltistan-Pakistan.
- Adjacent to the Taxkorgan Natural Reserve in China.

Area:

Spreads over 2,26,913 ha

Features:

- One of the highest National Parks in the world.
- It is Pakistan's third largest National Park.

Area of Park lies at an elevation of 4000m

Important Fact:

- The borders of the Park mapped in 1974, after a field survey to protect “Marco Polo Sheep”.
- The population of that sheep was around 400 but had dropped to below 180 by the time of the completion of the Karakoram Highway.

Major Fauna

The primary purpose of this park was to provide protection to the endangered **Marco Polo sheep**, which is only found in this area in Pakistan.

Snow leopards

- Worldwide---7,000-10,000
- Khunjerab Park---More than 300

Other Mammalian Fauna

- | | | |
|-----------------------------|-----------------------|---------------------------|
| 1. Himalayan ibex | 7. Mountain weasel | 14. Royle's mountain vole |
| 2. Himalayan brown bear | 8. Beech marten | 15. Asian house shrew |
| 3. Red fox | 9. Long-tailed marmot | 16. Etruscan shrew |
| 4. Tibetan wolf | 10. Eurasian lynx | 17. Grey dwarf hamster |
| 5. Blue sheep | 11. Large-eared pika | |
| 6. Western kiang (Wild ass) | 12. Cape hare | |
| | 13. Wood mouse | |

Birds Fauna

- | | |
|--------------------------|------------------------|
| 1. Golden Eagle | 5. Himalayan Snow Cock |
| 2. Black vulture | 6. Snow Partridge |
| 3. Marsh Harrier | 7. Grey Heron |
| 4. Eurasian Sparrow Hawk | 8. Snow Pigeon |

Important Fact:

According to WWF officials there is plan to turn “Khunjerab National Park” into “International Peace Park”. To conserve area on both sides of the boarder.

Enlist 5 ordinance act of Punjab. (5) marks

Punjab Goats (Restriction) Ordinance, 1959

- Punjab Fisheries Ordinance, 1961
- Punjab Animals Slaughter Control Act, 1963
- Punjab Livestock, Dairy and Poultry Development Board Act, 1974
- Punjab Wildlife (Protection, Preservation, Conservation and Management) Act, 1974
- Punjab Livestock Associations and Livestock Associations Unions (Registration and Control) Ordinance, 1979
- Punjab Animals Compound Feed and Feed Stuff Ordinance, 2002

Ramsar site of Punjab(3) marks

In 2013, 19 (nineteen) Ramsar sites has been declared in Pakistan.

Punjab

1. Uchhali Complex
2. Taunsa Barrage
3. Chashma Barrage

Ramsar Convention.3 marks

Ramsar is one of the global inter-governmental environmental agreements. The treaty was negotiated in 1960s by countries and N. To avoid the increasing loss and degradation of wetland habitat for migratory water birds. In a 18 nations meeting it was adopted in the Iranian city of Ramsar On 2nd February 1971. Came into force in 21st December 1975 .

What is wild life education?(3) marks

Generally people are ignorant about the utility of wildlife.

Thus, certain measures for mass education should be undertaken.

- ✓ At the formal level, schools, colleges and universities should include in the curriculum, the study of ecology, wildlife and conservation.
- ✓ The creation of awareness and right attitude towards wildlife and their conservation.
- ✓ Active involvement of Mass media such as newspapers and magazines, radio and television.
- ✓ Awareness among public about National parks and sanctuaries, zoological parks and natural history museums.
- ✓ Cinematography on wildlife and the necessity for conservation should be screened even to the remotest villages and to all classes of students, so that they develop love and affection towards wildlife.

How we can educate people for wild life? (2) marks

Most people of any country are ignorant about the utility of wildlife. Hence, for the conservation of wildlife there is a great need of educating people.

To achieve this goal following methods can be adapted.

- ✓ Celebration of wild life week every year.
- ✓ Publicity through media and film shows.
- ✓ Holding conducted tours, essay competitions, lectures, seminars, etc.
- ✓ Setting up nature clubs in educational institutions.
- ✓ Publication of wildlife books and journals.
- ✓ Establishment of natural history museums etc.
- ✓ Generally people are ignorant about the utility of wildlife.
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(I.U.C.N) stands for 2 marks

International Union for Conservation of Nature and Natural Resources (I.U.C.N)

History:

IUCN was founded in 1948. It is leading international, non-government organization concerned with conservation. Network of governmental and non-governmental organization.

area of chingi national park 2 marks

Area

Chinji National Park covers a total area of 6,095 hectares (15,061 acres).

name varieties of living organisms in wildlife. 3 marks

Organisms that grow or live wild in an area without being intervened by humans.

Wild life is natural renewable resource with a great importance throughout world.

It comprises innumerable varieties of living organism in their natural habitats.

1. Wild Plants
2. Wild Animals
3. Fungi
4. Microorganisms

concept of national park 3 marks

Concept:

- National Park is an area of outstanding scenic merit and natural beauty where the landscape, flora and fauna are protected and preserved in a natural state.
- Public access for recreation, education and research is provided.
- Access roads and other facilities should be planned so they do not conflict with main objectives of National Parks.

causes of depletion of wildlife 5 marks

The main factors of Persecution are:

Wildlife Trade

Trading of wildlife and its products. e.g. Bush meat, Ivory, hide, trophy, fur etc.

Trapping of Wild Animals

- Pets(cats etc.)
- Sold for Medical experimental studies (Monkeys, Rabbits etc.)
- For street shows, circuses (Bears,Parrots,Lions)

Poaching

- Illegal killing for tusks, oil, decoration (as stuffed preparation), Plumage.
- Illegal hunting for bush meat, trophies.

Absurd killing

- Tigers, jackals, wolves etc. are killed by the farmers.

name game reserve AJK 5 marks

AJK

- | | |
|---------------------------|-----------------------------|
| 1. Salkhala (Neelum) | 7. Nar (Bagh) |
| 2. Moji (Leepa) | 8. Sudhan Gali (Bagh) |
| 3. Qazinag (Leepa) | 9. Doom Khalla (Bagh) |
| 4. Mori Said Ali (Haweli) | 10. Banjonsa (Poonch) |
| 5. Phala (Haweli) | 11. Junjhal Hill (Sudhunti) |
| 6. Hillan (Haweli) | |

endangered species name -2 marks

Some most endangered species in Pakistan are as follow;

Indus River Dolphin (*Platanista gangetica minor*), an endangered species

1. Markhor

2. Asian Black Bear
3. Snow Leopard

toshi game reserve -2 marks.

Tooshi, a conservation area for Markhor. It is famous for the polo grounds of

- Shandur
- Broghil National Park
- Mastuj
- Booni
- Bamborat: area where the Kalash cultural festival is held every August of the year.

Location:

Tooshi Game Reserve, is located along the paved road to Garam Chashma in Chitral's Lutkho district.

Area:

It covers 1000 hectares.

