

Biodiversity

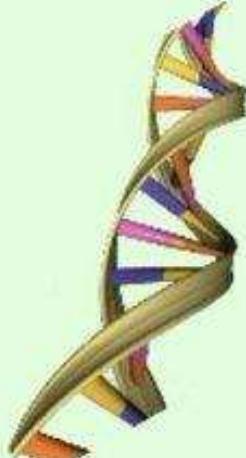


VISION
INSPIRING
INNOVATION

Types of Diversity

Genetic Diversity

Diversity of genes within a species



Species Diversity

Diversity among species in an ecosystem



Ecosystem Diversity

Diversity of a habitat in a given unit area





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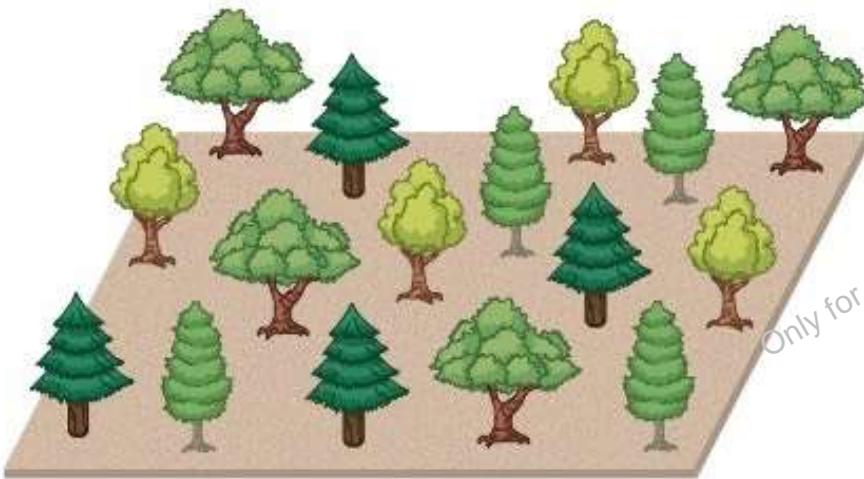
Genetic and Species Diversity

Approximate Number of Named Species

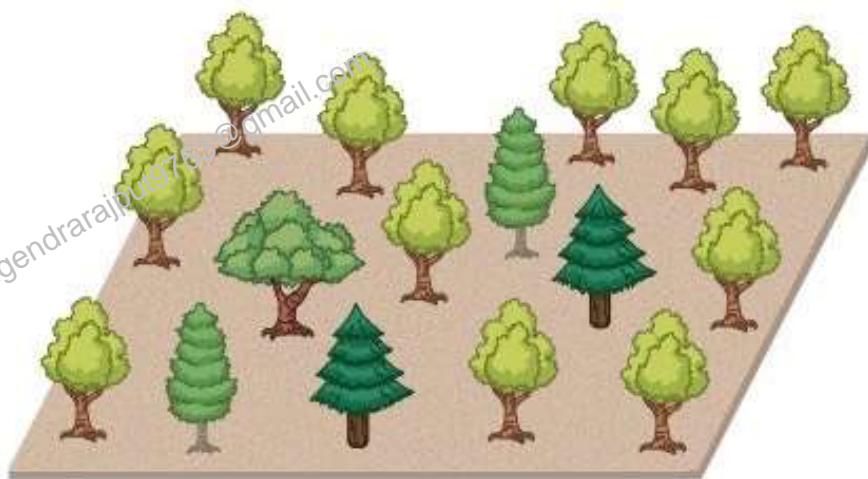
Group	Number
Mammals	4,650
Birds	9,700
Reptiles	7,150
Fishes	26,959
Amphibians	4,780
Insects	1,025,000
Vascular Plants	270,000
Algae	40,000
Protozoans	40,000

