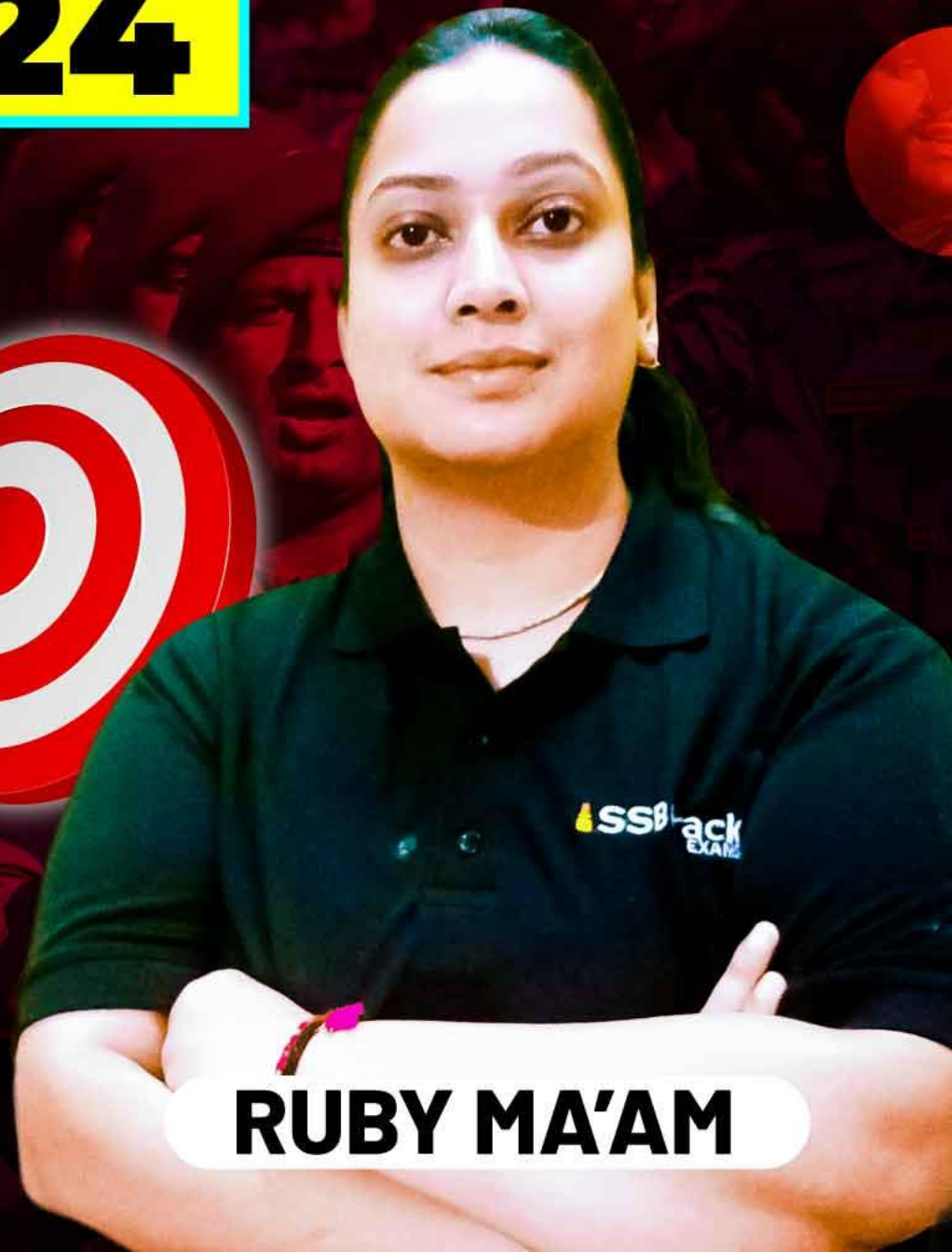
SSBCrack EXAMS

NDA-CDS 2 2024

GK

LIVE

BIOGEOGRAPHY



RUBY MA'AM

10 June 2024 Live Classes Schedule

8:00AM	10 JUNE 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM

SSB INTERVIEW LIVE CLASSES

9:00AM	OVERVIEW OF TAT & WAT	ANURADHA MA'AM

AFCAT 2 2024 LIVE CLASSES

4:00PM	MATHS - ALGEBRA - CLASS 3	NAVJYOTI SIR
5:30PM	ENGLISH - FILL IN THE BLANKS - CLASS 1	ANURADHA MA'AM

NDA 2 2024 LIVE CLASSES

11:30AM	GK - BIOGEOGRAPHY	RUBY MA'AM
2:30PM	GS - CHEMISTRY - CLASS 1	SHIVANGI MA'AM
5:30PM	ENGLISH - FILL IN THE BLANKS - CLASS 1	ANURADHA MA'AM
6:30PM	MATHS - BINOMIAL THEOREM - CLASS 1	NAVJYOTI SIR

CDS 2 2024 LIVE CLASSES

11:30AM	GK - BIOGEOGRAPHY	RUBY MA'AM
2:30PM	GS - CHEMISTRY - CLASS 1	SHIVANGI MA'AM
4:00PM	MATHS - ALGEBRA - CLASS 3	NAVJYOTI SIR
5:30PM	ENGLISH - FILL IN THE BLANKS - CLASS 1	ANURADHA MA'AM

SSBCrack EXAMS

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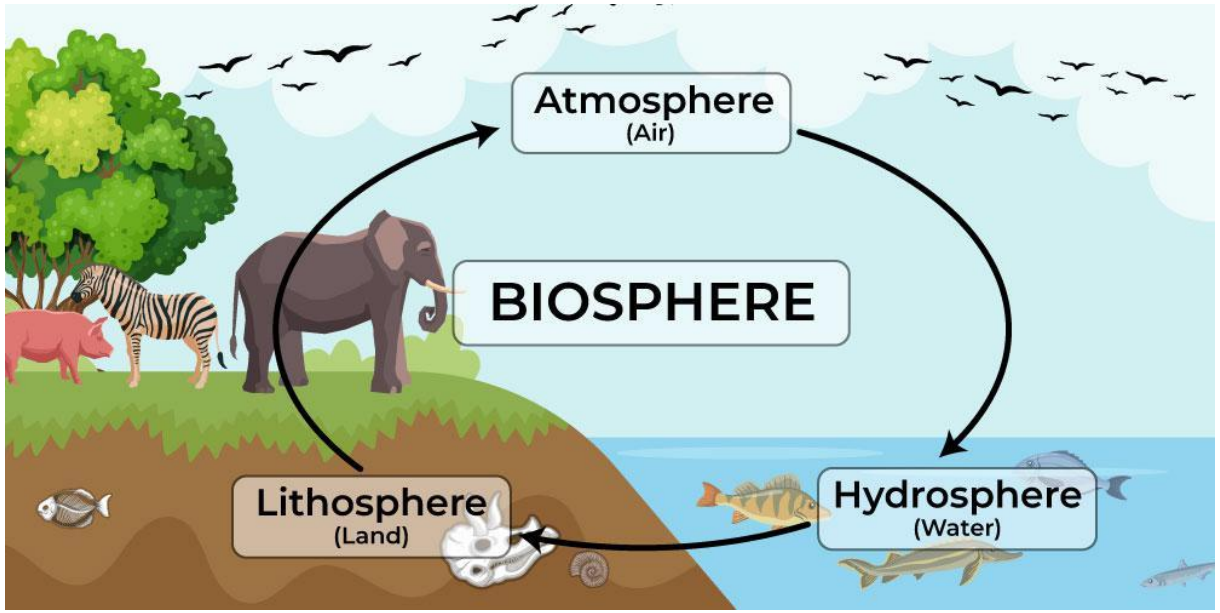
WHAT WILL WE STUDY?

- **Types Of Biosystem, Ecosystem And Its Type**
- **Biomes And Its Type**
- **Enviornmanetal Conservation**

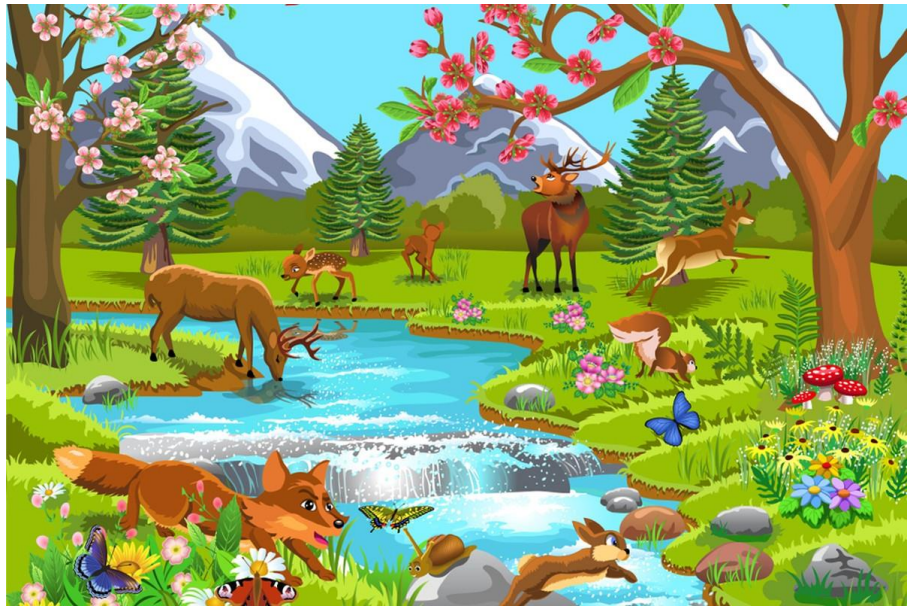
Biosphere

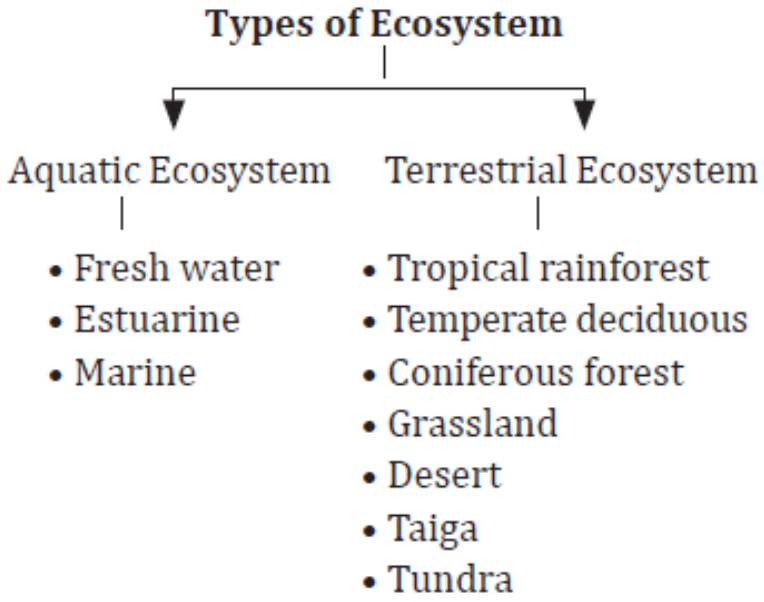
Biosphere Is The **Layer Of The Planet Earth** Where **Life Exists**. This Layer Ranges From Heights Of Up To **Ten Kilometers Above The Sea Level**. **Biosphere** Enables Interaction With The Elements Of The **Lithosphere, Hydrosphere And Atmosphere.**