Features:

It is proposed to be reclassified as a wildlife sanctuary, with readily viewable Markhor population. The jeep ride is just 20 minutes from Chitral town. The Markhor are best seen along the road at dusk. In the late afternoon until dusk, Markhor can be seen while descending to drink water from the passing river.

seed dispersed name.3 marks

Dispersal of seeds----- (squirrels, birds, rodents etc.) Seeds can stick to fur . Squirrels or birds pick them up and drop or bury them. Seed eaters also disperse the seeds by defecation . Caching behavior of many rodents and some birds.

runn of Kutch location. 3 marks

The Great Rann of Kutch is a salt marsh. Located in the Thar Desert. Kutch District of Gujarat, India and the Sindh, Province of Pakistan. Reputed to be one of the largest salt deserts in the world.

Location:

This Sanctuary, is part of the great “Thar desert”. Sindh-Pakistan

mintaka game reserve features .5 marks

Kilik/Mintaka Game Reserve

The name of the game reserve is actually driven from “*The Mintaka Pass or Mingteke Pass or Mintika Pass*” and the nearby [*“Kilik Pass”*](#)”

Mintaka means

“ *Thousand goats.*

Location

Kilik/Mintaka Game Reserve lies along the border with China. East of the Korakorum highway and the Khunjerab National Park.

Geographical Location:

Lies in Hunza, Gilgit District, on the Pakistan-China boader, 225km from the town of Gilgilt.

Area:

It includes 65,036ha

Features

- The terrain is rugged and mountainous
- There is a variety of rocks
 - Sedimentary
 - Metamorphic
 - Igneous
- Mixture of rock and mineral deposits

Features

- Temperatures at higher elevations remain below freezing point for most of the year
- Winters are severe
- Summers cold and dry.
- Mostly precipitation is in the form of snow

Fauna

Large mammals include

- Marco Polo sheep
- Ibex
- Snow leopard
- Brown bear
- Wolf
- Fox

The avifauna includes a variety of game birds, such as

- Chukar
- Snow partridge
- Raptors
- Vultures

Define habitat. 2

Habitat: Natural home of the an organism.

Habitat determines any wildlife species found in any area. The amount and distribution of food, water, cover, and space will influence the type and survival of wildlife in that area. Some wild species require special habitat features for their existence.

Habitat is the type of natural environment in which a particular species of organism lives. It is characterized by both physical and biological features. A species' habitat is those places where it can find food, shelter, protection and mates for reproduction

Name game reserve of the federal territory. 2

Federal territory: have one game reserve 1

Federal Territory

Islamabad

Note on Ayubia National Park. 3

Ayubia National Park

Ayubia National Park was declared a National Park in 1984. Ayubia was named after Muhammad Ayub Khan, the then President of Pakistan.

Location:

Abbottabad District, Khyber Pakhtunkhwa- Pakistan.

Area:

Initial area was 1684 ha, expanded through northern extension in 1998. Total area 3,312 hectares (8,184 acres)

Features:

- This National park is surrounded by three small towns (Nathia gali, Ayubia and Khanaspur)
- Rainfall: 1,244 cm
- Temperature: 3 °C - 11 °C

The Area Supports

- Temperate coniferous forest
- Temperate broadleaf and mixed forest
- These forests have an average elevation of 8,000 feet (2,400 m) above the sea level.

Major Flora:

The park holds 104 species of plants. The main floral species are

- *Cedrus deodara*
- Blue pine
- Yew
- Silver fir
- Horse chestnut
- Oak

Plants belonging to 19 families are known for their medicinal properties.

Major Birds Fauna:

- The park harbors up to 203 species of birds.
- Golden eagle
- Vulture
- Eurasian sparrow
- Hawk
- Hill pigeon
- Khalij Pheasant (30 species)
- Spotted dove
- Collared dove

Major Mammal Fauna:

Ayubia National Park supports 31 species of mammals.

- Asiatic leopard
- Hill fox
- flying squirrel
- Masked civet
- Rhesus Macaque

What are restrictions on import and export of animals. 3

Restrictions on Import and Export of Animals, Trophies or Meat

No person shall

- Receive by gift, purchase or otherwise any animal of a kind specified in the Second Schedule
- Unless a valid certificate of lawful possession in respect thereof.
- Restrictions on Dealing in Animals, Trophies and Meat
- Wildlife Sanctuary
- National Park
- Game Reserve

Note on Hub dam wildlife sanctuary. 3

PPT-74: Hub Dam Wildlife Sanctuary

Hab Dam Wildlife Sanctuary was declared in July 1974. It is Pakistan's third largest dam

Area:

27,219ha

Location:

It is situated in the north of Karachi bordering the Kirthar National Park Balochistan

Features:

- Hab Dam Wildlife Sanctuary is covering an area of 32 square miles
- Much of the shoreline is steeply shelving and stony
- Many shallow bays
- Small islands
- The greater part of the reservoir (in Balochistan) is unprotected
- The Eastern shore and of the Dam (in Sindh) is protected in the Kirthar National

Fauna:

An ideal place for bird watching

Waterfowl (both resident and migratory). The lake also provide refuge to migratory birds

- Cranes
- Pelicans
- Ducks
- Waders

Fauna:

The surrounding hills are home for

- Urial
- Sindh Wild Goat
- Chinkara Gazelle
- Pangolin
- Wolf
- Jackal
- Common fox
- Numerous reptiles

Significance of wildlife. 5

PPT 2: Importance - Significance

Wildlife is an integral part of an ecosystem.

1. Human himself as animal inter-related and inter-dependent on wildlife for its survival.
2. From clothes to medicines, building materials to variety of chemicals all are extracted from exiting wildlife around us.
3. About 90% of the domestic food crops now cultivated are descendants of wild plants.
4. Today, variety of plant products like lumber, paper, rubber, oils, dyes, and fibers etc. are supplied by wild plants.
5. Plants recycle nutrients necessary for agricultural production and help maintain soil fertility.

6. Wild plants or their extracts are a source of medicine for an estimated 80% of the world's population.
7. Source of oxygen.
8. Insects and birds add to the economic gains through pollination of plants.
9. Maintaining the 'balance of Nature'. e.g. Carnivore-herbivore balance.

What are common Hydrological alternation in wetland area. 5

Common hydrologic alterations in wetland areas include:

1. Deposition of fill material for development.
2. Drainage for development, farming, and mosquito control.
3. Dredging and stream channelization for navigation, development, and flood control.
4. Diking and damming to form ponds and lakes.
5. Diversion of flow to or from wetlands.
6. Addition of impervious surfaces in the watershed, thereby increasing water and pollutant runoff into wetlands.

What is Onus of proof. 2

Onus of Proof

- When in any proceedings taken under this Act.
- Wild animal, trophy or meat shall be presumed to be the property of until the contrary is proved.

What is primary objective of Zoo. 2 97ppt

Primary Objective:

“Conservation of Wildlife”

- No zoo shall take up any activity that is inconsistent with this objective.
- The objective shall be to complement and strengthen the national efforts in conservation of the rich biodiversity of the country, particularly the fauna.”

What is Poaching? 3

Poaching

- Illegal killing for tusks, oil, decoration (as stuffed preparation), Plumage.
- Illegal hunting for bush meat, trophies.

Name 2 wildlife sanctuaries of KPK. 3

Khyber PakhtunKhwa(KPK)

- Manglot
- Argam Basti

What is monitoring trade in CITES. 5

Convention on International Trade in Endangered Species (C.I.T.E.S)

Monitoring trade

- The backbone of CITES is the permit system that facilitates international cooperation in conservation and trade monitoring.