Species Richness and Evenness

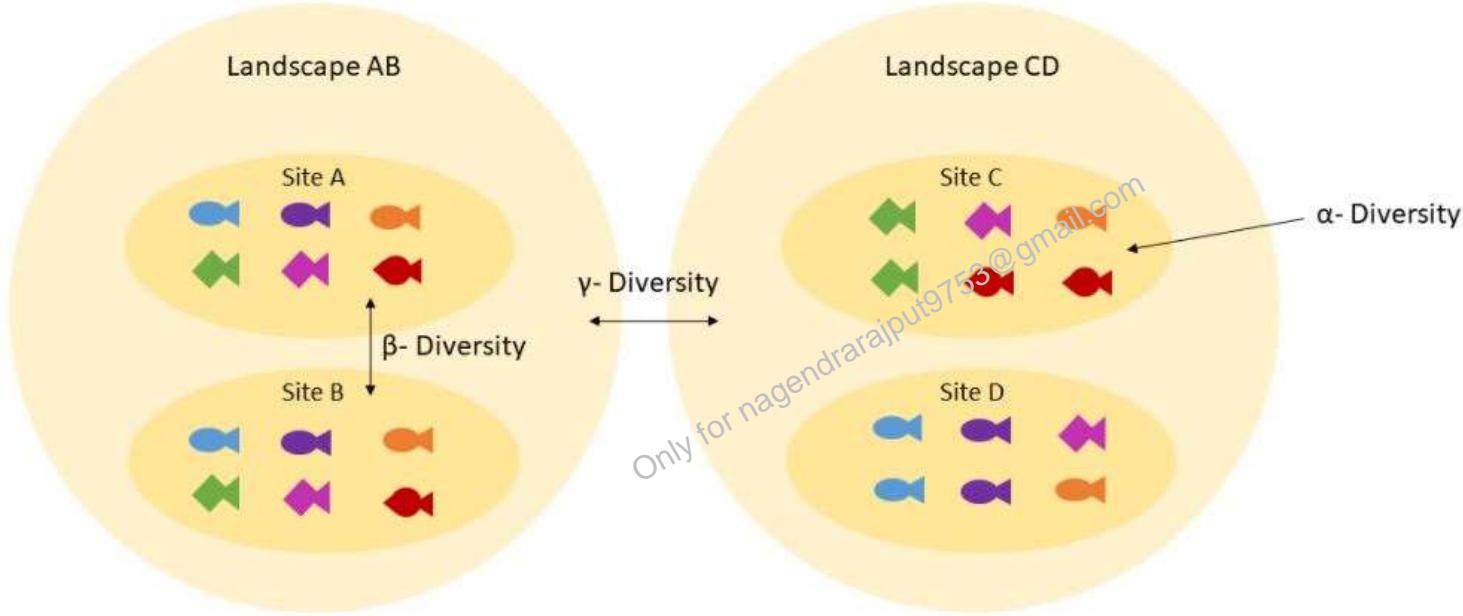
Community 1



Community 2

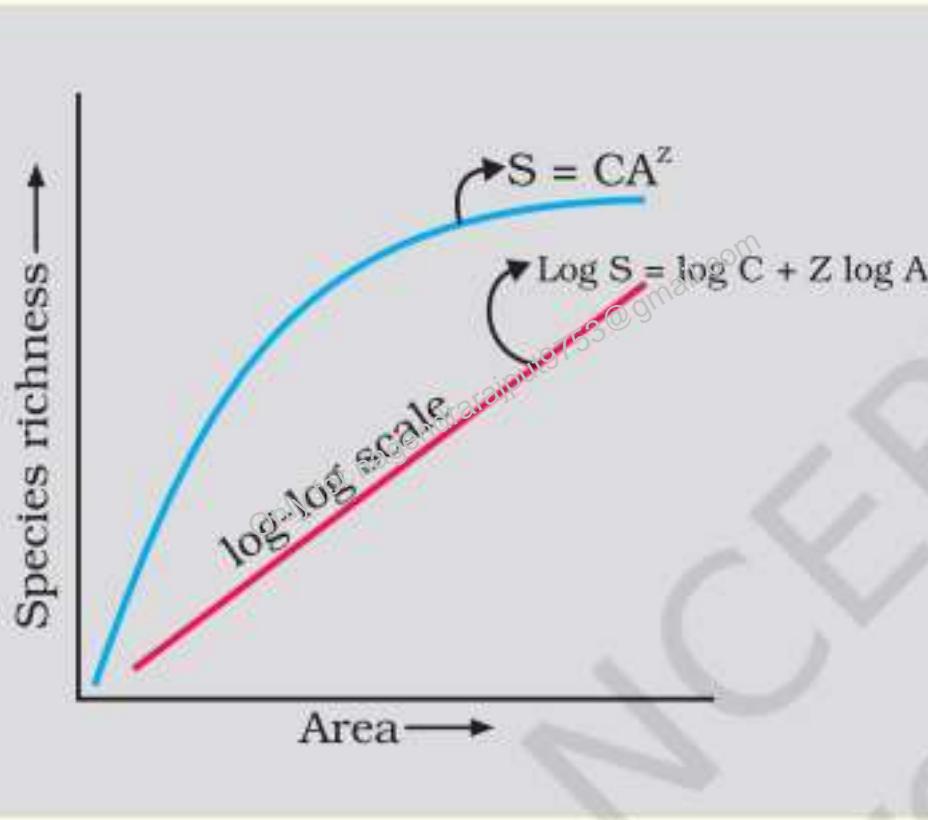


Community 1 and Community 2 have the same **species richness**, but they have *different species evenness*