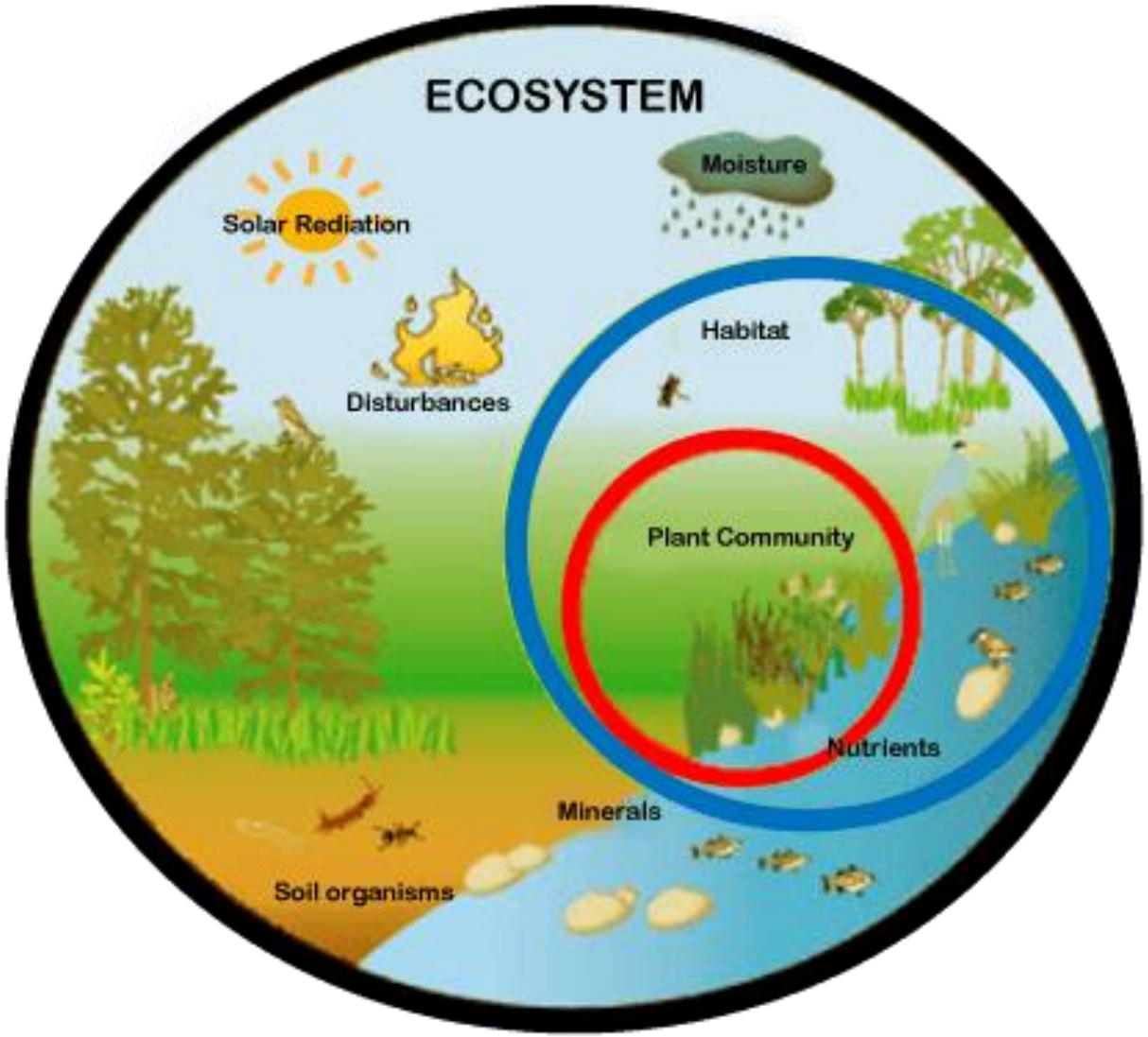
Ecosystem

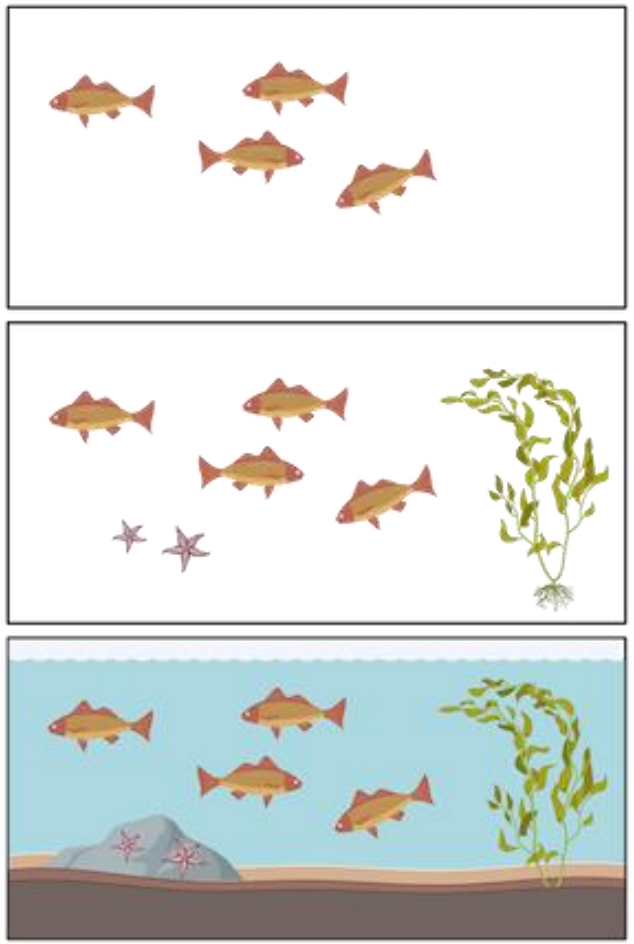
It Is Defined As A **Specific And Recognizable Landscape** Such As **Forest, Wetland, Coastal Area, Grasslands, Deserts**, Etc. Having **Interaction Of Biological Community** And **Physical And Chemical Factors** That Is Made Up Of **Non-living Or Abiotic Environment**.





Ecosystem





population

community

ecosystem

Wetlands

Wetlands Are Lands Which, Due To **Geological Or Ecological Factors**, Have A **Natural Supply Of Water –** Either From **Tidal Flows, Flooding Rivers, Connections With Groundwate**r, Or Because They Are Perched Above **Aquifers**.

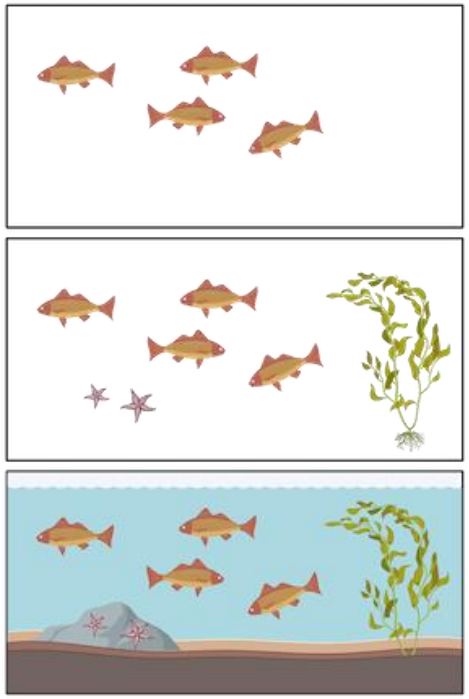
Wetlands Occupy Only **6% Of The Surface Area Of Earth**

Community

A **Group Of Population** Of **Different Species Living Together** In A **Given Area**

With **Mutual Tolerance** And **Beneficiary Interactions** Is Defined As **Community.**

The Species May Be **Plant, Animal Or Microorganism.**

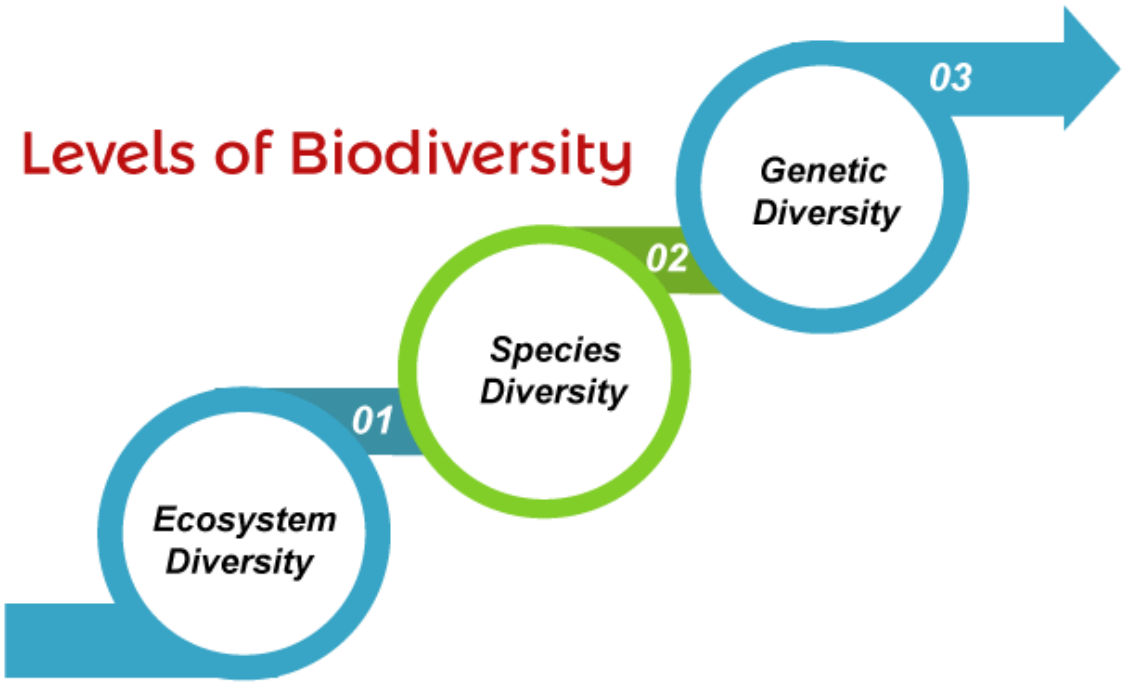


Biodiversity

Biodiversity Means **Diversity Or Heterogeneity** At **All Levels Of Biological Organization**, I.E. From **Macromolecules Of The Cells** To The **Biomass.** The Word Biodiversity Was Postulated By The Sociologist **E.D. Wilson**. **Biologist** Define **Biodiversity** In "**Totality Of Genes", Species And Ecosystems Of Region.**

