



**BHARATHIDASAN UNIVERSITY**

Tiruchirappalli- 620024, Tamil Nadu, India

## **Programme: M.Sc., Environmental Science**

**Course Title: FOREST ECOLOGY AND ITS MANAGEMENT**

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### ***Unit-V***

### ***Wild life resources and conservation***

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# Terms

- The terms endangered, extinct, rare, and threatened describe different categories of species conservation status. Here's how they differ:
- 1. Endangered:
  - - A species is classified as endangered when it faces a very high risk of extinction in the near future. This category typically includes species with rapidly declining populations due to factors like habitat loss, hunting, pollution, or climate change.
  - - Example: The Amur leopard is an endangered species due to habitat destruction and poaching.
- 2. Extinct:
  - - A species is considered extinct when there are no living individuals of that species left anywhere on Earth. Extinction can be confirmed after extensive surveys and evidence showing that the species no longer exists in the wild or in captivity.
  - - Example: The dodo bird, which became extinct in the late 17th century, is a well-known example.

- . Rare: A species is described as rare if it has a small population but is not necessarily at risk of extinction. A species can be rare due to geographic isolation, habitat specificity, or low population density but may not be considered endangered or threatened.
- Example: The Javan rhinoceros is a rare species, with very few individuals left in the wild, but it is also classified as critically endangered.
- 4. Threatened: A species is classified as threatened if it is likely to become endangered in the near future. Threatened species face declining populations due to environmental changes or other risk factors but have not yet reached the critical thresholds of an endangered status.
- Example: The polar bear is a threatened species because its habitat is shrinking due to climate change.
- In summary:
  - - Extinct: No longer exists.
  - - Endangered: High risk of extinction soon.
  - - Rare: Small population but not necessarily endangered.
  - -Threatened: Likely to become endangered in the near future.

# Endangered Mammals

- **Bengal Tiger (*Panthera tigris tigris*)**: India's national animal, found in various forests and grasslands across the country.
- **Asiatic Lion (*Panthera leo persica*)**: Found only in the Gir Forest of Gujarat.
- **Indian Rhinoceros (*Rhinoceros unicornis*)**: Primarily found in Assam, especially in Kaziranga National Park.
- **Snow Leopard (*Panthera uncia*)**: Found in the high-altitude regions of the Himalayas.
- **Nilgiri Tahr (*Nilgiritragus hylocrius*)**: An endangered mountain goat found in the Nilgiri Hills and the Western Ghats.
- **Kashmir Stag (*Cervus canadensis hanglu*)**: Also known as the Hangul, found in the Kashmir Valley.
- **Lion-tailed Macaque (*Macaca silenus*)**: Found in the Western Ghats.
- **Red Panda (*Ailurus fulgens*)**: Found in the Eastern Himalayas and Arunachal Pradesh.
- **Dhole (*Cuon alpinus*)**: Also known as the Indian wild dog, found in forested areas across the country.
- **Pygmy Hog (*Porcula salvania*)**: Found in Assam, this is one of the world's smallest and most endangered wild pigs.

# Endangered Reptiles

- **Gharial (*Gavialis gangeticus*):** A critically endangered crocodile species found in the rivers of northern India.
- **Indian Python (*Python molurus*):** Found in the forests of India, facing threats from habitat loss and poaching.
- **King Cobra (*Ophiophagus hannah*):** Found in the forests of the Western Ghats and Northeast India.
- **Indian Star Tortoise (*Geochelone elegans*):** Found in dry regions of India, often poached for the pet trade.
- **Olive Ridley Turtle (*Lepidochelys olivacea*):** Found along the eastern coast of India, especially known for mass nesting in Odisha.

# Endangered Birds

- **Great Indian Bustard (*Ardeotis nigriceps*)**: Critically endangered, found in the grasslands of Rajasthan and Gujarat.
- **Siberian Crane (*Grus leucogeranus*)**: A migratory bird, occasionally found in Bharatpur, Rajasthan.
- **Indian Vulture (*Gyps indicus*)**: Found in the Indian subcontinent, severely threatened by diclofenac poisoning.
- **Forest Owlet (*Heteroglaux blewitti*)**: A critically endangered owl species found in the forests of central India.
- **White-bellied Heron (*Ardea insignis*)**: Found in the foothills of the eastern Himalayas.
- **Nicobar Megapode (*Megapodius nicobariensis*)**: Found in the Nicobar Islands.
- **Jerdon's Courser (*Rhinoptilus bitorquatus*)**: A nocturnal bird found in the state of Andhra Pradesh.