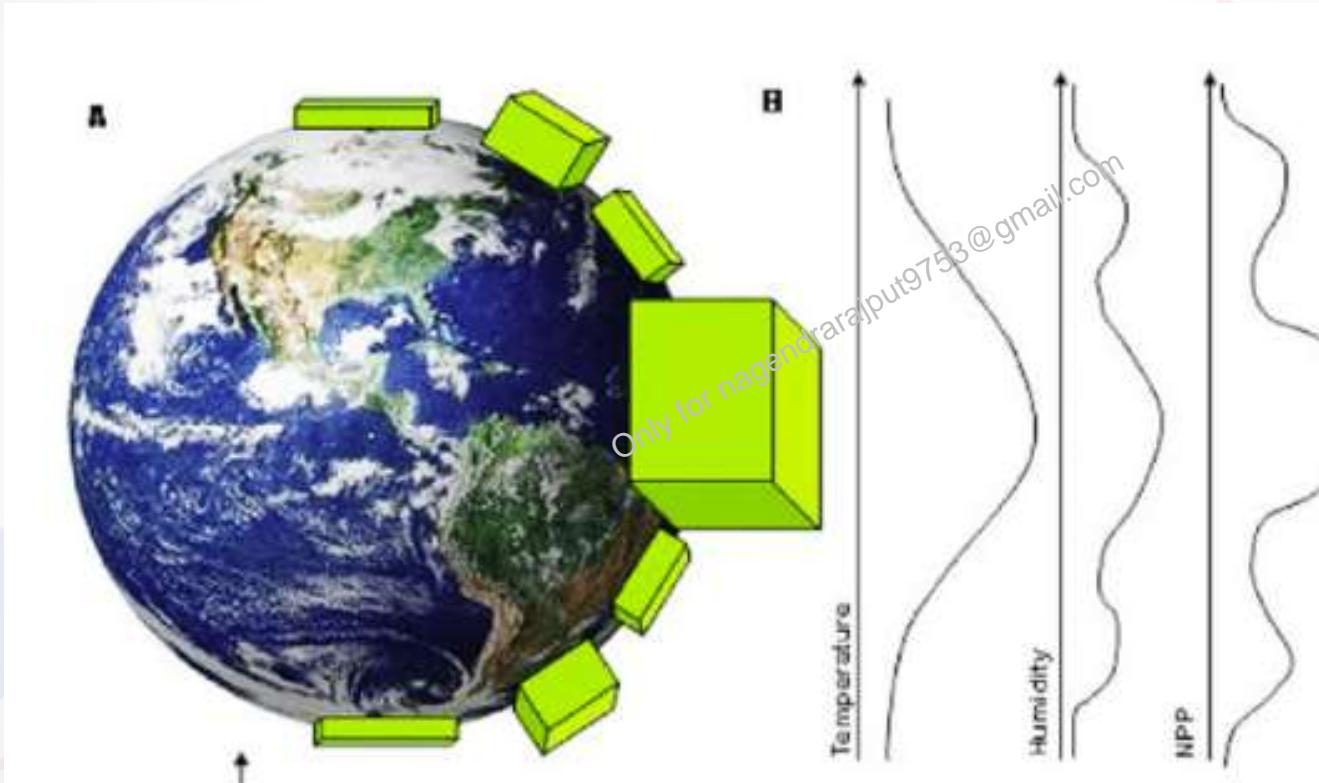


α , β , and γ Biodiversity

Species – Area Relationship



Latitudinal Gradients of Biodiversity



Keystone Species



Sea otters controlling the growth of Sea urchins, which otherwise would overexploit Kelp forest



Elephants in Savannah by consuming Shrubs and small trees

MULTIFOLD VALUES OF BIODIVERSITY

ENVIRONMENTAL VALUE

Refers to ecosystem processes which result in ecosystem services.



SOCIAL VALUE

Refers to aesthetic, recreational, cultural and health benefits.



ECOSYSTEM SERVICES VALUE

Various types of ecosystem services e.g., purification of water by wetlands through the process of soil organisms breaking down the water borne nutrients and pollutants brought into wetlands and captured by its vegetation.



ECONOMIC VALUE

Biodiversity is a major resource for different industries.



CONSUMPTION VALUE

It offers natural products for food, shelter etc.



PRODUCTIVE USE VALUE

Products commercially harvested and marketed such as Non-timber Forest Products (NTFPs), timber etc. It is the original stock from which new products and technologies are developed e.g. crops are developed from CWRs.



ETHICAL AND MORAL VALUE

Importance of protecting all forms of life in various cultures.



AESTHETIC VALUE

Nature's beauty adds to quality of life.