- Permits are issued only if a country's Management and Scientific Authorities determine that trade is legal and does not threaten the species' survival in the wild.
- These permit allows inspection at ports of export and import to quickly verify that CITES specimens are properly documented.
- This trade monitoring has created an information on the management and use of CITES species worldwide.
- CITES has helped global conservation of species.
- CITES provides tools to effectively conserve the world's diverse natural resources.
- It control global over-exploitation of wildlife.

State Purpose of wildlife sanctuaries. 5

Purpose:

Animal sanctuaries exist for many specific reasons:

1. Help to protect animals and safeguard their lives.
2. Animal sanctuaries give new homes to abandoned animals.
3. Animals rescued from dangerous conditions.
4. Help to protect animals from illegal activities.
5. Serve as places where endangered animals breed and are therefore protected.

effect of pollution on water .2m

Pollution of various kinds have adversely affected wild animals.

- **Insecticides**

There has been a considerable damage to birds by insecticides spraying.

- **Oil Spillage**

Oceanic birds are killed by oil spillage from oil tankers in the sea.

- **Noise Pollution**

It causes disturbance of hormonal and reproductive behavior of many wild animals.

- **Water Pollution**

Domestic as well as industrial waste dumped into water bodies causes decline in stocks of fishes.

- Animals like mussels have been unfit for human consumption
- Various natural calamities like floods, hurricane, fire etc. have also caused massive destruction of wildlife.

explain beauty of hingol national park 2m

IT is largest national park of Pakistan.

Hingol National Park was established in 1988. It is now named as Dharune-Hingol National Park, formed by the merge of two Parks.

Area:

165,700ha.

Location:

It is located along the Makran coast in southwestern, Balochistan-Pakistan. It lies within three districts of Balochistan, Lasbela, Gwadar and Awaran.

Major Fauna:

The Park is rich in fauna and is known to support

- 35 species of mammals
- 65 species of amphibians and reptiles
- 185 species of birds

Animals provided protection in this National Park

- Wild Sindh ibex
- Baluchistan urial
- Chinkara gazelle

write a short note on rabies 5 m

1. Viral Diseases

The usual mode of viral transmission and dissemination is through the direct contact or aerosol contact with others of their own species.

Rabies infection is caused by the rabies **virus**. The **virus** is spread through the saliva of infected animals. Infected animals can spread the **virus** by biting another animal or a person

Rabies(Hydrophobia) : Bite Wound Disease

Host: Any mammal, usually carnivores; highest incidence is in skunks, foxes, bats, and raccoons.

Transmission: Bite wounds, infected saliva in cuts or skin abrasions, aerosol in bat caves.

2. Other causative agents of zoonotic diseases

- Mycotic
- Helminth parasitic
- Protozoal

Name the factors for which Census can be helpful in mapping ? (3)

Census can be helpful in mapping factors of • Animals roaming • Water sources • Human activities, such as livestock grazing and charcoal burning.

Why trading of wildlife is carried? (3)

Wildlife Trade

Trading of wildlife and its products for e.g. Bush meat, Ivory, hide, trophy, fur etc.

Challenge to Veterinarians? (5)

29: Veterinary Service

Veterinarians are concerned with health of free-ranging wildlife populations and deals with the health of diverse range of species. Veterinarians make important contributions to zoos, wildlife conservation, and ecosystems.

Major Challenges to Veterinarians

- Environmental contaminants
- Infectious diseases
- Outbreaks that potentially threaten wild and domesticated animals as well as humans.

Wildlife veterinarians are necessary and should be made available to care of wild animals.

Veterinarians are to prevent

- Infectious disease transfer at the domestic animal-wildlife interface.
- Movement of diseases between wildlife and domestic species.
- Reducing contact between domestic and wild animals where necessary.

Give Primary objective of Protected Area with Sustainable use of Natural Resources (5)

55: Category VI (Protected area with sustainable use of natural resources)

Protected Area with Sustainable Use of Natural Resources

Definition:

Protected areas that conserve ecosystems and habitats, together with associated cultural values and traditional natural resource management systems.

Generally large, with most of the area in a natural condition. Where a proportion is under sustainable natural resource management. Where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

Primary objective

- To protect natural ecosystems
- Use natural resources sustainably, when conservation and sustainable use can be mutually beneficial.

Other objectives

- To promote sustainable use of natural resources.
- To promote social and economic benefits to local communities.
- To facilitate scientific research and environmental monitoring.

To facilitate recreation and appropriate small-scale tourism.

1.name 5 types of wetlands(5)

Five major wetland types are generally recognized.

- i. Marine
- ii. Estuarine
- iii. Lacustrine
- iv. Riverine
- v. Palustrine

climate change define(2).

Climate change refers to

“any change in climate over time, whether due to natural variability or as a result of human activity.”

Climate change is also taking its toll in wetland degradation.

Water pollution to wildlife(2).

• Water Pollution

Domestic as well as industrial waste dumped into water bodies causes decline in stocks of fishes.

- Animals like mussels have been unfit for human consumption
- Various natural calamities like floods, hurricane, fire etc. have also caused massive destruction of wildlife.

Purpose of IWC (2)

International Whaling Commission (I.W.C)

The purpose of the I.W.C as specified in its constitution is
"Safeguarding for future generations the great natural resources represented by the whale stocks;"
Original members consisted only of the 15 whale-hunting nations

Factors for which exploration of forest...(2

- Exploration of forest is not permissible except for reducing
 - Fire hazards
 - Epidemics
 - Insect attacks
 - Natural calamities

Rules for the administration of large zoo(3

Large zoo

At least one full time curator having the sole responsibility of looking after the upkeep of animals and maintenance of the animal enclosures. At least two full-time veterinarians.

Aesthetic and recreational value of wildlife (5

12: Aesthetic & Recreational Value

It is the pleasure to enjoy the beauty of wildlife

- People enjoy seeing plants and animals in their natural habitats for recreation.
- They are a source of joy, wonder, and pleasure for many people.
- Wildlife tourism (ecotourism).
- Bird watching, is now a growing part of wildlife tourism.
- Animals photographed for recreational purposes also have aesthetic value.
- Exotic game ranches
- Viewing non-native species in a “near-native” habitat.
- Visiting Safari parks/zoo as recreational activity
- Visiting hilly areas for recreational purpose

Flora and fauna of hazaraganji chiltan national Park (5

Major Flora:

- Pashtun Juniper
- Pistachio
- Almond
- Ash trees
- Wild figs

Major Fauna:

The area is mainly meant for the restoration of endangered species of Chiltan Markhor

- To date about 300- 400 Sulaiman Markhor and around 800 Chiltan ibex survive within the park boundaries.
- The Suleiman Markhor is also present in the northern part of the Chiltan Range and a few urial still survive on the western slopes between 1,500m and 2,100m

Mammals other than Markhor in the park includes

- | | |
|------------------|---------------|
| • Indian wolf | • Jackal |
| • Stripped hyena | • Red fox |
| • Leopard | • Porcupine |
| • Caracal | • Desert hare |

Birds in the Park are

- | | | |
|-------------------|-------------------|--------------------|
| • Houbara bustard | • Griffon vulture | • Egyptian vulture |
|-------------------|-------------------|--------------------|

- Honey buzzard
- Scops owl
- Variety of wheatears
- Laggar falcon
- Common cuckoo
- Rock partridge
- Peregrine falcon
- European nightjar
- Chukor
- Kestrel
- Long-billed pipit
- Indian sparrow hawk
- Orphean warbler

Appendix 1 of C.I.T.E.S 3

Appendix I

Species threatened with extinction and provides the greatest level of protection, including restrictions on commercial trade. Examples include gorillas, sea turtles, most lady slipper orchids, and giant pandas.