# Endangered Plants

- ***Cycas beddomei***: A type of cycad found in the Eastern Ghats, critically endangered due to habitat loss.
- ***Nepenthes khasiana***: A rare carnivorous plant found in Meghalaya.
- ***Pterocarpus santalinus* (Red Sanders)**: A rare tree species found in Andhra Pradesh, known for its valuable wood.
- ***Boswellia serrata* (Indian Frankincense)**: Found in dry forests of India, facing threats from overharvesting.
- ***Saraca asoca* (Ashoka Tree)**: Sacred tree, endangered due to habitat destruction and overuse for medicinal purposes.
- ***Saussurea obvallata* (Brahma Kamal)**: A rare flowering plant found in the Himalayas, often associated with Hindu mythology.
- ***Diospyros celebica***: A species of ebony tree found in the Western Ghats, endangered due to deforestation.
- ***Rauvolfia serpentina* (Indian Snakeroot)**: Used in traditional medicine, facing overexploitation.

# Wildlife Management and Protection

- Wildlife management and protection involve a range of strategies, policies, and actions aimed at conserving wildlife species and their habitats. In India, these efforts are crucial due to the country's rich biodiversity, which is under threat from habitat loss, poaching, human-wildlife conflict, and climate change. Below are key aspects of wildlife management and protection:
- **1. Legal Framework**
- India has several laws and regulations to protect wildlife and their habitats:
- **Wildlife Protection Act, 1972:** The cornerstone of wildlife protection in India. It provides for the protection of wild animals, birds, and plants, and the creation of protected areas like national parks and sanctuaries. It also includes provisions for hunting bans, penalties for poaching, and guidelines for managing wildlife habitats.
- **Forest Conservation Act, 1980:** Regulates the diversion of forest land for non-forest purposes and aims to prevent deforestation, thereby conserving habitats.
- **Environment Protection Act, 1986:** Provides for the protection and improvement of the environment, including wildlife habitats.
- **Biodiversity Act, 2002:** Focuses on the conservation of biological diversity, sustainable use of its components, and fair sharing of benefits arising from the use of biological resources.



- **2. Protected Areas**

- Protected areas are key to wildlife conservation in India:
- **National Parks and Wildlife Sanctuaries:** India has over 100 national parks and 500 wildlife sanctuaries that provide safe havens for wildlife. These areas are managed to conserve ecosystems and species, often involving anti-poaching measures, habitat restoration, and research.
- **Tiger Reserves:** Under Project Tiger, launched in 1973, India has established numerous tiger reserves to protect the endangered Bengal tiger and its habitat.
- **Biosphere Reserves:** These are regions that include protected areas and buffer zones where sustainable development is promoted alongside conservation. India has 18 biosphere reserves, recognized under UNESCO's Man and the Biosphere (MAB) Programme.

- **3. Anti-Poaching Efforts**

- Poaching is a significant threat to wildlife, and various measures are in place to combat it:
- **Wildlife Crime Control Bureau (WCCB):** A statutory body under the Ministry of Environment, Forest and Climate Change, it combats wildlife crime by gathering intelligence, conducting operations, and working with other law enforcement agencies.
- **Use of Technology:** The deployment of technologies like drones, camera traps, and satellite tracking helps monitor wildlife populations and detect illegal activities.
- **Community Involvement:** Local communities are increasingly involved in conservation efforts, which helps to reduce poaching by providing alternative livelihoods and fostering a sense of stewardship.

- **4. Human-Wildlife Conflict Management**

- As human populations expand, conflicts with wildlife are becoming more common. Strategies to manage this include:
- **Habitat Corridors:** Establishing wildlife corridors that connect fragmented habitats allows animals to move safely between them, reducing encounters with humans.
- **Compensation Schemes:** Providing compensation to farmers and villagers for livestock loss or crop damage caused by wildlife helps reduce retaliatory killings.
- **Awareness and Education:** Educating communities about living in harmony with wildlife and the importance of conservation.