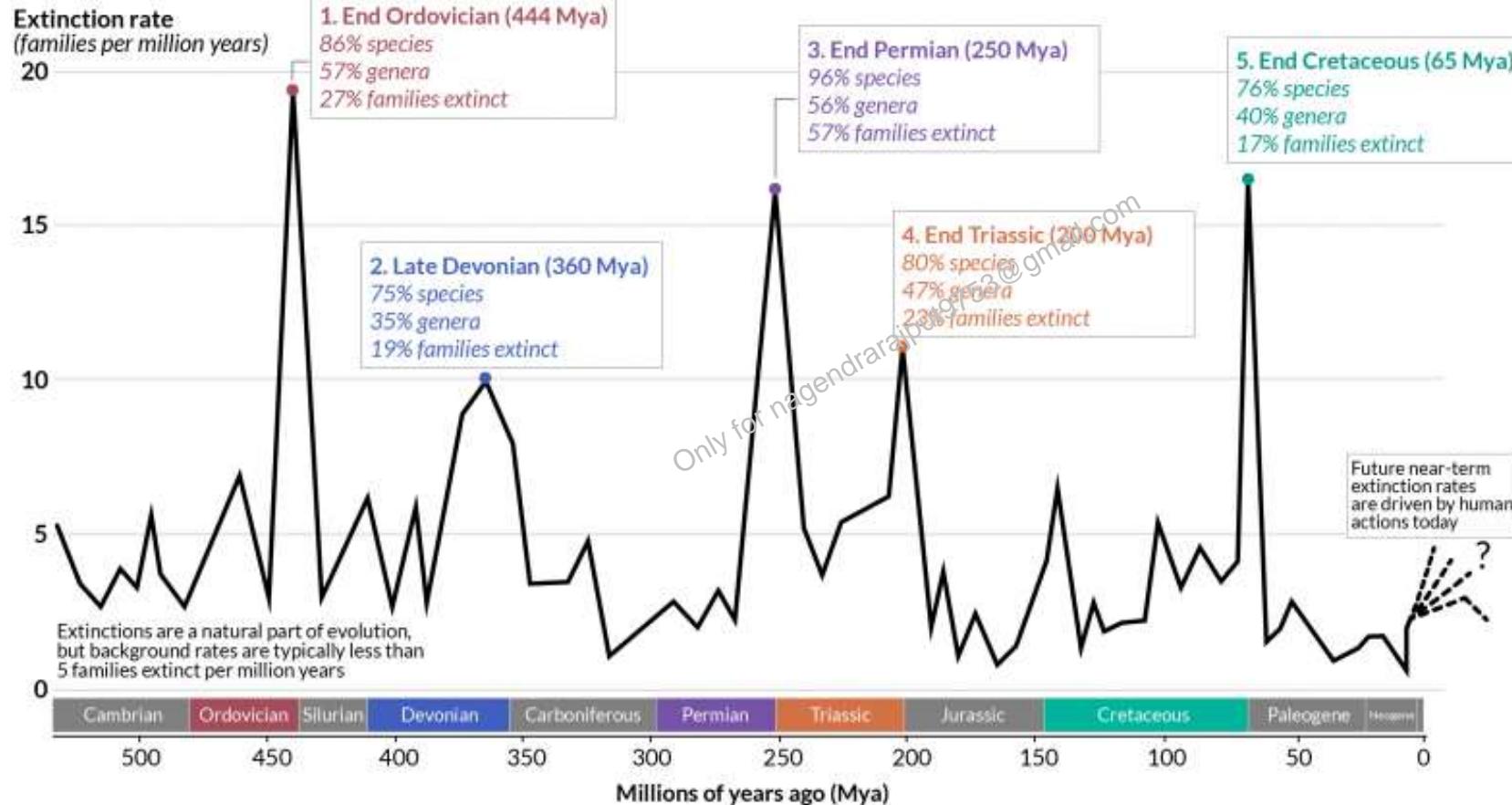
Threats to Biodiversity

- Changes in Land and Sea use, including Habitat loss and Fragmentation
- Species Overexploitation
- Invasive Species and Disease
- Pollution
- Climate Change