General rule of National Park 5

The Ministry of Interior is the responsible authority for National Parks. The Ministry may establish a National Planning Commission to designate, alter or abolish areas for National Parks. The Commission may review National Park management plans.

National Parks are meant for

- Preserving the nation's unique natural scenery
- Protection of wild fauna and flora
- Preserving historic sites
- Providing public recreation
- Areas for scientific research.
- Areas having unique landscapes, significant ecological systems, or habitats
- Biodiversity that are representative of the natural heritage of the nation.
- Administrative headquarters shall be established at each National Park.

The following activities shall be prohibited within the National Parks:

- Burning of vegetation or setting fires to clear land.
 - Hunting animals or catching fish.
 - Polluting water or air
 - Picking or removing flower or any other vegetation.
- Engraving, sketching or defacing trees, bark, stone or signs

In accordance with the existing land use and the characteristics of the resources, a National Park may be divided into the following zones for management:

- Existing use area
- Recreation area
- Cultural/historic area
- Scenic area
- Ecological protected area

Within cultural/historic areas, the following activities shall be subject to prior permission from the Ministry of Interior:

- Repairing artifacts or historic monument.
- Repairing or reconstructing buildings.
- Making artificial alterations to original landscapes or landforms.

name of any national park?2

- | | |
|---------------------------------------|------------------------------------|
| 01. Margallah Hills National Park. | 06. Chitral Gol National Park:. |
| 02. Hazarganji Chiltan National Park: | 07. Sheikh Badin National Park: |
| 03. Hingol National Park | 08. Saiful Maluk National Park. |
| 04. Kirthar National Park: | 09. Lulosar Dodipat National Park: |
| 05. Ayubia National Park: | 10. broghil valley national park |

chitral gol national park?5

66: Chitral Gol National Park

Chitral Gol National Park is established in 1984. “Gol” is local langauge meaning “Valley”.

Location:

Hindukush range. Beside the Chitral River in Chitral District - Khyber Pakhtunkhwa-Pakistan.

Area:

7,780 ha

Features:

- Rainfall is estimated to be 462 ml.
- Weather is cold and dry.
- The temperature ranges from -12.2 to 43.3 °C.

Major Flora:

- The park is rich in a particular tree. Cedar

Major Fauna:

- Chitral National Park provide shelter to a vast biodiversity, especially Markhor.
- Holds the largest population of the Astor Markhor in the world.
- Siberian ibex
- Ladakh Urial
- Asian black bear
- Snow leopard (Non-permanent resident)
- Tibetan wolf
- Red fox
- Yellow-throated marten
- Himalayan otter

Birds Fauna:

- Bearded vulture
- Himalayan vulture
- Golden Eagle
- Demoiselle crane
- Peregrine falcon
- Himalayan snow cock
- Himalayan monal
- Snow partridge
- Rock partridge

plant propagation?5

PPT 4: Plant Propagation

❖ **Wild animals can be helpful to plant propagation in various ways**

- **Pollination**----- (Honeybees, hummingbirds, and some bats. etc.) Pollen stick to bee's body and legs which then transferred to flower it visits.
- **Dispersal of seeds**----- (squirrels, birds, rodents etc.) Seeds can stick to fur . Squirrels or birds pick them up and drop or bury them. Seed eaters also disperse the seeds by defecation . Caching behavior of many rodents and some birds.
- **Conifer trees (pine, spruce, fir, etc.) use their pinecones** - there are seeds in there that can be eaten or distributed by mice and other animals.

Hence if the animals get extinct or moved due to environmental conditions, the plants will not propagate effectively.

two names of bacterial diseases caused by wild animals?..2

- **Bubonic plague**
- **Tularemia** (rabbit fever)

location of margalla hills national park??..2

Location:

North of the Islamabad City, Capital of Pakistan.

what is musk deer?...3

Musk deer can refer to any one, or all seven, of the species that make up Moschus, the only extant genus of the family Moschidae. The musk deer are lacking antlers.

major flora and fauna of hazraganji chiltan national park.?..5

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- | | |
|-----------------------|------------------------|
| • Houbara bustard | • Scops owl |
| • Griffon vulture | • Common cuckoo |
| • Egyptian vulture | • European nightjar |
| • Honey buzzard | • Long-billed pipit |
| • Laggar falcon | • Orphean warbler |
| • Peregrine falcon | • Variety of wheatears |
| • Kestrel | • Rock partridge |
| • Indian sparrow hawk | • Chukor |

What is the location of tooshi game reserve ? 2marks

Tooshi Game Reserve, is located along the paved road to GaramChashma in Chitral'sLutkho district.

Enlist agencies which make assessment of Indus river dolphin population ? 3 marks

- A comprehensive assessment of the Indus River Dolphin population was made of their entire range by various agencies
 - WWF Pakistan
 - The Wildlife Departments of Sindh, Punjab and NWFP,
 - The Whale and dolphin Conservation Society, UK
- A minimum abundance estimate of 965 dolphins
- Between Chashma and Taunsa Barrages, 84 dolphins were recorded
- From Taunsa to Guddu Barrages, 259 dolphins
- Highest abundance was the between Guddu and Sukkur Barrages where 602 dolphins were observed.
- A stretch of about 135 km of the Indus River from Sukkur Barrage upstream to Guddu Barrage.
- The Reserve includes the full width of the river when in space and a strip of land three miles wide on either side of the river

Define protected area ? 3 marks

Protected Area

“ A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values”.

Explain economic importance of wildlife ? 5 marks

PPT 6: Economic Importance

From the economic point of view wildlife is important and serves as source of

- **Tourism**

Fascination with the beauty of wild animals drives tourism worldwide. e.g. Safari park in Lahore Pakistan. Kruger National Park in South Africa.

- **Animal Protein**

e.g. In some forested area in Latin America, wildlife acts as animal protein source.

- **Bushmeat** (Wild meat)

Wild meat tends to have less fat than domestic meat and can be a good source of iron, Vitamin A and Vitamin B.

- **Trading of Bushmeat**

In sub-Saharan Africa there is a long tradition of trade between rural areas and the major towns, where it is sold as a high-priced delicacy.

- **Ranching and Farming**

Commercial ranching and farming of wild animal occurring in countries like China, Zimbabwe & Thailand.

- **Traditional medicine/ Pharmaceuticals**

e.g. *Nerium oleander* (Anvirzel)

- **Wood**

Wildlife resources like wood from trees are used for making houses.