- **5. Conservation Programs**

- Several species-specific conservation programs have been implemented:
- **Project Tiger:** Focuses on the conservation of tigers and their habitats.
- **Project Elephant:** Aims to protect elephants, their habitats, and corridors, and to address issues of human-elephant conflict.
- **Project Snow Leopard:** Aimed at conserving snow leopards in the high-altitude regions of the Himalayas.

- **6. Habitat Restoration and Reforestation**

- Efforts are made to restore degraded habitats through afforestation, reforestation, and ecological restoration projects. This is crucial for the survival of species that depend on specific habitats.

- **7. Research and Monitoring**

- Continuous research and monitoring are essential for effective wildlife management. This includes:
  - **Population Surveys:** Regular surveys and censuses to monitor species populations and health.
  - **Ecological Studies:** Understanding the ecology and behavior of species to inform conservation strategies.

- **8. International Cooperation**

- India is a signatory to several international treaties and conventions, such as:
  - **Convention on International Trade in Endangered Species (CITES):** Regulates the trade in endangered species to prevent exploitation.
  - **Convention on Biological Diversity (CBD):** A global agreement addressing all aspects of biological diversity.
  - **Ramsar Convention:** Focuses on the conservation and wise use of wetlands, which are critical habitats for many species.

- **9. Public Participation and Awareness**

- Engaging the public in wildlife conservation through awareness campaigns, education programs, and eco-tourism initiatives is vital for building a conservation ethic.

- **10. Sustainable Development**

- Balancing development with conservation is key. Integrating wildlife management into land-use planning and promoting sustainable livelihoods can help protect biodiversity while supporting human communities.

# Wild Life Projects in India

- The protection of wild species and their natural habitat from various dangers, such as poaching, killing, smuggling, etc., is accomplished through wildlife conservation. By doing so, we may improve, restore, and safeguard the environment.
- At both the national and international levels, several attempts have been made to conserve wildlife. Numerous NGOs are working to protect wildlife.
- One of the notable international accords is the 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (also known as CITES). It categorises diverse species into numerous groups.

- There are two approaches to conserving wildlife:
- Ex-situ conservation
- In-situ conservation
- Ex-situ conservation involves removing wild animals from their natural habitat and relocating them to a new location in order to protect biodiversity. Consider the zoo.
- In-situ conservation: As an illustration, consider a wildlife sanctuary. In this, the species remain in their original habitats, and the location is safeguarded by preserving its entire ecosystem.

# List of Animal Conservation Projects in India:

- Project Tiger
- Project Elephant
- Project Snow Leopard
- Project Hangul
- Project Rhinoceros
- Project Crocodile Conservation
- Project Vulture
- Project Red Panda
- Project Gangetic River Dolphin
- Project Great Indian Bustard
- Project Cheetah

# 1. Project Tiger

- **Launched:** 1973
- **Objective:** To conserve the Bengal tiger (*Panthera tigris tigris*) and its habitats. The project has led to the establishment of numerous tiger reserves across the country, aimed at protecting tigers from poaching and habitat destruction.
- Current IUCN Status: **Endangered**
- Current Tiger Population In India: **2967**
- Current Tiger Reserves In India: **53**
- First Tiger Reserve: **Jim Corbett Tiger Reserve (Uttarakhand)**
- Latest Tiger Reserve: **Guru Ghasidas National Park And Tamor Pingla Wildlife Sanctuary (Chhattisgarh)**
- **Top 3 States In Terms Of Number Of Tigers:**
  - Madhya Pradesh (526)
  - Karnataka(524)
  - Uttarakhand (442)



# Project Elephant:

- Year Of Launch: **1992**
- Current IUCN Status: **Endangered**
- Current Elephant Population In India: **29,964**
- Current Elephant Reserves In India: **32**
- First Elephant Reserve: **Singhbhum Elephant Reserve of Jharkhand.**
- Latest Elephant Reserve: **Agasthyamalai In Tamil Nadu.**
- **Top 3 States In Terms Of Number Of Elephants:**
  - Karnataka (6,049)
  - Assam (5,719)
  - Kerala (3,054)
- Objective: To protect elephants, their habitats, and corridors, and to address issues related to human-elephant conflict. The project also focuses on the welfare of domesticated elephants. Establishment of elephant reserves and corridors, improved protection measures, and efforts to mitigate human-elephant conflicts.