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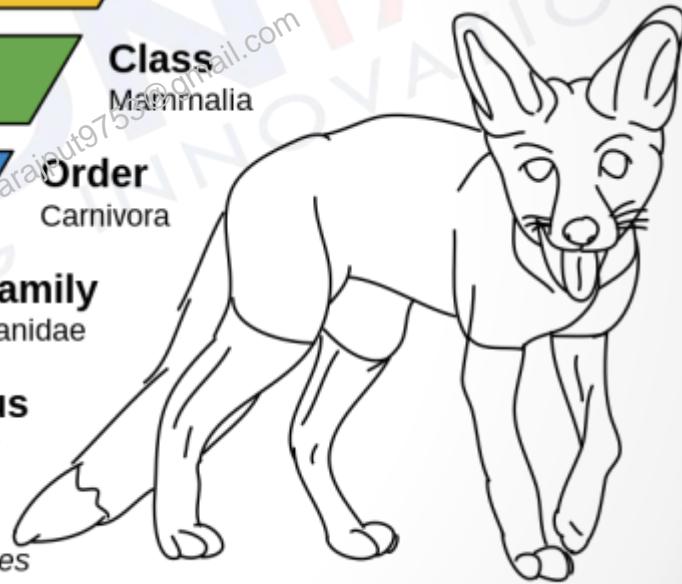
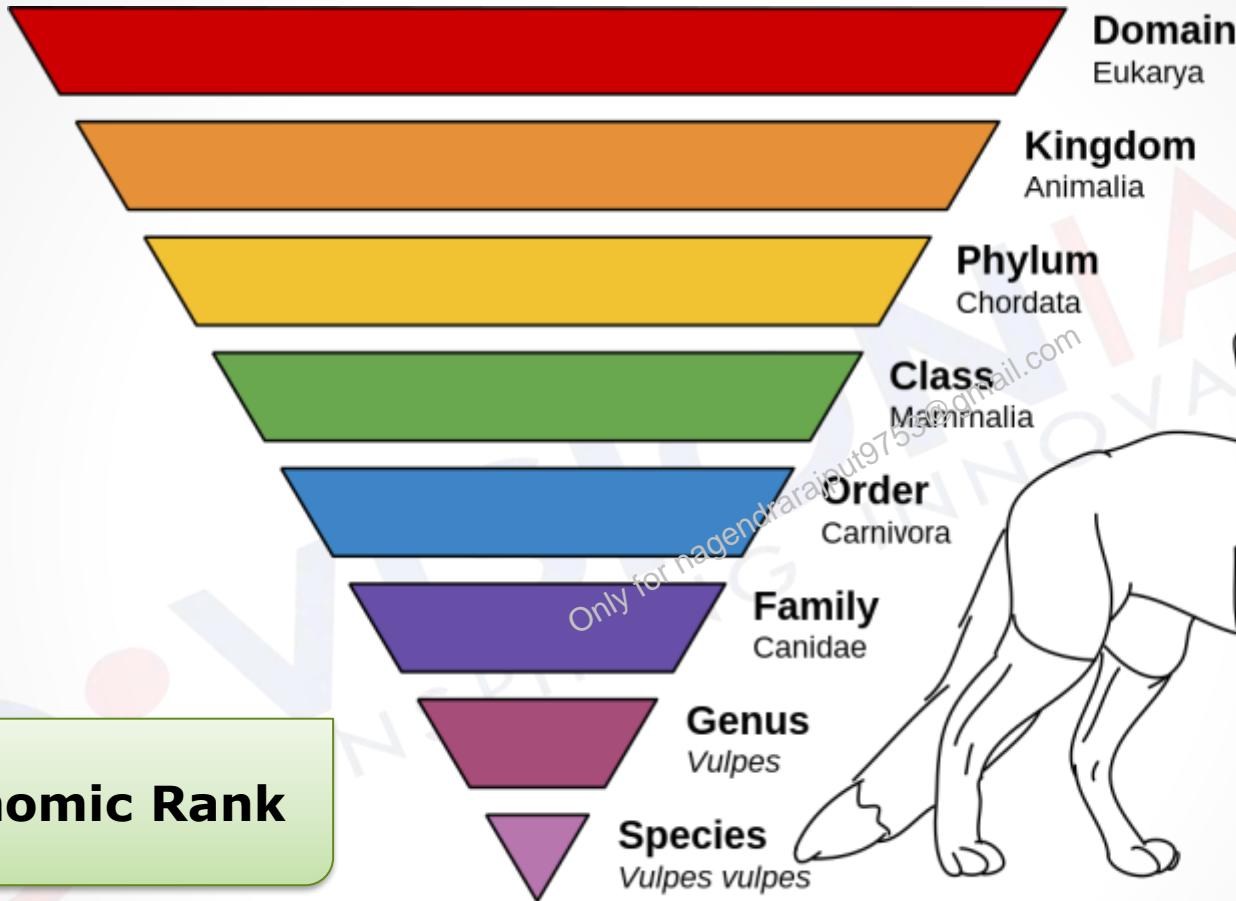
'Big Five' Mass Extinctions in Earth's History

A mass extinction is defined by the loss of at least 75% of species within a short period of time (geologically, this is around 2 million years).



Extinction Event	Age(mya)	Percentage of species lost	Cause of extinctions
End Ordovician	444	86%	Intense glacial and interglacial periods created large swings in sea levels and moved shorelines dramatically. Tectonic uplift of the Appalachian mountains created lots of weathering, sequestration of CO ₂ and with it, changes in climate and ocean chemistry.
Late Devonian	360	75%	Rapid growth and diversification of land plants generated rapid and severe global cooling.
End Permian	250	96%	Intense volcanic activity in Siberia. This caused global warming. Elevated CO ₂ and sulphur (H ₂ S) levels from volcanoes caused ocean acidification, acid rain, and other changes in ocean and land chemistry.
End Triassic	200	80%	Underwater volcanic activity in the Central Atlantic Magmatic Province (CAMP) caused global warming, and a dramatic change in chemistry composition in the oceans.
End Cretaceous	65	76%	Asteroid impact in Yucatán, Mexico. This caused global cataclysm and rapid cooling. Some changes may have already pre-dated this asteroid, with intense volcanic activity and tectonic uplift.

Taxonomic Rank



Red fox (*Vulpes vulpes*)

Organisms with Taxonomic Categories

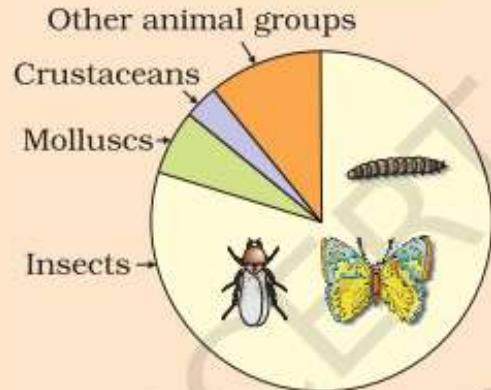
Common Name	Biological Name	Genus	Family	Order	Class	Phylum/Division
Man	<i>Homo sapiens</i>	<i>Homo</i>	Hominidae	Primates	Mammalia	Chordata
Housefly	<i>Musca domestica</i>	<i>Musca</i>	Muscidae	Diptera	Insecta	Arthropoda
Mango	<i>Mangifera indica</i>	<i>Mangifera</i>	Anacardiaceae	Sapindales	Dicotyledonae	Angiospermae
Wheat	<i>Triticum aestivum</i>	<i>Triticum</i>	Poaceae	Poales	Monocotyledonae	Angiospermae