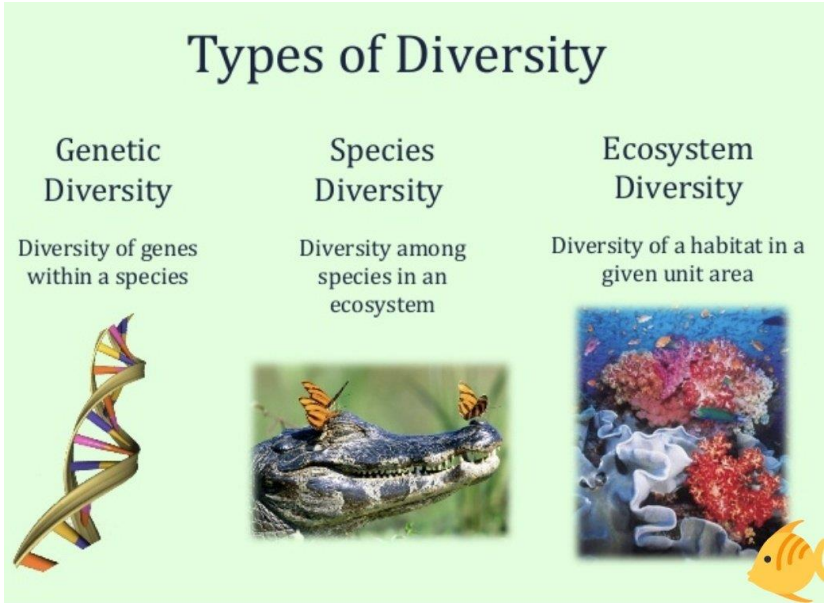
Levels Of Biodiversity

- 1. Species Diversity
- 2. Genetic Diversity
- 3. Ecological Diversity



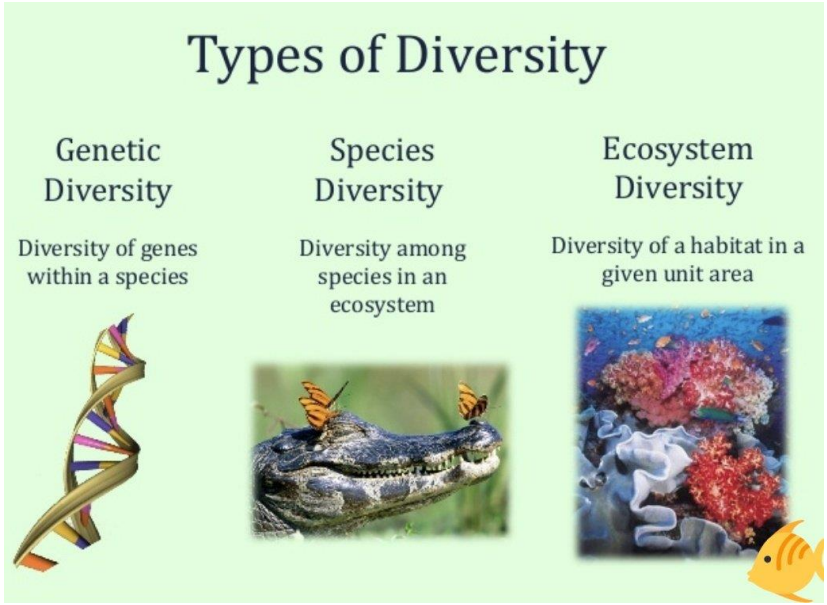
Species Diversity

The **Measurement Of Species Diversity** Is Its **Richness**, I.E. The **Number Of Species Per Unit Area**. **Greater The Species Richness**, **More Will Be The Species Diversity.** In Nature, The **Number And Kind Of Species**, As Well As The **Number Of Individual Per Species, Vary**, And This **Leads To Greater Diversity.**



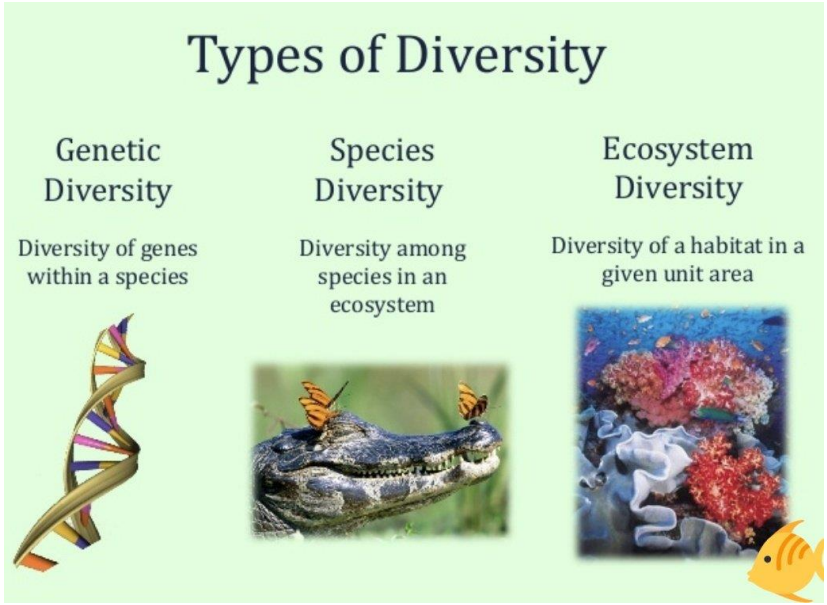
Genetic Diversity

It Is The **Diversity** At **Genetic Level (Sub-species Level** Below **Species Level**), In A **Single Species**. The **Genetic Diversity** Helps The **Population To Adapt**. If A Population Has More Diversity Which Means, It Can **Adapt Better To The Changed Environmental Conditions**. The Low **Diversity Leads To Uniformity.**



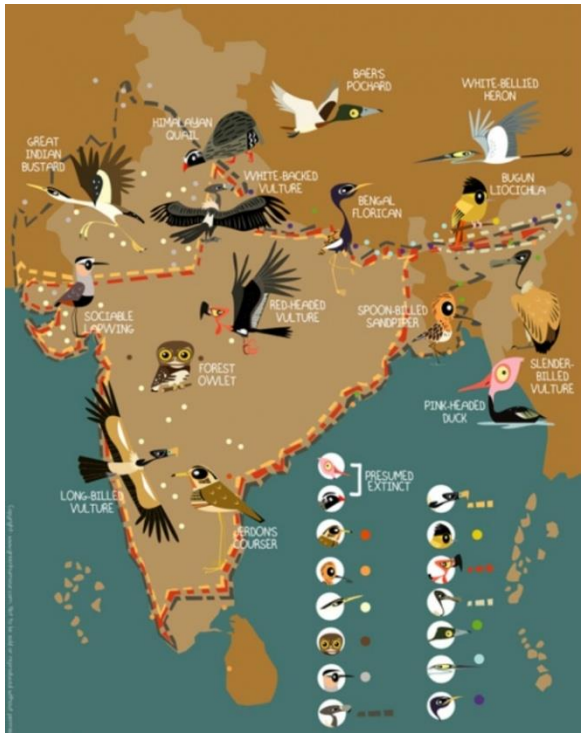
Ecological Diversity

It Is The **Diversity** At **Community Level**. It Refers To All The **Different Habitats** Or **Places That Exist**, Like **Tropical Or Temperate Forests, Hot & Cold Deserts, Wetlands, Rivers**, Etc. It Shows **Interaction Between Biotic** Components And **Abiotic Components.**



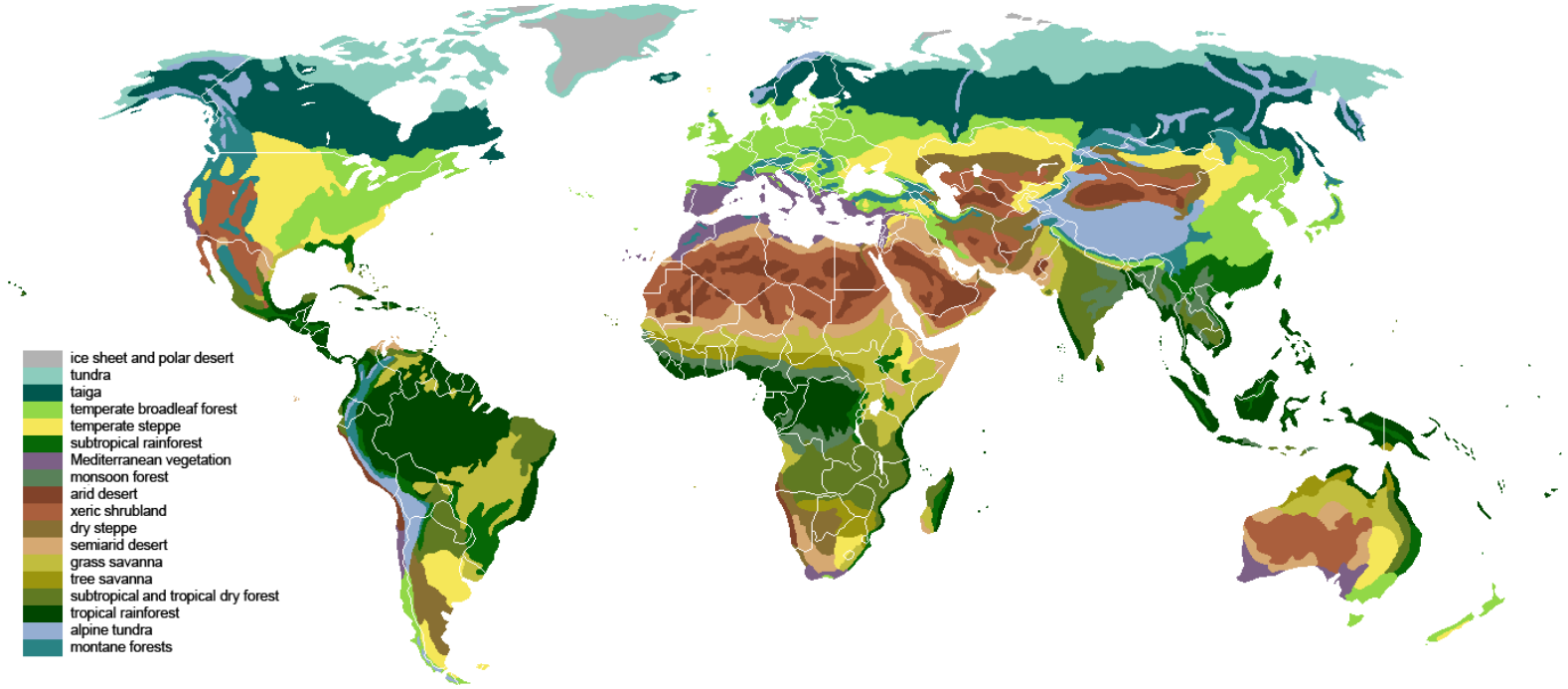
Number Of Species In India

India Is One Of The **12 Mega Diversity Country Of The World**. It Has **2.4%** Of **World Land Area**, But **Global Species Diversity** Is **8.1 %**. In India The Number Of Animal And Plant Species Recorded So Far **Is 90,000 And 45,000** Respectively.