# Project Snow Leopard

- **Launched:** 2009
- Current IUCN Status: **Vulnerable**
- Current Vulture Population In India: **500**
- Conservation Efforts: Snow Leopard Conservation Breeding Program Is Undertaken At **Padmaja Naidu Himalayan Wildlife Park In Darjeeling, West Bengal.**
- **Objective:** To conserve the snow leopard (*Panthera uncia*) and its fragile high-altitude habitat in the Himalayas. The project also aims to involve local communities in conservation efforts. Enhanced understanding of snow leopard populations and their habitats, better conservation strategies, and community participation.

# Project Hangul

- **Launched:** 1970s
- **Objective:** To protect the critically endangered Kashmir stag or Hangul (*Cervus canadensis hanglu*), found in the Dachigam National Park in Jammu and Kashmir. Efforts to conserve the Hangul have included habitat protection, population monitoring, and research, although challenges remain.

# Project Rhino

- Year Of Launch: **2005, Indian Rhino Vision: 2020**
- Current IUCN Status: **Vulnerable**
- Current Rhinoceros Population In India: **2900**
- Conservation Efforts: In **4 Protected Areas In Assam**: Pobitora Wildlife Reserve, Rajiv Gandhi Orang National Park, Kaziranga National Park, And Manas National Park.
- **Objective**: To conserve the Indian rhinoceros (*Rhinoceros unicornis*), primarily found in Assam's Kaziranga National Park and other protected areas. The project focuses on anti-poaching measures and habitat restoration. A significant increase in the rhino population in Kaziranga and other areas, although poaching remains a threat.

# Project Lion

- **Launched:** 2020
- **Objective:** To protect the Asiatic lion (*Panthera leo persica*) found in the Gir Forest of Gujarat. The project includes habitat improvement, reducing human-wildlife conflict, and exploring the possibility of establishing a second population. Strengthened conservation efforts in Gir Forest, though the establishment of a second population is still under consideration.

# Project Vulture

- Year Of Launch: **2006**
- **Vulture Conservation Action Plan 2020-25**
- Current IUCN Status: **Critically Endangered**
- India Is Home To **Nine Species Of Vultures**, But Most Of Them Face The **Danger Of Extinction**.
- Current Vulture Population In India: **19,000**
- Conservation Efforts: **Vulture Conservation Breeding Programme** Was Established By The Central Zoo Authority (CZA) And Bombay Natural History Society (BNHS).
- To Study, The **Cause Of Death Of Vultures** In India A **Vulture Care Centre (VCC)** Was Set Up At Pinjore, Haryana In 2001.
- **Objective:** To conserve the vulture population in India, which has drastically declined due to poisoning from the veterinary drug diclofenac. The project includes breeding programs and efforts to ban harmful drugs. Breeding centers have been established, and the ban on diclofenac for veterinary use has been implemented, leading to some recovery in vulture populations.

# Project Gangetic River Dolphin

- Year Of Launch: **1986**
- Current IUCN Status: **Endangered**
- Current Vulture Population In India: **3,000**
- Conservation Efforts: The MoEFCC Notified The Ganges River Dolphin As The **National Aquatic Animal**.
- Dolphin In India Is Found In The **Ganga And Brahmaputra Rivers**.
- The **Ganges Dolphin** Is Among **The Four 'Obligate' Freshwater Dolphins** Found In The World.
- '**Baiji**' (Yangtze Kiang), '**Bhulan**' Of The Indus (Pakistan) '**Boto**' Of The Amazon River Are The Other Three.
- There Are About **1,272 Dolphins In Uttar Pradesh And 962 In Assam**.
- **Objective:** To protect the Gangetic dolphin (*Platanista gangetica*), India's national aquatic animal. The project focuses on habitat conservation, pollution control, and community involvement. Increased awareness and efforts to improve the habitat and protect this endangered species.