- Silk
- Paper
- Leather/Hide
- Ivory

Explain importance of khunjerab national park ? 5 marks

1. Khunjerab national park (5)

Khunjerab National Park was established on 29 April 1979.

Location:

- Gilgit Baltistan-Pakistan.
- Adjacent to the Taxkorgan Natural Reserve in China.

Area:

Spreads over 2,26,913 ha

Features:

- One of the highest National Parks in the world.
- It is Pakistan's third largest National Park.

Area of Park lies at an elevation of 4000m

Important Fact:

- The borders of the Park mapped in 1974, after a field survey to protect “Marcopolo Sheep”.
- The population of that sheep was around 400 but had dropped to below 180 by the time of the completion of the Karakoram Highway.

Major Fauna

- The primary purpose of this park was to provide protection to the endangered Marco Polo sheep, which is only found in this area in Pakistan.

Snow leopards

- Worldwide---7,000-10,000
- Khunjerab Park---More than 300

Other Mammalian Fauna

- Himalayan ibex
- Himalayan brown bear
- Red fox
- Tibetan wolf
- Blue sheep (many more, see ppts)

Birds Fauna

- Golden Eagle
- Black vulture
- Marsh Harrier
- Eurasian Sparrow Hawk (many more, see ppts)

Important Fact:

- According to WWF officials there is plan to turn “Khunjerab National Park” into “International Peace Park”. To conserve area on both sides of the boarder.

2. Protected landscape-sea scape (3)

- A protected area where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value.
- Where safeguarding the integrity of this interaction is vital to protect and sustain the area and its associated nature conservation and other values.

3. Location of astor wildlife sanctuary

- Astore District
- Between Nanga Parbat
- Gilgit–Baltistan, Pakistan

2- Why Markhor is hunted? 2

Markhor hunting for trophy. (PPTS)

3- Who is Carl Hagenbeck? 2

German collector, Carl Hagenbeck, built the first wild animal park in 1848 • He allowed the animals outdoor access, believing their enclosure should more closely resemble nature • The Zoological Society of London justified London ’s zoological collection as “The advancement of zoology and animal physiology and the introduction of new and curios subjects of the Animal Kingdom.

4- What is Climate Change?

any change in climate over time, whether due to natural variability or as a result of human activity.” Climate change is also taking its toll in wetland degradation.

5- Area of LaL suhanra National Park?

Lal Suhanra is spread over 31,368 hectares Notable for the diversity of its landscape, which includes areas of desert, forest and wetland.

6- Cavity Tree?

Holes excavated in snags by woodpeckers. Shelter and nesting cover by many species.

7- Primary purpose of Astore sanctuary? Primary feature or object of the Astore?

Primary objective The sanctuary is home to a small population of the near threatened species, Markhor. Markhor is National animal of Pakistan. It is a large species of wild goats unique to this region of the world.

Features: ☐ Altitude is from 1,212 m to 6,060 m ☐ Durable and precipitous geography ☐ Mostly consisting of meta- sedimentary stones ☐ Several kinds of igneous stones

Objective: Purpose of conserving the threatened species • Snow leopard • Brown bear • Lynx • Tibetan wolf • Tibetan sand fox • Markhor • Bharal

8- Eagle and Hawk Spiritual Value?

Spiritually significant • Eagles, hawks and their feathers have great cultural and spiritual value to Native Americans as religious objects.

9- Negative impact of predation?

Negative impact of wildlife occurs when growing human populations overlap with established wildlife territory. People lose their crops, livestock, property, and sometimes their lives.

10- Ramser sites of Punjab?

Punjab • Uchhali Complex • Taunsa Barrage • Chashma Barrage

11- Ramser sites of Sindh?

Sindh • Keenjhar (Kalri) Lake • Haleji Lake • Drigh Lake • Indus Dolphin reserve • Jubho lagoon • Nurri Lagoon • DehAkro-II • Indus Delta • Runn of Kutch.

12- Name the three product of wild plants?

Today, variety of plant products like lumber, paper, rubber, oils, dyes, and fibers etc. are supplied by wild plants.

13- Mention places declared by IUCN categories wise?

1. Category I
 - O Category Ia
 - O (Strict Nature Reserve)
 - O Category Ib (Wilderness Area)
2. Category II (National Park)
3. Category III (Natural Monument or Feature)
4. Category IV (Habitat/Species Management Area)
5. Category V (Protected Landscape/\Seascape)
6. Category VI (Protected area with sustainable use of natural resources)

17- Rabies disease?

☐ Rabies (Hydrophobia) : Bite Wound Disease Host: Any mammal, usually carnivores; highest incidence is in skunks, foxes, bats, and raccoons. Transmission: Bite wounds, infected saliva in cuts or skin abrasions, aerosol in bat caves.

18- Margalla Hill beauty?

Elevation range 550m to 1500m. • Rugged topography • Numerous valleys • Precipitous slopes • Margalla hills have beautiful torrents gushing down in the monsoon. • Natural springs are also present. • The Park includes the Margalla Hills which form the foothills of the Himalayas, along with Shakarparian Park and Rawal Lake.

19- Sanctuary purpose?

Animal sanctuaries exist for many specific reasons: Help to protect animals and safeguard their lives. • Animal sanctuaries give new homes to abandoned animals. • Animals rescued from dangerous conditions. • Help to protect animals from illegal activities. • Serve as places where endangered animals breed and are therefore protected.

20- Define Poaching?

Poaching Snow leopards have long been killed for their Beautiful fur, Bones, Body parts, Traditional Asian Medicine.

21- National Parks Name any three? Name of Four National Parks?

01. Margallah Hills National Park. 02. Hazarganji Chiltan National Park: 03. Hingol National Park 04. Kirthar National Park: 05. Ayubia National Park: 06. Chitral Gol National Park:. 07. Sheikh Badin National Park 08. Saiful Maluk National Park. 09. Lulosar Dodipat National Park: 10. broghil valley national park.

27- Wetland Definition?

A wetland is a place where the land is covered by water, either salt, fresh or somewhere in between. Marshes and ponds, the edge of a lake or ocean, the delta at the mouth of a river, low-lying areas that frequently flood—all of these are wetlands.

28- Note on Wildlife?

Wildlife traditionally refers to undomesticated animal species, but has come to include all organisms that grow or live wild in an area without being introduced by humans. Wildlife can be found in all ecosystems. ... This includes such animals as domesticated cats, dogs, mice, and gerbils.

29- Definition of Parks by IUCN?

Large natural or near natural areas (at least 1000 hectares) set aside to protect large-scale ecological processes, which also provide a foundation for environmentally scientific, educational, recreational and visitor opportunities.

30- What is territory?

Territory is the sociographical area that an animal of a particular species consistently defends against conspecifics (or, occasionally, animals of other species). Animals that defend territories in this way are referred to as territorial. Territoriality is only shown by a minority of species. **(Internet)**

31- Economics important of wildlife?

From the economic point of view wildlife is important and serves as source of • Tourism • Animal Protein •

Bushmeat(Wild meat) • Trading of Bushmeat • Ranching and Farming • Traditional medicine/ Pharmaceuticals • Wood.

32- What is Site?

Local Wildlife Sites are areas of land that are especially important for their wildlife. They are some of our most valuable wildlife areas They are corridors for wildlife, forming key components of ecological networks.