Biomes

Biome Can Be Defined As **Major Ecological Communities** Of **Flora And Fauna**, Which Generally **Extend Over A Large Part Of The Earth Surface** And Usually Characterized By A **Distinct Type Of Vegetation**.



Biomes

Tundra

Coniferous Forests/Temperate Evergreen Forests

Temperate Broadlead Deciduous Forests

Mediterranean Shrublands

Grasslands

Tropical Scrubs / Thornwoods

Deserts

Tropical Deciduous Forests

Tropical Rain Forests

Biogeographic Zones Of India

Biogeographic Zone	Political Boundary	Vegetation Types
1 Trans-Himalaya	Ladakh (Jammu & Kashmir), Lahul and Spiti (Himachal Pradesh).	Alpine scrubs, trees conspicuously absent, except the planted ones.
2 West Himalaya	Jammu & Kashmir (except Ladakh), Himachal Pradesh (except Lahul & Spiti), Garhwal and Kumaon (Uttar Pradesh).	Tropical, Subtropical, Temperate, Subalpine, Alpine.
3 East Himalaya	Sikkim, Darjeeling (West Bengal), Arunachal Pradesh.	Tropical, Subtropical, Temperate, Subalpine.
4 North-East India	Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura.	Tropical, Subtropical, Temperate, Subalpine.
5 The Indian Desert	Western and North Western region of Rajasthan; part of Kutch region of Gujarat.	Vegetation of sand dunes, sandy and hammcky plains, gravelly and rocky plains, saline tracts.
6 Semi-Arid zone	Punjab plains, Haryana, Delhi; fringes of Jammu, Himachal Pradesh; western edge of Uttar Pradesh, eastern Rajasthan and Gujarat; North-west Madhya Pradesh.	Deciduous forests; open scrubs.

Biogeographic Zones Of India

7 Gangetic Plains	From eastern Rajasthan through Uttar Pradesh to Bihar and West Bengal.	Secondary vegetation of xerophytes and open dry grasslands.
8 Deccan Peninsula	Most of Maharashtra, Madhya Pradesh, Karnataka, Tamil Nadu, Andhra Pradesh and Orisssa.	Dry scrubs; dry deciduous, moist deciduous, semi-evergreen.
9 Western Ghats	Narrow stretch from south of river Tapati to Kanyakumari along the west coast.	Dry scrubs; dry deciduous, moist deciduous, semi-evergreen, evergreen, sholas and grasslands.
10 Indian Coasts	Coast line of India from Gujarat to Kanyakumari in the west; Sunderbans to Kanyakumari in the east.	Submerged vegetation, Mangrove and beach forests.
11 Andaman and Nicobar Islands	Group of 348 Islands, islets in the Bay of Bengal.	Submerged and Strand vegetation; Mangrove, tidal, evergreen, semi-evergreen and moist deciduous forests; grasslands.
12 Lakshadweep Islands	Archipelago of 27 small Islands in the Arabian sea.	Virtually no natural vegetation left; coconut plantations common.

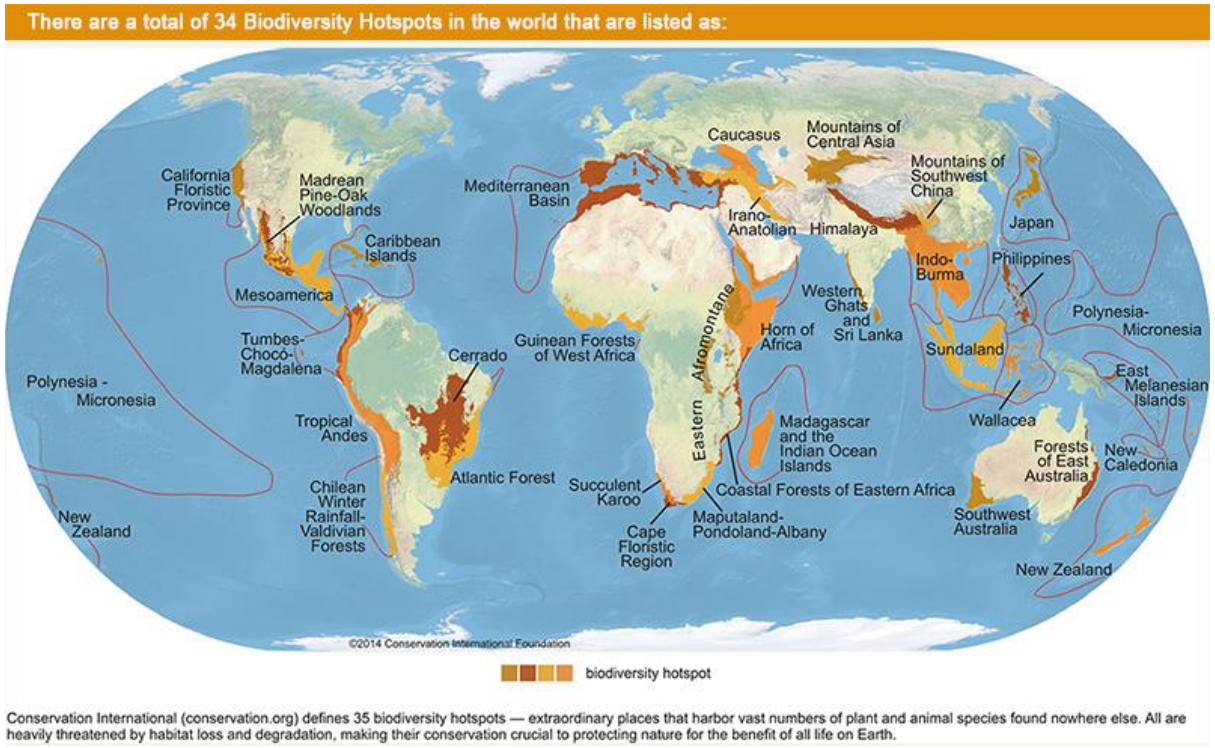
Causes Of Loss Of Biodiversity

There Are **4 major Causes**, Called **'The Evil Quartet'**, For The **Loss Of Biodiversity**

- Habitat Loss And Fragmentation
- Over-exploitation
- Invasion Of Alien Or Exotic Species
- Co-extinctions

Hotspots

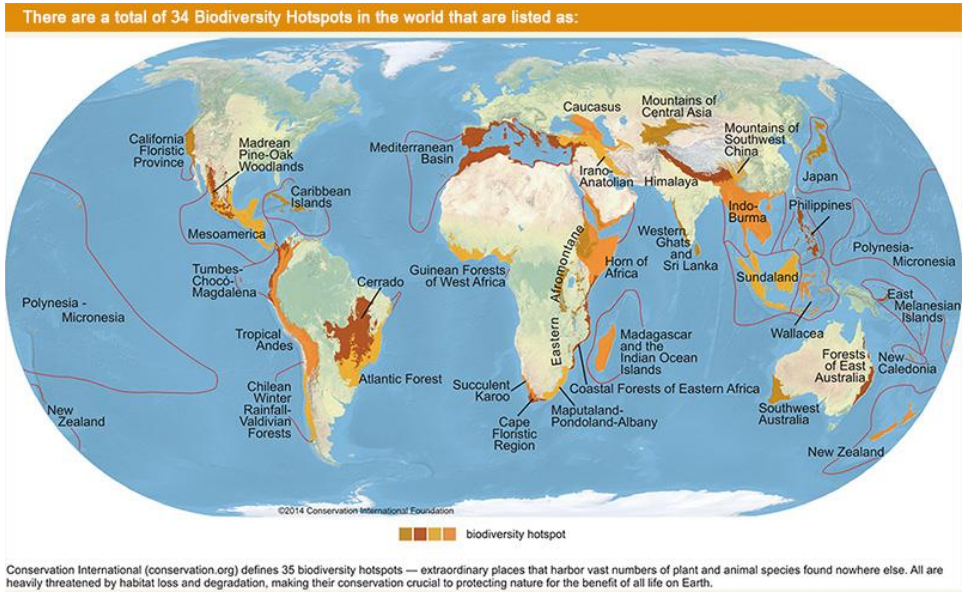
It Is A **Biogeographic Region** With Significant **Levels Of Biodiversity** That Is **Threatened With Destruction**. The Concept Was Given By **Norman Myers** In The Years **1988**.



Conservation International (conservation.org) defines 35 biodiversity hotspots — extraordinary places that harbor vast numbers of plant and animal species found nowhere else. All are heavily threatened by habitat loss and degradation, making their conservation crucial to protecting nature for the benefit of all life on Earth.

Hotspots

There Are **35 Hotspots Present In The World**. They Represent Just **2.3% Of Earth's Land Surface**, They Contain Around **50% Of The World's Endemic Plant Species** And **42% Of Terrestial Vertebrates. 4 Major Hotspot** In India Namely **Western Ghats, The Eastern Himalayas, Indo Burma Region** & **Sundaland.**



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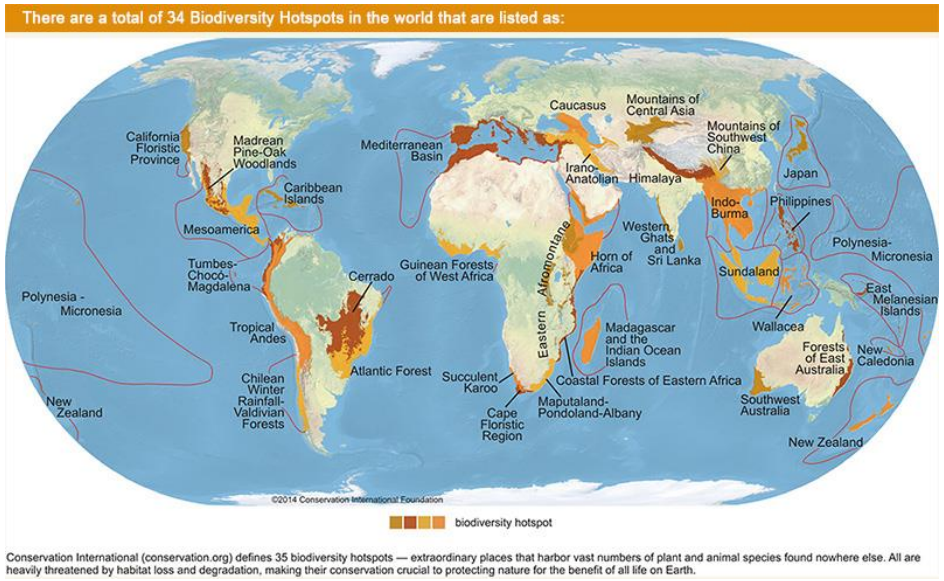
Hotspots

To Qualify An Area As A Hotspot It Should Fulfill **Two Major Criteria**:

1. It Must Contain **At Least 0.5% Or 1500 Species** Of **Vascular Plants** As **Endemics.**

2. It Has **Lost 70% Of Its Primary Vegetation**.



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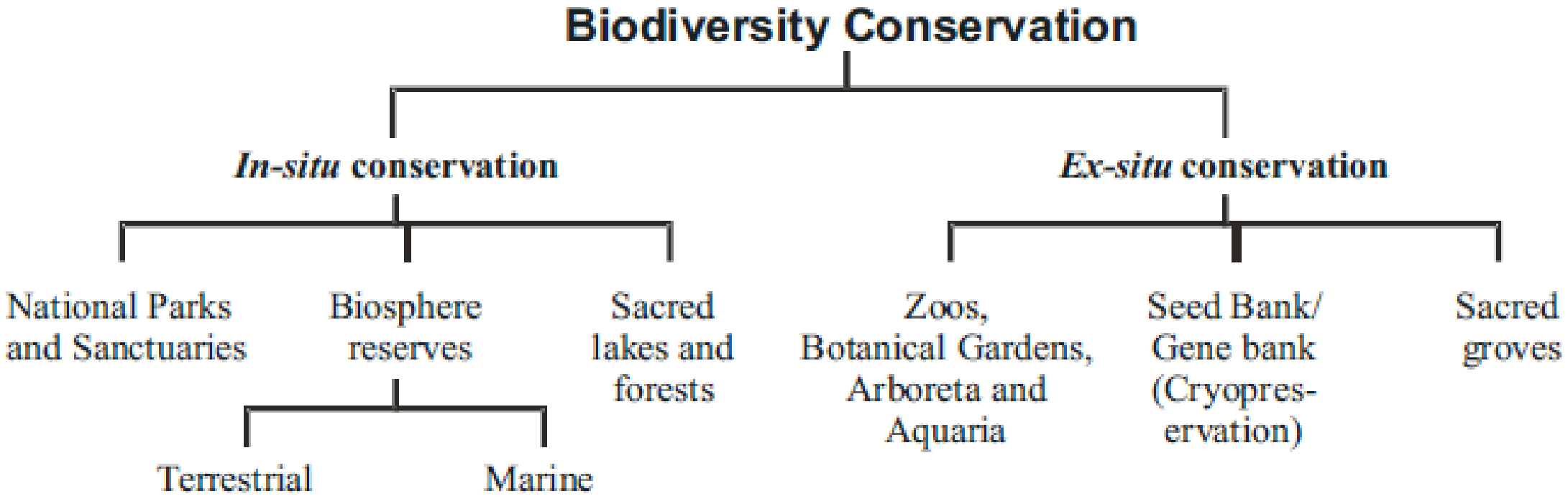
Conservation Of Biodiversity

- The **Conservation Of Biodiversity Can Be**

- **In Situ (On Site)** Or **Ex Situ (Off Site)**



In Situ Conservation

In Such **Conservatio**n The **Endangered Species** Are **Protected** In Their **Natural Habitat** With **Entire Ecosystem**. The **Conservationists, On Global Basis**, Have Identified Certain **Biodiversity Hot Spots.** It Is A **Cheap** And **Convenient Way** Of **Conserving Biological Diversity.**

Ex Situ Conservation

In Such Type Of **Conservation** The **Threatened Animals** And **Plants** Are Taken **Out Of Their Natural Habitat** And Are **Protected In Special Parks** Or Areas Like, **Zoological Parks, Wild Life Safari Parks** And **Botanical Gardens**, Etc. It Provides **Research Opportunities** Of The Components Of **Biological Diversity**.

Zoological gardens

Wildlife Sanctuaries

In **Sanctuaries** The Protection Is Given To **Fauna Only.** The Activity Like **Harvesting Of Timber, Collection Of Forest Products** And **Private Ownership Rights** Are Permitted So Long As They **Do Not Interfere With The Well Being Of The Animals.** It Is **Devoted** Towards **Preservation** Of **Particular Animals.**

WILDLIFE SANCTUARIES IN INDIA

Name of the Sanctuary	Location	Major Species
Gir Wildlife Sanctuary	Sasan Gir, Junagadh, Amreli	Lion, Leopard, Chausinga, Chital, Hyena, Sambar, Chinkara, Herpetofauna, Crocodiles and birds
Wild Ass Sanctuary	Little Rann of Kutch	Wild Ass, Chinkara, Blue bull, Houbara bustard, Wolf, Waterfowls, Herpetofauna
Hingolgadh Sanctuary	Hingolgadh, Rajkot	Chinkara, Blue bull, Wolf, Hyena, Fox, Birds, Herpetofauna
Marine Sanctuary	Gulf of Kutch, Jamnagar	Sponges, Corals, Jellyfish, Sea horse, Octopus,Oyster, Pearloyster, Starfish, Lobster, Dolphin, Dugong, waterfowls
Simlipal Sanctuary	Odisha	Elephant, Tiger, Leopard, Gaur, Cheetal
Kutch Desert Sanctuary	Great Rann of Kutch	Chinkara, Hyena, Fox, Flamingo, Pelicans & other waterfowls, Herpetofauna
Rampara Sanctuary	Rampara, Rajkot	Blue bull, Chinkara, Wolf, Fox, Jackal, Birds, Herpetofauna

Ghana Bird Sanctu-ary	Rajasthan	Water Bird, Black-buck, Cheetal, Sambar
Pachmarhi	Madhya Pradesh	Tiger, Panther, Sambhar, Nilgai, Baskeng, Deer
Dandeli Sanctuary	Karnataka	Tiger, Panther, Elephant, Cheetal, Sanbhar, Wild Boar
Kutch Bustard Sanctuary	Near Naliya, Kachchh	Great Indian Bustard, Lesser Florican, Houbara bustard, Chinkara, Blue bull, Herpetofauna
Manas Wildlife Sanctuary	Srinagar	Tigers, buffaloes, elephants, sambhars, swamp deer, langurs
Periyar Wildlife Sanctuary	Kerala	Wild dogs, Niligiri langurs, otters, tortoise, hornbills
Calimere Wildlife Sanctuary	Kodiyakadu, Tamil Nadu	Flamingos, black bugs, spotted dear, wild pigs
Anamalai Wildlife Sanctuary	Pollachi, Tamil Nadu	Elephants, gaurs, tigers, panthers, deer, boars, wild cats

National Parks

They Are **Reserved For The Betterment** Of **Wild Life**, Both **Fauna And Flora.**

In **National Parks Private Ownership Is Not Allowed**. The **Grazing,**

Cultivation, Forestry Etc. Is Also Not Permitted. National Parks Are Devoted

Towards **Preservation** Of **Entire Ecosystem.**

NATIONAL PARKS IN INDIA

Name	State	Notability
Bandipur National Park (1974)	Karnataka	Chital, grey langurs, Indian giant squirrel, gaur, leopard, sambar deer, Indian elephants, honey buzzard, red-headed vulture and other animals.
Bannerghatta National Park (Bannerghatta Biological Park) (1974)	Karnataka	White Tiger, Royal Bengal Tiger, Bear, other animals
Betla National Park (1986)	Jharkhand	Tiger, Sloth Bear, Peacock, Elephant, Sambar deer, mouse deer and other animals.
Bhitarkanika National Park (1988)	Odisha	Mangroves, Saltwater crocodile, white crocodile, Indian python, black ibis, wild pigs, rhesus monkeys, chital and other animals
Buxa Tiger Reserve (1992)	West Bengal	Tiger
Dachigam National Park (1981)	J&K	Only area where Kashmir stag is found
Dudhwa National Park (1977)	U.P	Swamp deer, sambar deer, barking deer, spotted deer, hog deer, tiger, Indian rhinoceros,
Gir Forest National Park (1965)	Gujarat	Asiatic lion
Great Himalayan National Park (1984)	Himachal Pradesh	UNESCO World Heritage Site
Gulf of Mannar Marine National Park (1980)	Tamil Nadu	Green turtles and Olive Ridley turtles and whales.
Indravati National Park (1981)	Chhattisgarh	Wild Asian Buffalo, Tiger Reserve, Hill Mynas

Jaldapara National Park (2012)	West Bengal	Indian one horned rhinoceros
Jim Corbett National Park (1936)	Uttarakhand	Tiger
Kanha National Park (1955)	Madhya Pradesh	Swamp Deer, Tigers
Kaziranga National Park (1905)	Assam	Indian rhinoceros, UNESCO World Heritage Site
Keibul Lamjao National Park (1977)	Manipur	Only floating park in the world
Keoladeo National Park (1981)	Rajasthan	UNESCO World Heritage Site
Manas National Park (1990)	Assam	UNESCO World Heritage Site
Mandla Plant Fossils National Park (1983)	Madhya Pradesh	Plant Fossils National Park
Marine National Park, Gulf of Kutch (1980)	Gujarat	70 species of sponges, Coral 52 species along with puffer fishes, sea horse and sting ray
Namdapha National Park (1974)	Arunachal Pradesh	Snow Leopards, Clouded Leopards, Common Leopards and Tigers
Nanda Devi National Park (1982)	Uttarakhand	UNESCO World Heritage Site

Neora Valley National Park (1986)	West Bengal	Clouded leopard, red panda and musk deer
Nokrek National Park (1986)	Meghalaya	UNESCO World Biosphere Reserve
Periyar National Park (1982)	Kerala	Tigers
Ranthambore National Park (1981)	Rajasthan	Tigers, Leopards, Striped Hyenas, Sambar deer and Chital
Sariska Tiger Reserve (1955)	Rajasthan	Tiger
Simlipal National Park (1980)	Odisha	Tiger, Leopard, Asian elephant, Sambar, Barking deer, Gaur, Jungle cat, Wild boar, and other animals
Sultanpur National Park (1989)	Haryana	Siberian crane, greater flamingo, ruff, black-winged stilt, common teal, northern pintail, and yellow wagtail
Sundarbans National Park (1984)	West Bengal	UNESCO World Heritage Site
Valley of Flowers National Park (1982)	Uttarakhand	Flying squirrel, Himalayan black bear, red fox, Himalayan weasel, Himalayan yellow-throated marten, and Himalayan goral

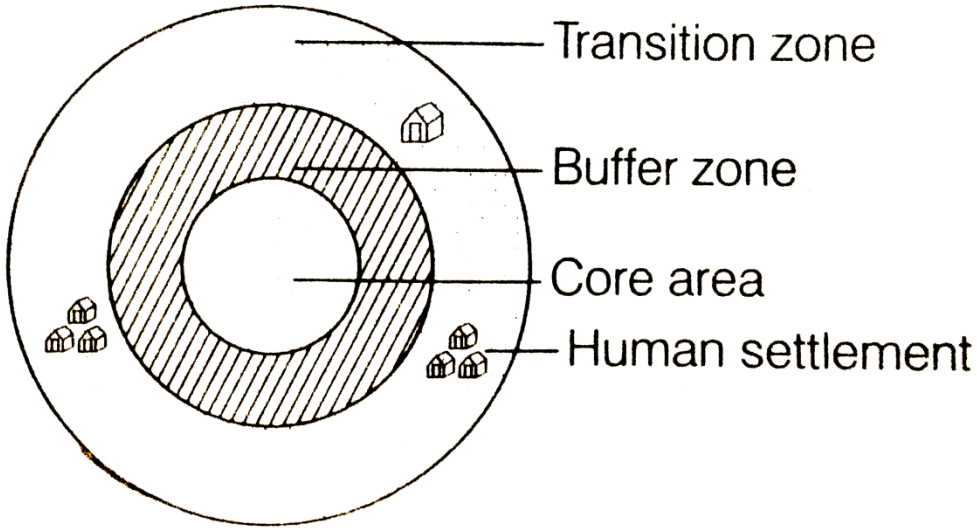
Biosphere Reserves

They Represent **Natural Biomes** Which **Contain Unique Biological Communities**. They Include **Land As Well As Coastal Environment. These Are The Sites** Recognized Under **UNESCO's Man And Biosphere (MAB) Programme.**

Biosphere Reserve Was Initiated By **UNESCO In 1971**

Zones In Biosphere Reserves

Core (Natural) Zone: It Is **Inner Most Zone**. It Contains **Suitable Habitat** For **Numerous Plants** And **Animal Species**. **Core Zone** Should Be **Kept Free From Human Interference**. This Is **Strictly Prohibited Area**.