# Project Crocodile

- Year Of Launch: **1975**
- Current IUCN Status: Of **23 Known Crocodile Species**
- **7 – Critically Endangered**
- **4 – Vulnerable**
- **12 – Least Risk**
- The Country's **First Gharial Breeding Center** Was Built In **Nandankanan Zoological Park**.
- **Conservation Efforts:** Initially The Crocodile Conservation Project Was Launched In **Odisha's Satkosia Gorge Sanctuary**.
- It Was Implemented With The Financial Aid Of **The United Nations Development Fund** And The **Food And Agriculture Organization**.
- **Objective:** To conserve India's three crocodile species—the gharial (*Gavialis gangeticus*), mugger (*Crocodylus palustris*), and saltwater crocodile (*Crocodylus porosus*). The project focuses on captive breeding, habitat management, and public awareness. **Impact:** Significant recovery of crocodile populations, particularly the gharial, in protected areas.



# Indian Rhino Vision 2020

- **Launched:** 2005
- Current IUCN Status: **Vulnerable**
- Current Rhinoceros Population In India: **2900**
- Conservation Efforts: In **4 Protected Areas In Assam:** Pobitora Wildlife Reserve, Rajiv Gandhi Orang National Park, Kaziranga National Park, And Manas National Park.
- **Objective:** To increase the population of Indian rhinoceros in Assam to 3,000 by 2020. The project focuses on translocating rhinos to different protected areas and improving habitat management.
- **Impact:** Successful translocation of rhinos to new areas, although the population target was not fully met by 2020.

# Project Crocodile Conservation:

- Year Of Launch: **1975**
- Current IUCN Status: Of **23 Known Crocodile Species**
- **7 – Critically Endangered**
- **4 – Vulnerable**
- **12 – Least Risk**
- The Country's **First Gharial Breeding Center** Was Built In **Nandankanan Zoological Park**.
- **Conservation Efforts:** Initially The Crocodile Conservation Project Was Launched In **Odisha's Satkosia Gorge Sanctuary**.
- It Was Implemented With The Financial Aid Of **The United Nations Development Fund** And The **Food And Agriculture Organization**.

# Project Vulture:

- Year Of Launch: **2006**
- **Vulture Conservation Action Plan 2020-25**
- Current IUCN Status: **Critically Endangered**
- India Is Home To **Nine Species Of Vultures**, But Most Of Them Face The **Danger Of Extinction**.
- Current Vulture Population In India: **19,000**
- Conservation Efforts: **Vulture Conservation Breeding Programme** Was Established By The Central Zoo Authority (CZA) And Bombay Natural History Society (BNHS).
- To Study, The **Cause Of Death Of Vultures** In India A **Vulture Care Centre** (VCC) Was Set Up At Pinjore, Haryana In 2001.

# Project Red Panda:

- Year Of Launch: **1966**
- Current IUCN Status: **Endangered**
- Current Vulture Population In World: **10,000**
- Conservation Efforts: The Project Was Started At **Padmaja Naidu Himalayan Wildlife Park In Darjeeling, West Bengal.**
- Red Panda Is Found In **Arunachal Pradesh, Sikkim,** And The Himalayas Around **Darjeeling.**

# Govt and NGO's for wild life protection

- Both governmental and non-governmental organizations (NGOs) play crucial roles in wildlife protection. They work individually and collaboratively to safeguard wildlife and their habitats. Here's an overview of their roles:
- **1. Governmental Organizations**
- **A. Policy Formulation and Implementation**
- **Ministry of Environment, Forest and Climate Change (MoEFCC):** The central government body responsible for formulating policies related to environmental conservation, including wildlife protection. It oversees the implementation of laws like the Wildlife Protection Act, 1972, and the Forest Conservation Act, 1980.
- **State Forest Departments:** Each state in India has its own forest department responsible for managing forests, wildlife sanctuaries, national parks, and implementing conservation laws at the state level.
- **B. Law Enforcement**
- **Wildlife Crime Control Bureau (WCCB):** A statutory body that combats organized wildlife crime in India by coordinating with state and central agencies, collecting intelligence, and conducting enforcement operations.
- **National Tiger Conservation Authority (NTCA):** Established under the MoEFCC, the NTCA oversees the implementation of Project Tiger, ensuring the protection of tigers and their habitats across India.
- **Central Zoo Authority (CZA):** Regulates and monitors zoos in India, ensuring that they follow standards for animal care and contribute to conservation and education.