33- How many sanctuary in Pakistan? How many Wild sanctuary in Pakistan?

In Pakistan presently there are 99 Wildlife Sanctuaries.

34- At least two criteria for wetland depletion?

(1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water (**Internet**)

36- What are protected area with sustainable use of natural resources?

Protected areas that conserve ecosystems and habitats, together with associated cultural values and traditional natural resource management systems. Generally large, with most of the area in a natural condition. Where a proportion is under sustainable natural resource management. Where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

37- Give Primary objective of Protected Area with Sustainable use of Natural Resources?

Primary objective • To protect natural ecosystems. Use natural resources sustainably, when conservation and sustainable use can be mutually beneficial.

39- What is Park Name?

Park Name Meaning. English and Scottish: from Middle English, Old French parc '**park**'; a metonymic occupational **name** for someone employed in a **park** or a topographic **name** for someone who lived in or near a **park**. In the Middle Ages a **park** was a large enclosed area where the landowner could hunt game.

40- Describe Scientific Role of Wildlife?

Many **wildlife** studies focus on conservation and management, with the aim of learning about the ecology of a population in the field. In such cases, minimising disturbance to the **animals** is important for the **scientific** validity of the research as well as for good animal welfare.

Wild life provides a stability to different natural processes of nature. The **importance of wildlife** can be categorized as ecological **importance**, economic **importance**, investigatory **importance**, conservation of biological diversities etc. **Wildlife** helps in maintaining the balance of nature.

One of the most vital roles of **wildlife** conservation to humans is food security. Through the protection of forests against deforestation as well as restoring natural habitats, economic opportunities would rise. Moreover, **wildlife** conservation helps in promoting agricultural diversity.

4. Q5: What is importance of Dams. 5

- Dams can play an important role in supporting the economic development of a country and its people.
- Once an urgent need for more electricity, irrigation water, or other service has been demonstrated, an options assessment can show whether a large dam is the best alternative. (ppts)
- **Dams** are **important** because they provide water for domestic, industry and irrigation purposes.
- **Dams** often also provide hydroelectric power production and river navigation. ...
- **Dams** and their reservoirs provide recreation areas for fishing and boating.
- They help people by reducing or preventing floods. (google)

5. 3 name of punjab remsar?3

Punjab

- Uchhali Complex
- Taunsa Barrage
- Chashma Barrage

6. area of chinji national park 2

- Chinji National Park covers a total area of 6,095 hectares (15,061 acres).

7. Pollution and wetlands. 2

Increasing pollutant inputs

- Sediment
- Fertilizer
- Human sewage
- Animal waste
- Road salts
- Pesticides
- Heavy metals

8. What is wild life 2

- “Wildlife” refers to neither cultivated or domesticated nor tamed organisms.
Or
- Organisms that grow or live wild in an area without being intervened by humans.

9. Zones of national parks 3

- Existing use area
- Recreation area
- Cultural/historic area
- Scenic area
- Ecological protected area

What are wetlands?

- Wetlands are areas where water is the primary factor controlling the environment and the associated plant and animal life.
- They occur where the water table is at or near the surface of the land, or where the land is covered by shallow water.

10. tularemia?

Tularemia (rabbit fever)

Host: Rodents and rabbits. fox, beaver, mice, and muskrats and some species of birds.

Transmission: Handling infected animals, contamination of cuts, mosquito/fly/ tick bites, and by inhalation.

11. Location of minitaka game reserve?

Location

- Kilik/Mintaka Game Reserve lies along the border with China
- East of the Korakorum highway and the Khunjerab National Park.

Q1 Bushmeat?

Bushmeat (Wild meat)

Wild meat tends to have less fat than domestic meat and can be a good source of iron, Vitamin A and Vitamin B.

Q2 Endangered & endemic species?

Endemic species: These endemic species can be found in certain specific areas. For example, to come upon endemic animals, small **islands** are great places e.g. Galapagos fauna

Endangered species: An **endangered species** is a [species](#) which has been categorized as very likely to become [extinct](#). e.g. Asian Elephant, Bengal Tiger etc.

Q5 Red list?

The IUCN Red List of Threatened Species, founded in 1964, has evolved to become the world's most comprehensive inventory of the global conservation status of biological species.

Q6 Sanctuary?

Wildlife Sanctuary, is a protected area, provides an undisturbed breeding ground for the protection of wildlife. It is a naturally occurring sanctuary, may be an island.

Q7 In-situ, Ex-situ ?

In Situ Conservation

In-situ conservation, the conservation of species in their natural habitats, is considered the most appropriate way of conserving biodiversity.

Conserving the areas where populations of species exist naturally is an underlying condition for the conservation of biodiversity. That's why protected areas form a central element of any national strategy to conserve biodiversity.

Ex Situ Conservation Methods

Ex-situ conservation is the preservation of components of biological diversity outside their natural habitats. This involves conservation of genetic resources, as well as wild and cultivated or species, and draws on a diverse body of techniques and facilities. Some of these include:

- Gene banks, e.g. seed banks, sperm and ova banks, field banks;
- In vitro plant tissue and microbial culture collections;
- Captive breeding of animals and artificial propagation of plants, with possible reintroduction into the wild; and
- Collecting living organisms for zoos, aquaria, and botanic gardens for research and public awareness.

Q10 CITES?

C.I.T.E.S.: Convention on International Trade in Endangered Species.

Q11 WWF?

W.W.F.: World Wildlife Fund.

Question of 3 marks

Features of protected areas?

Distinguishing features

The area should generally:

Have a largely complete set of expected native species.

Be capable of being managed to ensure minimal disturbance.

Be free of significant direct intervention by modern humans.

Have a full set of expected native ecosystems, largely intact with intact ecological processes, or processes capable of being restored with minimal management intervention.

Be managed for relatively low visitation by humans.

Wetland services?

Wetlands are among the world's most productive environments providing

- Resources
- Enabling recreational activities

- Economic benefits

Source of recreation and tourism opportunities

- Hiking
- Fishing
- Bird watching
- Photography
- Hunting

Flood protection

Acts as natural buffers, soaking up and storing a significant amount of floodwater. A wetland can typically store about three-acre feet of water, or one million gallons. Wetlands are cradles of biological diversity. Providing the water and primary productivity upon which countless species of plants and animals depend for survival. Wetlands are also important storehouses of plant genetic material.

They support high concentrations of

- Invertebrate species.
- Fish
- Amphibians
- Reptiles
- Birds
- Mammals

Source of Food

- Rice, for example, is a common wetland plant, and is a staple diet of more than half of humanity.
- Fisheries (over two thirds of the world's fish harvest is linked to the health of wetland areas.
- Agriculture, through the maintenance of water tables and nutrient retention in floodplains.

Other Benefits

- Timber and other building materials.
- Energy resources, such as peat and plant matter.
- Wildlife resources.

Source of Herbal medicines

A wide range of herbal medicines are obtained from wetlands

Medicinal leeches, *Hirundo medicinalis* for

- Abscesses
- Painful joints
- Glaucoma
- Venous diseases
- Thrombosis

White willow, *Salix alba*, a riverine plant

- Original source of salicylic acid (SA)
- SA is the precursor of aspirin.
- Used in skin care products.