Characteristics of five Kingdoms

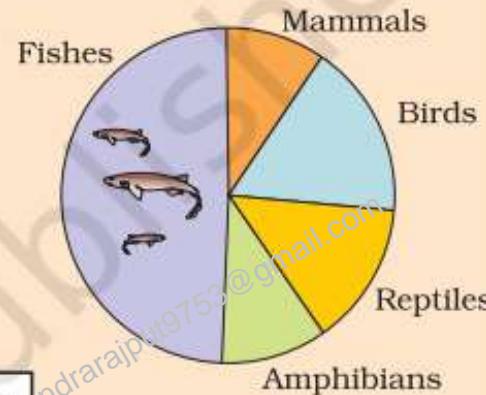
Characters	Five Kingdoms				
	Monera	Protista	Fungi	Plantae	Animalia
Cell type	Prokaryotic	Eukaryotic	Eukaryotic	Eukaryotic	Eukaryotic
Cell wall	Noncellular (Polysaccharide + amino acid)	Present in some	Present (without cellulose)	Present (cellulose)	Absent
Nuclear membrane	Absent	Present	Present	Present	Present
Body organisation	Cellular	Cellular	Multicellular / loose tissue	Tissue / organ	Tissue / organ / organ system
Mode of nutrition	Autotrophic (chemosynthetic and photosynthetic) and Heterotrophic (saprophyte/parasite)	Autotrophic (Photosynthetic) and Heterotrophic	Heterotrophic (Saprophytic / Parasitic)	Autotrophic (Photosynthetic)	Heterotrophic (Holozoic / Saprophytic etc.)