- **C. Protected Area Management**

- **Management of National Parks and Wildlife Sanctuaries:** Government bodies manage these protected areas, implementing conservation measures, anti-poaching patrols, habitat restoration, and monitoring wildlife populations.

- **Forest Rangers and Guards:** These personnel are on the frontlines, protecting wildlife from poachers, illegal logging, and other threats, often working in challenging and dangerous conditions.

- **D. Research and Monitoring**

- **Wildlife Institute of India (WII):** An autonomous institution under the MoEFCC, the WII conducts research, training, and capacity-building activities for wildlife conservation and management.

- **National Biodiversity Authority (NBA):** Responsible for the conservation of biodiversity, sustainable use of biological resources, and ensuring equitable sharing of benefits arising from their use.

- **E. Community Engagement and Eco-Development**

- **Joint Forest Management (JFM):** A government-led initiative that involves local communities in the management of forests and wildlife, promoting sustainable practices and reducing human-wildlife conflicts.

# Non-Governmental Organizations (NGOs)

- **A. Advocacy and Awareness**

- **World Wildlife Fund (WWF) India:** WWF works on various conservation projects, including species protection, habitat conservation, and climate change mitigation. They also conduct awareness campaigns to educate the public about the importance of wildlife conservation.
- **Wildlife Trust of India (WTI):** WTI focuses on conserving endangered species, rescuing wildlife, mitigating human-wildlife conflict, and promoting community involvement in conservation efforts.
- **Bombay Natural History Society (BNHS):** BNHS conducts research, advocacy, and education programs to promote the conservation of biodiversity, including wildlife and their habitats.

- **B. Habitat Conservation**

- **Nature Conservation Foundation (NCF):** NCF works on conserving wildlife habitats, particularly in the Western Ghats, Eastern Himalayas, and other biodiversity hotspots in India.
- **The Corbett Foundation:** This NGO focuses on habitat restoration, wildlife research, community development, and education in and around protected areas like Corbett National Park.

- **C. Anti-Poaching Efforts**

- **TRAFFIC India:** A joint program of WWF and IUCN, TRAFFIC works to combat wildlife trade by monitoring and curbing illegal wildlife trade and poaching in India.
- **Save the Elephants:** Focuses on protecting elephants from poaching, promoting anti-poaching initiatives, and working on elephant conservation projects.

- **D. Community-Based Conservation**

- **Foundation for Ecological Security (FES):** FES works with local communities to restore and conserve forest and water resources, thus helping in the protection of wildlife and their habitats.
- **Ashoka Trust for Research in Ecology and the Environment (ATREE):** ATREE engages in research and community-based conservation projects, promoting sustainable livelihoods that align with conservation goals.

- **E. Rehabilitation and Rescue Operations**

- **Friendicoes SECA:** An NGO that runs rescue centers for injured wildlife and provides rehabilitation services to ensure their safe return to the wild.
- **Prakriti Foundation:** Engages in rescue and rehabilitation of distressed wildlife, providing medical care and safe habitats for recovery.



- **E. Research and Conservation Science**

- **Centre for Wildlife Studies (CWS):** CWS conducts research on wildlife, particularly large carnivores, and develops strategies for their conservation through science-based management.
- **Wildlife Conservation Society (WCS) India:** WCS focuses on the conservation of wildlife and wilderness by conducting scientific research, policy advocacy, and community engagement.

- **G. Legal and Policy Advocacy**

- **Environmental Law and Development Foundation (ELDF):** This NGO provides legal assistance and advocacy for wildlife protection, ensuring that laws and policies are effectively implemented.
- **Greenpeace India:** While primarily focused on environmental issues, Greenpeace also advocates for the protection of wildlife habitats and opposes activities that threaten biodiversity.