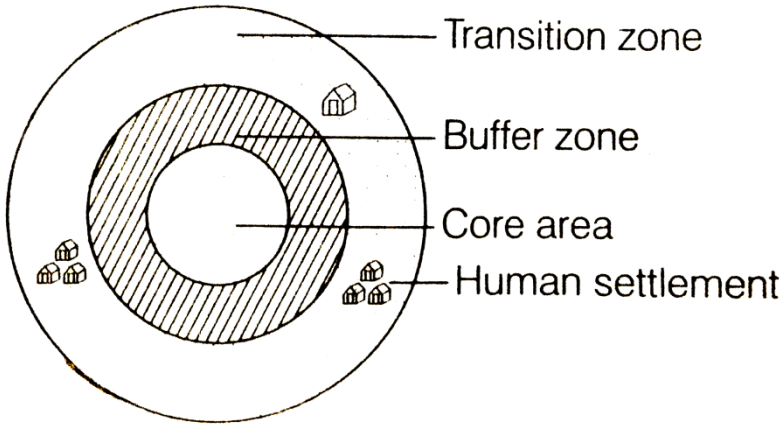


Zonation in terrestrial biosphere

Zones In Biosphere Reserves

Buffer Zone: The Buffer Zone Surrounds The **Core Areas.** In This Zone **Limited Human Activity Is Allowed** For **Research And Education Purposes**.

Transition (Manipulation) Zone: It Is **The Outermost Zone Of Biosphere Reserve** In Which **Large Number Of Human Activities Are Permitted.**



Zonation in terrestrial biosphere

Functions Of Biosphere Reserves

- For **Conservation** Of **Landscape, Ecosystem** And **Genetic Resources**.
- For **Economic Development.**
- For **Scientific Research, Education** And For **Exchange Of Information** At **National And Global Level.**

Biosphere Reserves

Nilgiri Is The **First Biosphere Reserve** Declared In **1986.** It Includes Parts Of **Karnataka, Kerala And Tamilnadu.**

BIOSPHERE RESERVES IN INDIA

Name	State	Key Fauna
Nilgiri Biosphere Reserve	Tamil Nadu, Kerala and Karnataka	Nilgiri tahr, lion-tailed macaque
Nanda Devi National Park & Biosphere Reserve	Uttarakhand	Himalayan musk deer, mainland serow, Himalayan tahr
Gulf of Mannar	Tamil Nadu	Dugong or sea cow
Nokrek	Meghalaya	Red panda
Sundarbans	West Bengal	Royal Bengal tiger
Manas	Assam	Golden langur, red panda
Simlipal	Odisha	Gaur, Royal Bengal tiger, elephant
Dihang-Dibang	Arunachal Pradesh	Mishmi takin, red goral, musk deer
Pachmarhi Biosphere Reserve	Madhya Pradesh	Giant squirrel, flying squirrel

Achanakmar-Amarkantak Biosphere Reserve	Madhya Pradesh, Chhattisgarh	Four horned antelope (Tetracerus quadricornis), Indian wild dog (Cuon alpinus), Saras crane (Grus antigone), Asian white-backed vulture (Gyps bengalensis), Sacred grove bush frog (Philautus sanctisilvaticus)
Great Rann of Kutch	Gujarat	Indian wild ass
Cold Desert	Himachal Pradesh	Snow leopard
Khangchendzonga	Sikkim	Snow leopard, red panda
Agasthyamalai Biosphere Reserve	Kerala, Tamil Nadu	Nilgiri tahr, elephants
Great Nicobar Biosphere Reserve	Andaman and Nicobar Islands	Saltwater crocodile
Dibru-Saikhowa	Assam	Golden langur
Seshachalam Hills	Andhra Pradesh	Yellow-throated bulbul
Panna	Madhya Pradesh	Tiger, chital, chinkara, sambhar and sloth bear

Wildlife Sanctuary	National Parks	Biosphere reserve
It is an area which is free from disturbances from human activities, and is devoted for the conservation and protection of wildlife.	National Parksare those reserved areas where no human activity is allowed at all.	A biosphere reserve is an area of land or water that is protected by law in order to support the conservation of ecosystems
Wildlife sanctuaries are under the jurisdiction of the state government	National parks are under the jurisdiction of the central government	Biosphere reserves were created by UNESCO
Example: The Mudumalai wildlife sanctuary in Tamil Nadu.	Example: Kaziranga National Park in Assam	Example: Nilgiri Biosphere Reserve

Distinction among National Park, Sanctuary and Biosphere Reserve.

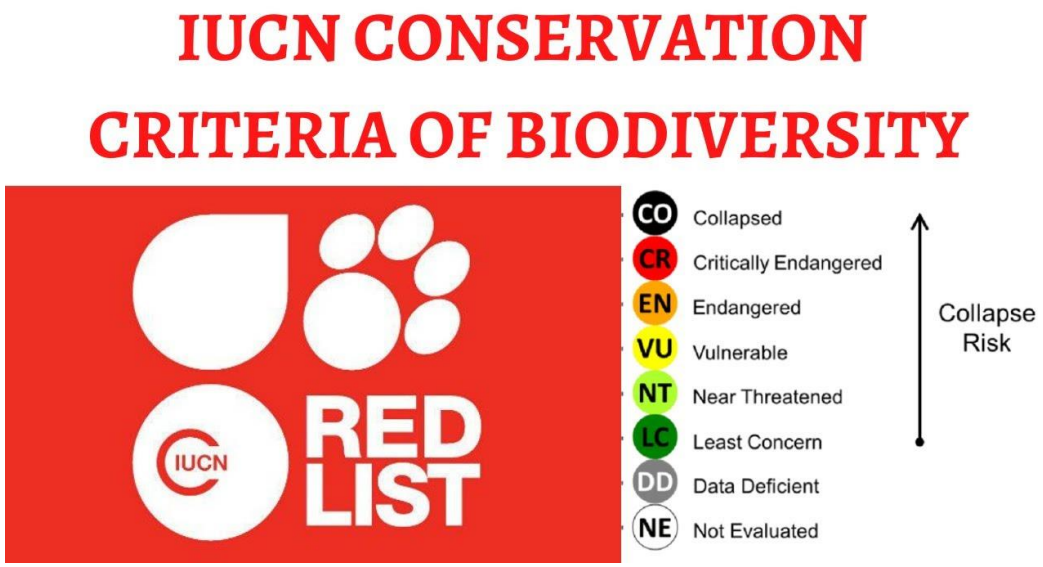
National park	Sanctuary	Biosphere Reserve
Habitat for particular wild animal species	Generally species-oriented such as citrus, pitcher plant, etc.	Ecosystem-oriented i.e. All forms of life
The general size range is 0.04 to 3162 sq. Km.	The general size range is 0.61 to 7818 sq. km.	The general size range is over 5670 sq. km
Boundaries fixed by legislation	Boundaries are not sacrosanct	Boundaries fixed by legislation
Except the buffer zone, no biotic interference	Limited biotic interference	Except the buffer zone, no biotic interference
Tourism Permissible	Tourism Permissible	Tourism normally not Permissible
Research and Scientific management lacking	Research and Scientific management lacking	Managed
So far no gene pool and conservation	So far no gene pool and conservation.	Attention given

IUCN (International Union For Conservation Of Nature)

It Was **Founded In 1948** As The **World's First Global Environmental Organization.** It Is The **Largest Professional Global Conservation Network** To **Implement Solution** To **Environmental Challenges. Headquarters: Gland,** Switzerland