Global Biodiversity

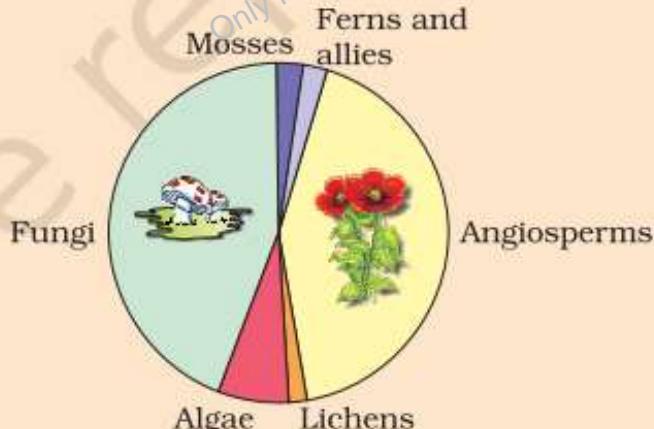
Invertebrates



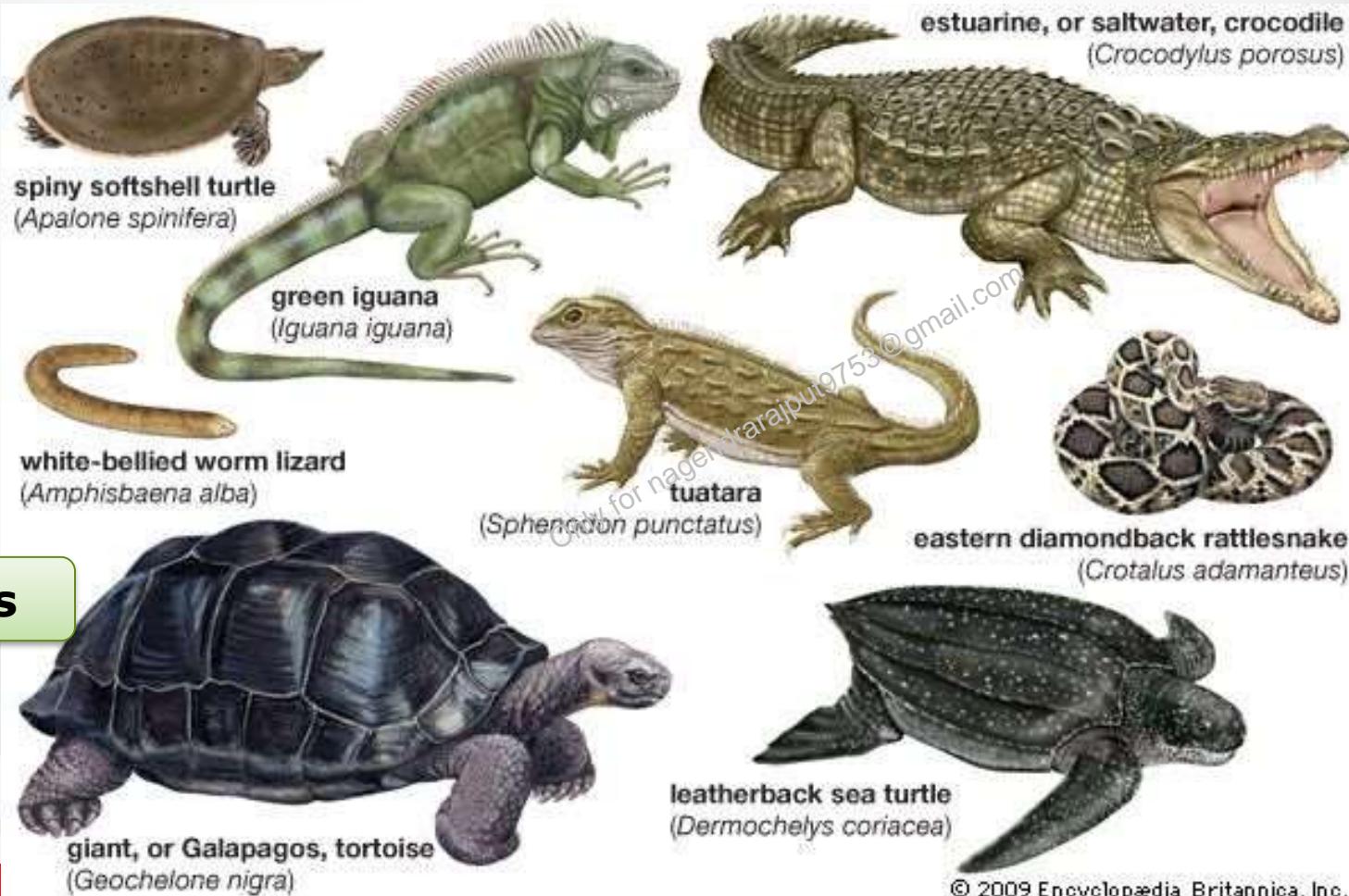
Vertebrates



Plants



Reptiles



Amphibians



South American caecilian
(*Siphonops annulatus*)



Dakota toad
(*Bufo hemiophrys*)



Oregon spotted frog
(*Rana pretiosa*)



large-blotched salamander
(*Ensatina escholtzii*)

Annelids



Nereis



Earthworm

Annelida



Leech

Insects

ENTOMOLOGY ETYMOLOGY

Where some common insect names come from

Instagram @etymologynerd

Twitter @etymology_nerd



ANT
From the West Germanic reconstruction ematjōn, which literally meant "biting thing".



APHID
Thought to be from an Ancient Greek word meaning "unsparing", in reference to their appetite.



BEE
Through Proto-Germanic, derives from Proto-Indo-European bhei, which still meant "bee".



BEETLE
From the Old English word bītel, which has a literal translation of "little biter".



BUTTERFLY
Possibly comes from an old folk belief that witches in the form of butterflies steal babies.



CATERPILLAR
Through Old French, traces to the Late Latin phrase catta pilosa, meaning "hairy cat".



CICADA
Borrowed from Latin in the early fifteenth century. Ultimately onomatopoeic of the sound it makes.



COCKROACH
From Spanish cucaracha. The spelling was changed because of confusion with roosters and a type of fish.



CRICKET
From the Old French verb criquer, which meant "to creak" and is of onomatopoeic origin.



DRAGONFLY
Believed to resemble the mythological creature. Previously known as the adder-bolt.



EARWIG
Wig is from Old English wigca, "insect". The name is from a folk belief that the bug crawls into ears.



FLEA
From Proto-Germanic flauhaz. May be related to the verb "flee" on the notion that it jumps.



GNAT
From Proto-Germanic gnattiaz, meaning "biting insect". Related to the word "gnaw".



LADYBUG
An allusion to the Virgin Mary. The seven spots were thought to represent her seven sorrows.



LOCUST
From Latin locusta, meaning "lobster". The connection is a perceived physical resemblance.



MANTIS
A 17th-century word meaning "soothsayer" in Greek. That comes from mainesthai, "be inspired".



MAYFLY
The name was adopted in the seventeenth century in reference to the time of year when they emerge.



MOSQUITO
Means "little gnat" in Spanish. The name is a diminutive of mosca, meaning "fly".



MOTH
From Old English moðde, which is probably related to the roots for the words midge and maggot.



PHASMID
Borrowed in the nineteenth century from the Latin word phasma, meaning "phantom".



SCARAB
Traces to Ancient Greek skarabos, which could mean either "crayfish" or "beetle".



SILVERFISH
Simply in reference to its appearance. Also referred to as a silverfish and furnuti-bug.



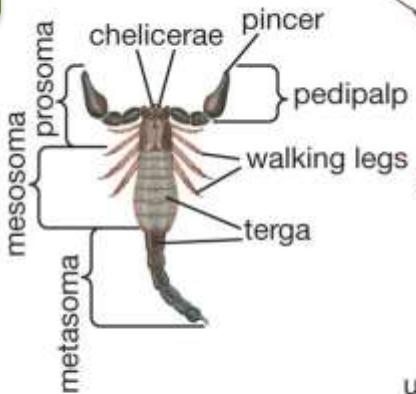
TERMITE
The plural of Latin termitēs, which meant "white ant". Influenced by the verb tenere, "to rub".