- **Collaboration Between Government and NGOs**

- **Public-Private Partnerships:** Many government initiatives are supported by NGOs and private organizations, creating a synergy that enhances conservation efforts. For example, the NTCA often collaborates with NGOs for tiger conservation projects.
- **Community-Based Conservation Models:** Government and NGOs often work together to implement conservation models that involve local communities, ensuring that conservation efforts are sustainable and socially inclusive.
- **Capacity Building and Training:** NGOs often provide training and capacity-building support to government forest departments and other agencies to enhance their effectiveness in wildlife protection.

# Role of IUCN, WWF and other international agencies in Wild life management.

- **1. International Union for Conservation of Nature (IUCN)**
- **A. Red List of Threatened Species**
- **Global Standard for Conservation Status:** The IUCN Red List is the world's most comprehensive inventory of the global conservation status of species. It classifies species into categories such as "Endangered," "Critically Endangered," and "Vulnerable," which helps guide conservation priorities.
- **Data for Policy and Action:** Governments and conservation organizations use the Red List data to develop policies, allocate resources, and implement conservation actions for species at risk.
- **B. Protected Area Management**
- **Protected Areas Classification:** IUCN provides guidelines for the management of protected areas, including national parks, nature reserves, and community-conserved areas. These guidelines help standardize the management practices globally.
- **World Commission on Protected Areas (WCPA):** This commission under IUCN promotes the establishment and effective management of protected areas, which are critical for biodiversity conservation.
- **C. Global Conservation Initiatives**
- **Species Survival Commission (SSC):** The SSC is a network of experts working under the IUCN to focus on the conservation of specific species or groups of species. They provide scientific knowledge and strategic advice for species conservation.
- **Biodiversity Assessments:** IUCN conducts biodiversity assessments, which help countries and organizations understand the state of biodiversity and the threats it faces, leading to informed conservation actions.

## 2. World Wildlife Fund (WWF)

- **A. Conservation Programs**
- **Species Conservation:** WWF is involved in various species conservation programs worldwide, focusing on endangered species like tigers, elephants, rhinos, and marine species. These programs often include anti-poaching efforts, habitat restoration, and community engagement.
- **Habitat Conservation:** WWF works to protect and restore critical habitats, such as forests, rivers, and oceans. Their efforts help maintain ecosystems that support wildlife and human communities.
- **B. Advocacy and Policy Influence**
- **Global Advocacy:** WWF engages in global advocacy to influence policies that affect wildlife and the environment. They work with governments, international bodies, and the private sector to promote sustainable practices.
- **Climate Change:** WWF addresses the impact of climate change on wildlife by promoting mitigation and adaptation strategies. They work on projects that aim to reduce carbon emissions, promote renewable energy, and protect ecosystems that are vulnerable to climate change.

- **C. Community-Based Conservation**

- **Community Engagement:** WWF emphasizes the involvement of local communities in conservation efforts. They work on sustainable development projects that benefit both people and wildlife, such as eco-tourism, sustainable agriculture, and forest management.
  - **Education and Awareness:** WWF conducts awareness campaigns and educational programs to build public support for conservation and encourage responsible environmental behavior.
- **D. Fundraising and Partnerships**
  - **Global Fundraising:** WWF raises funds globally to support its conservation projects. This includes partnerships with governments, corporations, and individuals to secure the financial resources needed for large-scale conservation efforts.
  - **Corporate Partnerships:** WWF collaborates with corporations to promote sustainable practices, reduce environmental impact, and fund conservation projects.

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

- **A. Regulation of Wildlife Trade**
- **Controlling Illegal Trade:** CITES is an international agreement between governments that aims to ensure that international trade in wild animals and plants does not threaten their survival. It regulates the trade of over 35,000 species, including many endangered species.
- **Permitting System:** CITES requires that international trade in specimens of selected species is subject to certain controls. These controls require that permits are issued only if the trade is sustainable and does not harm the species' survival in the wild.
- **B. Capacity Building**
- **Training and Support:** CITES provides training and capacity-building support to member countries to help them enforce wildlife trade regulations effectively. This includes training customs officials, wildlife law enforcement officers, and other stakeholders.