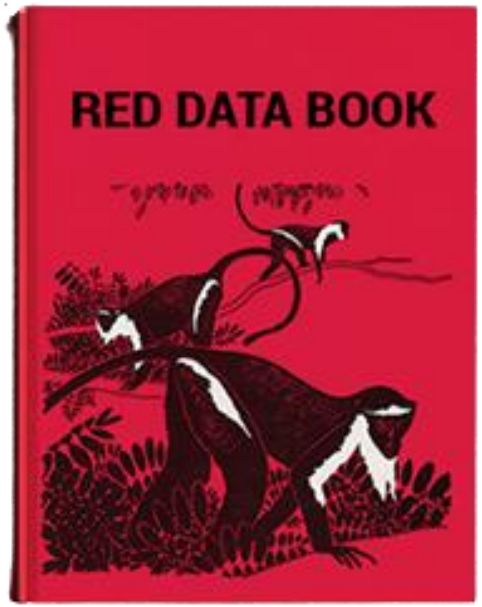
IUCN Red List

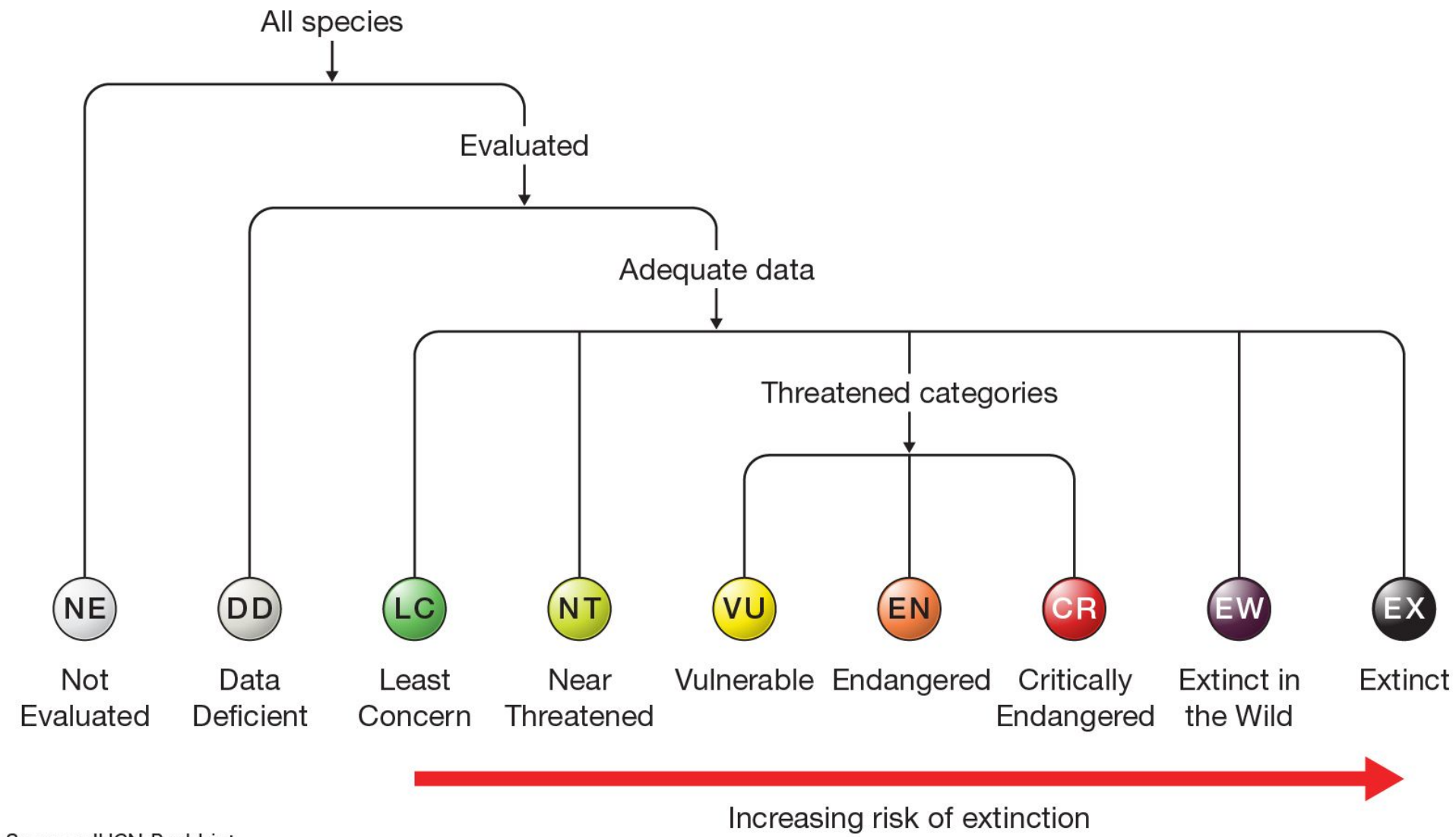
This System Is Designed To Determine The **Relative Risk Of Extinction**, And The Main Purpose Is To Catalogue And Highlight Those **Plants And Animals** That Are **Facing A Higher Risk** Of **Global Extinction** (I.E. Those Listed As **Critically Endangered, Endangered And Vulnerable).**



Red Data Book

It Contains **Lists Of Species** Whose **Continued Existence** Is **Threatened**. Species Are Classified Into **Different Categories** Of **Perceived Risk. Each Red Data Book** Usually Deals With A **Specific Group Of Animals Or Plants.** They Are Now Being **Published** In **Many Different Countries.**





Source: IUCN Red List

THE RED LIST CATEGORIES

Extinct (EX): no reasonable doubt that the last individual has died

Extinct in the Wild (EW): known only to survive in captivity, cultivation or well outside its natural range

Critically Endangered (CR): facing extremely high risk of extinction in the wild

Endangered (EN): facing a very high risk of extinction in the wild,

Vulnerable (VU): facing a high risk of extinction in the wild.

Near Threatened (NT): close to qualifying, or likely to qualify for a threatened category in the near future

Least Concern (LC): population is stable enough that it is unlikely to face extinction in the near future

Data Deficient (DD): not enough information on abundance or distribution to estimate its risk of extinction

Critically Endangered Mammals

1. Pygmy Hog
2. Andaman White-toothed Shrew
3. Jenkin's Andaman Spiny Shrew
4. Nicobar White-tailed Shrew
5. Kondana Rat
6. Large Rock Rat or Elvira Rat
7. Namdapha Flying Squirrel
8. Malabar Civet
9. Sumatran Rhinoceros
10. Javan Rhinoceros

Critically Endangered Reptiles

1. Gharial
2. Hawksbill Turtle
3. River Terrapin
4. Bengal Roof Turtle
5. Sispara day gecko

Critically Endangered Birds

1. Aythya Baeri
2. Forest Owlet
3. Great Indian Bustard
4. Bengal Florican
5. Siberian Crane
6. Spoon-billed Sandpiper
7. Sociable Lapwing
8. Jerdon's Courser
9. White-backed Vulture
10. Red-headed Vulture
11. White-bellied Heron
12. Slender-billed Vulture
13. Indian Vulture
14. Pink-headed Duck
15. Himalayan Quail

Critically Endangered Fishes

1. Pondicherry Shark
2. Ganges Shark
3. Knife-tooth Sawfish
4. Large-tooth Sawfish
5. Narrow-snout Sawfish

ENDANGERED SPECIES IN INDIA	
Birds	White-bellied heron Great Indian bustard (*Ardeotis nigriceps*) Forest owlet (*Athene blewitti*) Baer's pochard (*Aythya baeri*) Spoon-billed sandpiper (*Eurynorhynchus pygmeus*) Siberian crane (*Grus leucogeranus*) White-rumped vulture (*Gyps bengalensis*) Indian vulture (*Gyps indicus*) Slender-billed vulture (*Gyps tenuirostris*)
	Bengal florican (*Houbaropsis bengalensis*) Himalayan quail (*Ophrysia superciliosa*) Jerdon's courser (*Rhinoptilus bitorquatus*) Pink-headed duck (*Rhodonessa caryophyllacea*) Red-headed vulture (*Sarcogyps calvus*) Sociable lapwing (*Vanellus gregarius*) Bugun liocichla (*Liocichla bugunorum*)
Fish	Knifetooth sawfish (*Anoxypristis cuspidata*) Pondicherry shark (*Carcharhinus hemiodon*) Ganges shark (*Glyphis gangeticus*) Deccan labeo (*Labeo potail*) Largetooth sawfish (*Pristis microdon*) Longcomb sawfish (*Pristis zijsron*) Humpback mahseer

Reptiles and Amphibians	Northern river terrapin (*Batagur baska*) Red-crowned roofed turtle (*Batagur kachuga*) Hawksbill sea turtle (*Eretmochelys imbricata*) Gharial (*Gavialis gangeticus*) Ghats wart frog (*Fejervarya murthii*) Gundia Indian frog (*Indirana gundia*) Toad-skinned frog (*Indirana phrynoderma*) Charles Darwin's frog (*Ingerana charlesdarwini*) Rao's torrent frog (*Micrixalus kottigeharensis*) Amboli bush frog (*Pseudophilautus amboli*) White-spotted bush frog (*Raorchestes chalazodes*) Griet bush frog (*Raorchestes griet*) Munnar bush frog (*Raorchestes munnarensis*) Ponmudi bush frog (*Raorchestes ponmudi*) Sacred Grove bush frog (*Raorchestes sanctisilvaticus*) Shillong bubble-nest frog (*Raorchestes shillongensis*) Resplendent shrubfrog (*Raorchestes resplendens*) Anaimalai flying frog (*Rhacophorus pseudomalabaricus*) Patinghe Indian gecko (*Geckoella jeyporensis*)

Mammals	Asiatic cheetah (*Acinonyx jubatus venaticus*) Namdapha flying squirrel (*Biswamoyopterus biswasi*) Himalayan wolf (*Canis himalayensis*) Andaman Shrew (*Crocidura andamanensis*) Jenkins' shrew (*Crocidura jenkinsi*) Nicobar shrew (*Crocidura nicobarica*) Northern Sumatran rhinoceros (*Dicerorhinus sumatrensis lasiotis*) Kondana soft-furred rat (*Millardia kondana*) Pygmy hog (*Porcula salvania*) Indian Javan rhinoceros (*Rhinoceros sondaicus inermis*) Malabar large-spotted civet (*Viverra civettina*) Elvira rat (*Cremnomys elvira*) Chinese pangolin (*Manis pentadactyla*) Kashmir stag (*Cervus canadensis hanglu*)
Coral	Fire corals (*Millepora boschmai*) Spiders Rameshwaram Ornamental or Parachute Spider (*Poecilotheria hanumavilasumica*) Gooty Tarantula, Metallic Tarantula or (*Poecilotheria metallica*)

CITES

CITES (**The Convention On International Trade In Endangered Species Of Wild Fauna And Flora)** Is An **International Agreement** Between Governments. Its Aim Is To **Ensure The International Trade** In **Specimens Of Wild Animals** And **Plants Does Not Threaten Their Survival**. It Was **Signed** On **3 March 1973.**

World Wide Fund For Nature (WWF)

The **Organisation** Was Founded In **Merges, Switzerland (29, April, 1961).** It Is An **International Non-governmental Organization** In Nature. Works In The Field Related To **Biodiversity Conservation,** And The **Reduction Of Humanity's Footprint** On The **Environment**. **Headquarters:** Gland, Switzerland

Main Missions Of WWF

- **Conserving** The **World's Biological Diversity**
- Ensuring That The **Use Of Renewable Natural Resources** Is **Sustainable.**
- Promoting The **Reduction Of Pollution** And **Wasteful Consumption**

National Biodiversity Authority (NBA)

The **Biological Diversity Act 2002** Came Into Force In **2003** The Act Extents To The **Whole Of India**. The Objectives Of The Act Are **Conservation, Sustainable Utilization** And **Fair And Equitable Sharing Of Benefits** Arising Out Of The Use Of **Biological Resources** And Associated Knowledge.

National Biodiversity Authority (NBA)

The Act Is Being Implemented In A **Three Tiered** Institutional Structures (NBA At National Level, **State Biodiversity Board** At **State Level** And **Biodiversity Management Committee** At **Local Level).**

CARBON BUDGET

- A carbon budget is the maximum amount of carbon that can be released into the atmosphere while keeping a reasonable chance of staying below a given temperature rise.
- The concept of carbon budget was first time adopted by Intergovernmental Panel on Climate Change (IPCC) in its 2013 report.
- In its most recent synthesis report, published in early 2014 states that the Intergovernmental Panel on Climate Change (IPCC) laid out estimates of how much CO2 we can emit and still keep global average temperature rise to no more than 1.5°C, 2°C or 3°C above pre-industrial levels.
- The first four carbon budgets, leading to year 2027, have been set in law. The UK is currently in the second carbon budget period (2013-17).
- Meeting the fourth carbon budget (2023-27) will require that emissions be reduced by 50% from 1990 levels in 2025.
- As Carbon dioxide is increasing day by day in the atmosphere the three major sink (atmosphere, ocean and land) are absorbing more carbon.
- The carbon sink are increasing alarmingly due to deforestation, fossil fuel emission and industrialization.
- Although we tend to focus on growing atmospheric carbon concentrations, ocean acidification is also hugely worrying.
- As the world continues to warm the future function of ocean and land sinks may come under strain.