Veterinarian service?

Veterinary Service

Veterinarians are concerned with health of free-ranging wildlife populations and deals with the health of diverse range of species. Veterinarians make important contributions to zoos, wildlife conservation, and ecosystems.

Causes of habitat loss?

Loss of Habitat

Habitat loss poses the greatest threat to species. Habitat destruction is identified as a main threat to 85% of all species described in the IUCN's Red List. The world's forests, swamps, plains, lakes, and other habitats continue to disappear as they are harvested for human consumption.

Wildlife board?

Constitution of Board

The Board shall consist of

Chairman

Vice-Chairman

Number of members as may be appointed by Government.

Chief Minister of the Punjab shall be the chief warden and *ex-officio* Chairman of the Board.

Minister incharge of the Department shall be the *ex-officio* Vice Chairman of the Board.

Secretary to Government, Forestry, Wildlife, Fisheries and Tourism Department shall be the *ex-officio* Secretary of the Board.

Experimental animals?

1. Animals -

- Monkeys, Rabbits, Guinea-pigs, Rats etc.

Types of wild ecosystem?

Snag & cavity trees?

Snags:

- Dead or partially dead standing trees. Nesting sites for forest-dwelling bats/birds.

Cavity Trees:

- Holes excavated in snags by woodpeckers. Shelter and nesting cover by many species.

Questions for 5 marks

Threats to wetlands?

Threats to Wetlands

Half of the world's wetland have disappeared since long.

- Continued development in all aspects is the need of hour with proper management

Unmanaged activities pose major threats to wetlands, despite their value and importance

Human Activities:

Unfortunately, the increasing population pressure at the beginning of the last century, tightly inter connected with

- Growing need for food resources
- Poor knowledge of ecology of wetlands
 - “Wasted land”
 - Source of diseases

Industrial Development:

The rapid industrial development at the beginning of 19th century led to present-day situation of wetland being affected by human activities.

Major threats to wetlands:

Conversion of wetlands for:

- Commercial development
- Drainage schemes
- Extraction of minerals
- Overfishing
- Pollutants
- Constructions of dams

Industrial Threat to Wetlands

Industrialization and urbanization cause wetland degradation and loss by

- Changing quality & quantity of water
- Flow rates
- Increasing pollutant inputs
 - Sediment
 - Fertilizer
 - Human sewage
 - Animal waste
 - Road salts
 - Pesticides
 - Heavy metals

Hundreds of thousands of hectares of wetlands have been drained for agriculture

- Globally, agriculture accounts for 65% of the total water withdrawal on Earth
- The result is that as the water level drops, millions of trees and plants are dying because they are deprived of their life-sustaining supplies.
- Many small, medium and large modern industries emerged on the banks of the backwaters and rivers.
- They dump their wastes into the waterbed in an attempt to save the costs of pollution abatement
- Agriculture and other industries such as paper making are often very wasteful and inefficient with water.
- Intensive use of agrochemicals has become a major threat for wetlands.
- They causing encroachment, reclamation, pollution, eutrophication, and biodiversity loss.

Invasive Species

Introduction of non-native species is posing a major threat to the wetlands.

An invasive or alien species is established outside of its natural past or present distribution, whose introduction and/or spread threaten biological diversity.

Impact of invasive species

Invasive species have had severe impacts on

- local aquatic flora and fauna

- Can upset the natural balance of an ecosystem.
- An analysis of the IUCN Red List shows that alien species is one of the most common threat associated with species that have gone completely extinct.
- Weeds(lantana, salvinia, caulerpa) and pest animals(pigs) compete with native wetland species and habitats.
- May replace them altogether by affecting water quality and destroy habitats through digging and wallowing.
- An introduced plant lippia and fish European carp displaced native fish in rivers and wetlands

Pollution

Wetland degradation is a big and growing problem occurring due to pollution inputs.

Degraded wetlands are less able to perform their functions effectively. Pollution is the process or act that human did during routine activities and contaminated the environment Harmful chemical substances may cause disturbance in environment health. Although wetlands are capable of absorbing pollutants from the surface water. BUT there is a limit to their capacity to do so.

The primary pollutants causing wetland degradation are

- Sediments
- Fertilizers
- Human sewage
- Animal waste
- Road salts
- Pesticides
- Heavy metals

Pollutants can originate from many sources, including:

- Runoff from urban, agricultural and mining areas.
- Air pollution from cars, factories, and power plants.
- Old landfills and dumps that leak toxic substances.
- Pollution in wetlands is a growing concern, affecting drinking water sources and biological diversity.
- Drainage and run-off from fertilized crops and pesticides used in industry introduce nitrogen and phosphorous nutrients and other toxins like mercury to water sources.
- Pollution in wetlands is a growing concern, affecting drinking water sources and biological diversity.
- Drainage and run-off from fertilized crops and pesticides used in industry introduce nitrogen and phosphorous nutrients and other toxins like mercury to water sources
- These chemicals can affect the health and reproduction of species, posing a serious threat to biological diversity.

Climatic Change

Climate change refers to

“any change in climate over time, whether due to natural variability or as a result of human activity.”

Climate change is also taking its toll in wetland degradation.

Change in climate poses a fundamental threat to everything we love.

- Rise in temperature

- Melting glaciers
- Rising sea levels
- More frequent weather extremes.

The changes in turn leads to

- Wetlands being swamped
- Some species of mangrove trees being submerged and drowned.
- Other wetlands- estuaries, floodplains, and marshes - are being destroyed through drought.

Vegetation Damage

Wetland plants are susceptible to degradation if subjected to hydrological changes.

Activities that can impair wetland vegetation

- Grazing by domestic animals.
- Introduction of nonnative plants that compete with natives.
- Removal of vegetation for peat mining.

A wetland's characteristics evolve when hydrologic conditions cause

- The water table to saturate or inundate the soil for a certain amount of time each year.
- Any change in hydrology can significantly alter the soil chemistry and plant and animal communities

Common hydrologic alterations in wetland areas include:

- Deposition of fill material for development.
- Drainage for development, farming, and mosquito control.
- Dredging and stream channelization for navigation, development, and flood control.
- Diking and damming to form ponds and lakes.
- Diversion of flow to or from wetlands.
- Addition of impervious surfaces in the watershed, thereby increasing water and pollutant runoff into wetlands.

What we can do?

- Conserve and restore wetlands on your property.
- Reduce the amount of fertilizers, herbicides, and pesticides applied to lawns and gardens.

Construction of Dams

The major problem that affects any ecological system is the increase in population and accompanied changes in land use pattern

- Dams can play an important role in supporting the economic development of a country and its people.
- Once an urgent need for more electricity, irrigation water, or other service has been demonstrated, an options assessment can show whether a large dam is the best alternative.

Dams and Wetlands:

- Worldwide there are now over 40,000 dams which alter the natural flow of water and impact on existing ecosystems.
- Whilst there is much debate about the need for dams to be built

- WWF argues that development should be as sustainable as possible to ensure minimum negative impact on biodiversity.

Categories of zoo+rules?