# 4. United Nations Environment Programme (UNEP)

- **A. Global Environmental Governance**
- **Policy Development:** UNEP works with governments and international organizations to develop global environmental policies, including those related to wildlife conservation. They play a key role in coordinating international environmental agreements.
- **Ecosystem Management:** UNEP promotes the integrated management of ecosystems to ensure their health and resilience. They work on projects related to forest conservation, marine ecosystems, and biodiversity protection.
- **B. Scientific Research and Data**
- **Global Assessments:** UNEP conducts global assessments of the state of the environment, including biodiversity and wildlife. These assessments provide valuable data for policymakers and conservation organizations.
- **Environmental Monitoring:** UNEP's monitoring programs track changes in the environment, including wildlife populations, habitat loss, and climate change impacts, providing early warning systems for environmental degradation.

- **5. Global Environment Facility (GEF)**
- **A. Funding for Conservation Projects**
- **Financial Support:** GEF provides funding for projects that conserve biodiversity, combat climate change, and protect international waters. These projects often focus on protecting endangered species and their habitats.
- **Biodiversity Conservation:** GEF supports projects that aim to protect biodiversity hotspots, improve protected area management, and restore degraded ecosystems.
- **B. Multi-Stakeholder Collaboration**
- **Partnerships:** GEF works with governments, NGOs, private sector organizations, and other international agencies to implement large-scale conservation projects. This collaborative approach helps to leverage resources and expertise for greater impact.
- **6. The Nature Conservancy (TNC)**
- **A. Land and Water Conservation**
- **Land Acquisition:** TNC works to acquire and protect critical habitats for wildlife, such as forests, grasslands, and wetlands. They often work with local governments and communities to establish protected areas.
- **Water Resource Management:** TNC also focuses on protecting freshwater ecosystems, which are vital for both wildlife and human communities.
- **B. Sustainable Development**
- **Promoting Sustainability:** TNC engages in projects that promote sustainable development practices, such as sustainable agriculture and forestry, which help reduce the pressure on natural habitats.
- **Community-Based Approaches:** TNC works with local communities to develop conservation strategies that benefit both people and wildlife, ensuring long-term sustainability.

# World Bank and International Finance Corporation (IFC)

- **A. Funding Conservation and Development Projects**
- **Financial Investments:** The World Bank and IFC provide funding and investment for projects that integrate wildlife conservation with economic development. These projects often aim to reduce poverty while protecting natural resources.
- **Sustainable Infrastructure:** They support infrastructure projects that minimize environmental impact and promote the conservation of biodiversity, such as eco-friendly tourism initiatives and sustainable agriculture projects.
- **B. Policy and Technical Assistance**
- **Environmental Safeguards:** The World Bank and IFC have environmental safeguards that ensure their funded projects do not harm wildlife and ecosystems. They provide technical assistance to countries to help them comply with these safeguards.
- **Capacity Building:** They offer capacity-building programs to help countries improve their environmental management and conservation practices.



# International Fund for Animal Welfare (IFAW)

- **A. Animal Rescue and Rehabilitation**
- **Wildlife Rescue Operations:** IFAW conducts rescue operations for wildlife affected by disasters, poaching, and illegal trade. They provide medical care, rehabilitation, and release back into the wild when possible.
- **Marine Mammal Protection:** IFAW is particularly active in marine conservation, working to protect whales, dolphins, and other marine species from threats such as bycatch, pollution, and habitat loss.
- **B. Public Education and Advocacy**
- **Awareness Campaigns:** IFAW runs global campaigns to raise awareness about wildlife conservation issues, such as the illegal wildlife trade, habitat destruction, and the impacts of climate change on animals.
- **Advocacy:** They advocate for stronger wildlife protection laws and policies at the national and international levels.

# International Union for Conservation of Nature (IUCN)

- **A. Global Standards for Conservation**
- **Red List of Threatened Species:** The IUCN Red List is the most comprehensive source on the global conservation status of species. It provides critical information that guides conservation action and policy decisions.
- **Protected Area Management:** IUCN provides guidelines and standards for the management of protected areas, helping countries to effectively conserve biodiversity within these areas.
- **B. Scientific Research and Expertise**
- **Species Survival Commission:** IUCN's Species Survival Commission (SSC) is a global network of experts who contribute to the conservation of species through research, monitoring, and action planning.
- **Biodiversity Assessments:** IUCN conducts global biodiversity assessments, providing valuable data and insights that inform conservation strategies and policies.