INTERNATIONAL CONVENTIONS FOR CLIMATE CHANGE

Convention	Place	Crucial Documents
International Whaling Commission (1946)	Washington, D.C., United States.	• To keep under review and revise as necessary the measures laid down in the Schedule to the Convention which govern the conduct of whaling throughout the world.
Convention on International Trade in Endangered Species of Wild Fauna and Flora (1973)	Washington, U.S.A.	• Help in conservation of species
Ramsar Convention on Wetland (1971)	Ramsar, Iran	• Halt the worldwide loss of wetlands and • To conserve, use and manage, those that remain. • This requires international cooperation, policy making, capacity building and technology transfer.
World Heritage Convention, 1972	Paris	• Recognizes the way in which people interact with nature, and the fundamental need to preserve the balance between the two. • Defines the kind of natural or cultural sites which can be considered for inscription on the World Heritage List under UNESCO.
Convention on the Conservation of Migratory Species of Wild Animals (1979)	Bad Godesberg, Germany	• It is an intergovernmental treaty • Should promote, cooperate in and support research relating to migratory species • Endeavour to provide immediate protection for migratory species • Conservation and management of migratory species included in Appendix II
MARPOL Convention (73/78)	—	• To minimize pollution of the oceans and seas, including dumping, oil and air pollution.

Montreal Protocol on Substances that Deplete the Ozone Layer (1987)	Helsinki, Finland	• Play role in controlling the ozone depletion
Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and Their Disposal (1989)	Basel, Switzerland	• To reduce hazardous waste generation and promote environmental sound management system for their disposal. • Restrict trans boundary movement of such wastes and • Provide regulatory system applying to cases where such movement is allowable.
Convention on Biological Diversity (1993)		• The conservation of biological diversity • The sustainable use of the components of biological diversity • The fair and equitable sharing of the benefits arising out of the utilization of genetic resources
The United Nations Framework Convention on Climate Change (1994)	Kyoto, Japan	• Gather and share information on greenhouse gas emissions, national policies and best practices • Launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing c ountries • Cooperate in preparing for adaptation to the impacts of climate change
Global Tiger Forum (1994)	New Delhi, India	• Set up to embark on a worldwide campaign to save the wild tiger
United Nations Convention to Combat Desertification (1994)		• Promotes a global response to desertification, land degradation and drought

Kyoto Protocol (1997)	Kyoto, Japan	• Set targets on greenhouse-gas emissions for developed countries. • Fight global warming by reducing greenhouse gas concentrations in the atmosphere. • Reduce greenhouse gases by 18% below the emission levels of 1990.
United Nations Forum on Forests (2000)		• Implementation of agreements and foster a common understanding on sustainable forest management; • To provide policy development and dialogue among Governments and international organizations, • To enhance cooperation • To foster international cooperation and • To monitor, assess and report on progress of the above functions and objectives • To strengthen political commitment to the management, conservation and sustainable development.
Stockholm Convention on Persistent Organic Pollutants (2001)	Stockholm, Sweden	• It develops a risk management evaluation • Determines whether the substance fulfills POP screening. • Manage and dispose of POPs wastes in an environmentally sound manner
Rotterdam Convention (2004)	Rotterdam, Netherlands	• Convention promotes open exchange of information • Calls on exporters of hazardous chemicals to use proper labeling • Inform purchasers of any known restrictions or bans

Agenda-21

- It is a product of the Earth Summit (UN Conference on Environment and Development) held in Rio de Janeiro, Brazil, in 1992.
- The Agenda emphasizes on issues like poverty, health consumption patterns, natural resource use, financial resources and human settlements.

Paris Agreement, 2016

- It is an agreement within the United Nations Framework Convention on Climate Change (UNFCCC) dealing with greenhouse gases emissions, mitigation, adaptation and finance starting in the year 2020.
- It was opened for signature on 22 April 2016 (Earth Day) at a ceremony in New York. As of December 2016, 194 UNFCCC members have signed the treaty, 131 of which have ratified it.

Cartagena Protocol on Biosafety

- It is an international agreement which aims to ensure the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health.
- It was adopted on 29th January, 2000 and entered into force on 11 September 2003.

ENVIRONMENTAL POLICIES/ PROGRAMMES OF INDIA

Programmes/ Policies	Launch Date	Objective
National Water Mission	—	• To put comprehensive water data base in public domain and assessment of impact of climate change on water resource. • Promotion of citizen and state action for water conservation, augmentation and preservation. • Focused attention to vulnerable areas including over-exploited areas.
Paryavaran Vahini Scheme	1992	• To create environmental awareness and involve people through active participation and reporting of illegal acts pertaining to forests, wildlife, pollution, environmental degradation and cruelty to animals.
National River Conservation Plan	1995	• To improve the water quality of major rivers which are the major fresh water source in the country, through the implementation of pollution abatement scheme.
National Environment Policy, 2006	2006	• Conservation of Critical Environmental Resource. • Integration of environmental concerns in economic and social development. • Intra-generational equity.
National Action Plan on Climate Change	2008	• To sustain economic growth while dealing with the global threat of climate change.

ENVIRONMENTAL CONFERENCES/ SUMMITS

Conference	Date	Venue	Highlights
United Nations Conference on Environment and Development (Earth Summit)	3-14 June, 1992	Rio de Janeiro	Resulted in the documents like Rio Declaration on Environment and Development, Agenda 21, and Forest Principles
World Summit on Sustainable Development	26 August to 4 September 2002	Johannesburg, South Africa	Reviewed progress in the implementation of Agenda 21 since its adoption in 1992
United Nations Conference on Sustainable Development	20-22 June, 2012	Rio de Janeiro, Brazil	Securing renewed political commitment for sustainable development
International Conference on Land Use and Water Quality	29 May - 1 Jun 2017	Hague, Netherlands	Discussion on 'policy cycle' to enable enhancing the quality of the water environment, which includes problem recognition, formulation of technical options, policy formulation, interaction between policy makers and stakeholders

ENVIRONMENTAL CONFERENCES/ SUMMITS

3rd World Conference on Environment	5th June, 2017	New Delhi	Discussion on issues like air pollution, water pollution, economics and clean technology, and the role of courts and tribunals for environmental protection
CEM India 2017 - Conference on Emissions Monitoring	26-28 September, 2017	New Delhi	Provide guidelines for continuous emission monitoring system
UN Summit on Conservation of Migratory Species	23-28 October, 2017	Manila, Philippines	Discussion on sustainable development for wildlife and people

ENVIRONMENTAL BILLS/ACTS

- The Water (Prevention and Control of Pollution) Act, 1974
- The Water (Prevention and Control of Pollution) Rules, 1975
- The Water (Prevention and Control of Pollution) Cess Act, 1977
- The Water (Prevention and Control of Pollution) Cess Rules, 1978
- The Air (Prevention and Control of Pollution) Act, 1981
- The Air (Prevention and Control of Pollution) Rules, 1982
- The Environment (Protection) Act, 1986
- The Environment (Protection) Rules, 1986
- Hazardous Wastes (Management and Handling) Rules, 1989
- Manufacture, Storage and Import of Hazardous Chemical Rules, 1989
- The Forest (Conservation) Act, 1980
- The Forest (Conservation) Rules, 1981
- The Wildlife Protection Act, 1972
- The Wildlife (Transactions and Taxidermy) Rules, 1973
- The Wildlife (Stock Declaration) Central Rules, 1973
- The Wildlife (Protection) Licensing (Additional Matters for Consideration) Rules, 1983
- The Wildlife (Protection) Rules, 1995
- The Wildlife (Specified Plants - Conditions for Possession by Licensee) Rules, 1995
- The Public Liability Insurance Act, 1991
- The Public Liability Insurance Rules, 1991
- The National Environment Tribunal Act, 1995
- The National Environment Appellate Authority Act, 1997
- Municipal Solid Wastes (Management and Handling) Rules, 2000
- Ozone Depleting Substances (Regulation and Control) Rules, 2000
- The Biological Diversity Act, 2002
- Noise Pollution (Regulation and Control) (Amendment) Rules, 2002
- The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006
- The National Green Tribunal Act, 2010
- Wild Life Protection (Amendment) Bill, 2013

ENVIRONMENTAL ORGANIZATIONS/AUTHORITIES

Organizations	Headquarter	Objective
National Biodiversity Authority (2003)	Chennai	• To implement the provisions under the National Biological Diversity Act, 2002. • To ensure conservation, sustainable use of biological resources and fair and equitable sharing of benefits arising out of the use of biological resources
National Ganga River Basin Authority (2009)	New Delhi	• To safeguard the drainage basin which feeds water into the Ganges by protecting it from pollution or overuse
National Green Tribunal (2010)	New Delhi	• Effective disposal of cases relating to environmental protection and conservation of forests and other natural resources
R20 - Regions of Climate Action (2010)	Geneva, Switzerland	• To help sub-national governments to implement low-carbon and climate-resilient projects, as well as to share best practices in renewable energy and energy efficiency in order to build a "green economy"
International Union for Conservation of Nature (IUCN) (1948)	Gland, Switzerland	• To influence, encourage and assist societies throughout the world to conserve nature and to ensure that any use of natural resources is equitable and ecologically sustainable
World Wildlife Fund (1961)	Gland, Switzerland	• Conserve nature and reduce the most pressing threats to the diversity of life on Earth

United Nations Environment Programme (1972)	Nairobi	• Coordinate environmental activities, assisting developing countries in implementing environmentally sound policies and practices
International Tropical Timber Organization (1985)	Yokohama, Japan	• To promote sustainable management and legal harvesting of forests that produce tropical timber, and to promote expansion and diversification of international timber trade from these forests
International Panel on Climate Change (1988)	Geneva	• Providing the world with an objective, scientific view of climate change and its political and economic impacts
International Renewable Energy Agency (2009)	Masdar City, UAE	• To promote adoption and sustainable use of renewable energy
Global Environment Facility (1991)	Washington	• Address global environmental issues with the help of with international institutions, civil society organizations and the private sectors
People for the Ethical Treatment of Animals (PETA) (1980)	Norfolk, Virginia	• To work for the welfare of animals by preventing cruel killing of rodents, birds, and other animals who are often considered "pests" as well as cruelty to domesticated animals

IMPORTANT DATES RELATED TO ENVIRONMENT

Name	Date
World Wetland Day	2nd February
World Forest Day	21st March
World Water Day	22nd March
World Meteorological Day	23rd March
World Heritage Day	18th April
Earth Day	22nd April
Bio- Diversity Day	22nd May
World Environment Day	5th June
World Nature Conservation Day	28th July
International Tiger Day	29th July
International Day for Disaster Reduction	13th October
International Day of Climate Action	24th October
World Fisheries Day	21st November
World Soil Day	5th December
International Day to Combat Desertification and Drought	17th June

SUMMARY

- **Types Of Biosystem, Ecosystem And Its Type**
- **Biomes And Its Type**
- **Enviornmanetal Conservation**