Categories of Zoo

Based on area, Zoological garden can be categorized into four Zoos

- Large Zoo
- Medium Zoo
- Small Zoo
- Mini Zoo

Areas in hectares of the various categories of zoo

- i. Large Zoo (More than 75)
- ii. Medium Zoo (50-75)
- iii. Small Zoo (20-50)
- iv. Mini Zoo (Less than 20)

Number of the Animals exhibited

- Large Zoo (More than 750)
- Medium Zoo (500-750)
- Small Zoo (200-499)
- Mini Zoo (200)

Animal Variety exhibited

- Large Zoo (More than 75 numbers)
- Medium Zoo (50-75 numbers)
- Small Zoo (20-49 numbers)
- Mini Zoo (20 numbers)

Number of Endangered Species Exhibited

- Large Zoo (More than 15)
- Medium Zoo (15-10)
- Small Zoo (9-5)
- Mini Zoo (Less than 5)

Annual Number of Visitors per Year

- Large Zoo (More than 0.75 million)
- Medium Zoo (0.5-0.75 million)
- Small Zoo (0.5-0.2 million)
- Mini Zoo (Less than 0.2 million)

Zoo Rules

Zoo is a facility in which animals are

- Housed within enclosures
- Displayed to the public
- They may also breed
- “Today, the zoo is on the list of inevitable field trips and vacation destinations.”
- Zoos have been known for thousands of years, with well-known collections of animals
 - i. Egypt
 - ii. China
 - iii. Rome

The Period of the Kings and Emperors

- King Henry I created the first wild animal menagerie in Britain
- Animal menageries remained private collections until the early part of the 19th century
- After that open to the general public

Public Access

- Public accessibility in Western Europe began at zoological collections in
- Paris
- Vienna
- Dublin
- London lately

Place &Year of starting of Zoos

i.	Vienna zoo	1752
ii.	Paris zoo	1793
iii.	London zoo	1826
iv.	Calcutta zoo	1854
v.	Trivandrum zoo	1857
vi.	Philadelphia zoo	1874

- German collector, Carl Hagenbeck, built the first wild animal park in 1848
- He allowed the animals outdoor access, believing their enclosure should more closely resemble nature
- The Zoological Society of London justified London ’s zoological collection as

“The advancement of zoology and animal physiology and the introduction of new and curios subjects of the Animal Kingdom

One of main three National parks?

Ayubia National Park

Ayubia National Park was declared a National Park in 1984. Ayubia was named after Muhammad Ayub Khan, the then President of Pakistan.

Location:

Abbottabad District, Khyber Pakhtunkhwa- Pakistan.

Area:

Initial area was 1684 ha, expanded through northern extension in 1998. Total area 3,312 hectares (8,184 acres)

Features:

- This National park is surrounded by three small towns (Nathia gali, Ayubia and Khanaspur)
- Rainfall: 1,244 cm
- Temperature: 3 °C - 11 °C

The Area Supports

- Temperate coniferous forest
- Temperate broadleaf and mixed forest
- These forests have an average elevation of 8,000 feet (2,400 m) above the sea level.

Major Flora:

The park holds 104 species of plants. The main floral species are

- *Cedrus deodara*
- Blue pine
- Yew
- Silver fir
- Horse chestnut
- Oak

Plants belonging to 19 families are known for their medicinal properties.

Major Birds Fauna:

- The park harbors up to 203 species of birds.
- Golden eagle
- Vulture
- Eurasian sparrow
- Hawk
- Hill pigeon
- Khalij Pheasant (30 species)
- Spotted dove
- Collared dove

Major Mammal Fauna:

Ayubia National Park supports 31 species of mammals.

- Asiatic leopard
- Hill fox
- flying squirrel
- Masked civet
- Rhesus Macaque

Indus dolphin sanctuary?**Sukkur And Guddu Barrage Dolphin Reserve**

In 1974 the Government of Sindh declared the Indus River between the Sukkur and Guddu Barrages an Indus dolphin Reserve.

Location:

The Indus Dolphin Reserve is a natural wetland and situated in the Sukkur. From the Sukkur Barrage upstream to the Guddu Barrage near Kashmor, Northern Sindh.

Surveys:

From 1972 to 1978 several surveys were conducted between Guddu and Sukkur Barrages

All of these surveys reported estimation of 187 or fewer animals

- A comprehensive assessment of the Indus River Dolphin population was made of their entire range by various agencies
 - WWF Pakistan
 - The Wildlife Departments of Sindh, Punjab and NWFP,
 - The Whale and dolphin Conservation Society, UK
- A minimum abundance estimate of 965 dolphins
- Between Chashma and Taunsa Barrages, 84 dolphins were recorded
- From Taunsa to Guddu Barrages, 259 dolphins
- Highest abundance was the between Guddu and Sukkur Barrages where 602 dolphins were observed.
- A stretch of about 135 km of the Indus River from Sukkur Barrage upstream to Guddu Barrage.
- The Reserve includes the full width of the river when in space and a strip of land three miles wide on either side of the river

Tooshi Game reserve?

Tooshi Game Reserve

Tooshi, a conservation area for Markhor. It is famous for the polo grounds of

- Shandur
- Broghil National Park
- Mastuj
- Booni
- Bamborat: area where the Kalash cultural festival is held every August of the year.

Location:

Tooshi Game Reserve, is located along the paved road to Garam Chashma in Chitral's Lutkho district.

Area:

It covers 1000 hectares.

Features:

It is proposed to be reclassified as a wildlife sanctuary, with readily viewable Markhor population. The jeep ride is just 20 minutes from Chitral town. The Markhor are best seen along the road at dusk. In the late afternoon until dusk, Markhor can be seen while descending to drink water from the passing river.

Loss of Habitat

Habitat loss poses the greatest threat to species. Habitat destruction is identified as a main threat to 85% of all species described in the IUCN's Red List. The world's forests, swamps, plains, lakes, and other habitats continue to disappear as they are harvested for human consumption.

Forest Loss and Degradation

Expansion of agricultural land, intensive harvesting of timber, wood for fuel etc. is the cause of forest loss. Palm oil plantations in the tropical regions of Africa, Latin America, and Asia have led the large scale destruction of important habitat for many species (Orangutans, tigers, elephants, rhinos). In Malaysia and Indonesia where large tracts of rainforest are cleared to grow palm oil crops. It is an estimate that almost 70% of deforested areas are converted to agricultural land.

Coastal and Marine Areas

Population growth, urbanization, and industrialization results in marine and coastal degradation. Poverty, consumption and land-use patterns contribute to the degradation of marine habitats and to the destruction of the species that rely on them to survive.

Drainage of Wetlands

Wetlands are being drained for cultivation and building of roads etc.

Pollution

Pollution of various kinds have adversely affected wild animals.

- **Insecticides**

There has been a considerable damage to birds by insecticides spraying.

- **Oil Spillage**

Oceanic birds are killed by oil spillage from oil tankers in the sea.

- **Noise Pollution**

It causes disturbance of hormonal and reproductive behavior of many wild animals.

- **Water Pollution**

Domestic as well as industrial waste dumped into water bodies causes decline in stocks of fishes.

- Animals like mussels have been unfit for human consumption
 - Various natural calamities like floods, hurricane, fire etc. have also caused massive destruction of wildlife.
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