WASP
Thought to derive from the Proto-Indo-European root webh, meaning "to weave".

Arachnids

fossil scorpion from the Silurian Period



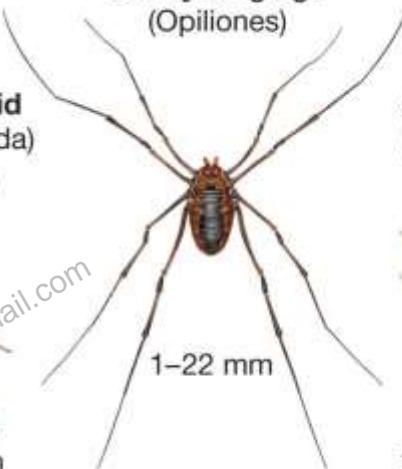
whip scorpion (Uropygi)



palpigrade (Palpigradi)



daddy longlegs (Opiliones)



sunspider (Solifugae)



scorpion (Scorpiones)



spider (Araneida)



acarid (Acari)



false scorpion (Pseudoscorpiones)



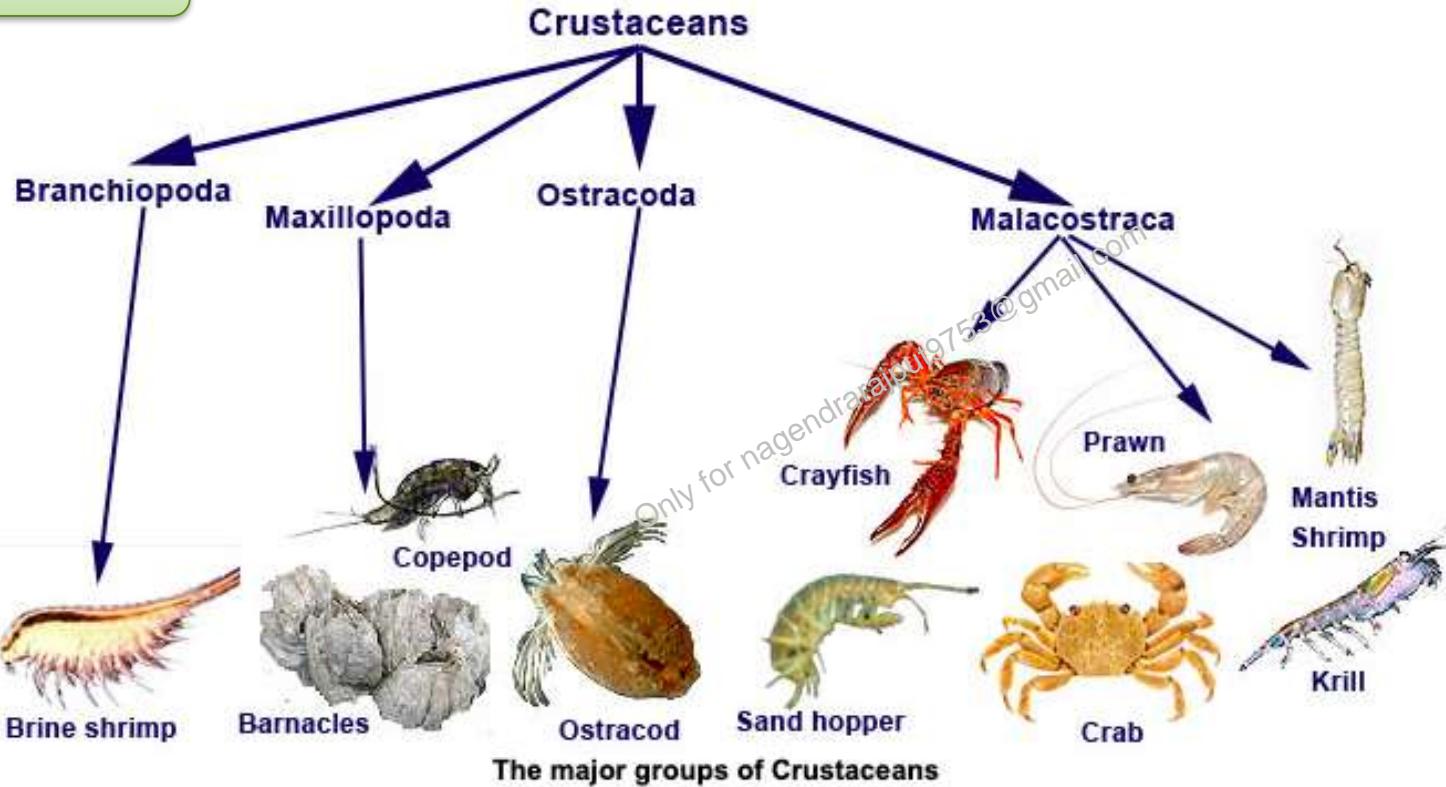
ricinuleid (Ricinulei)



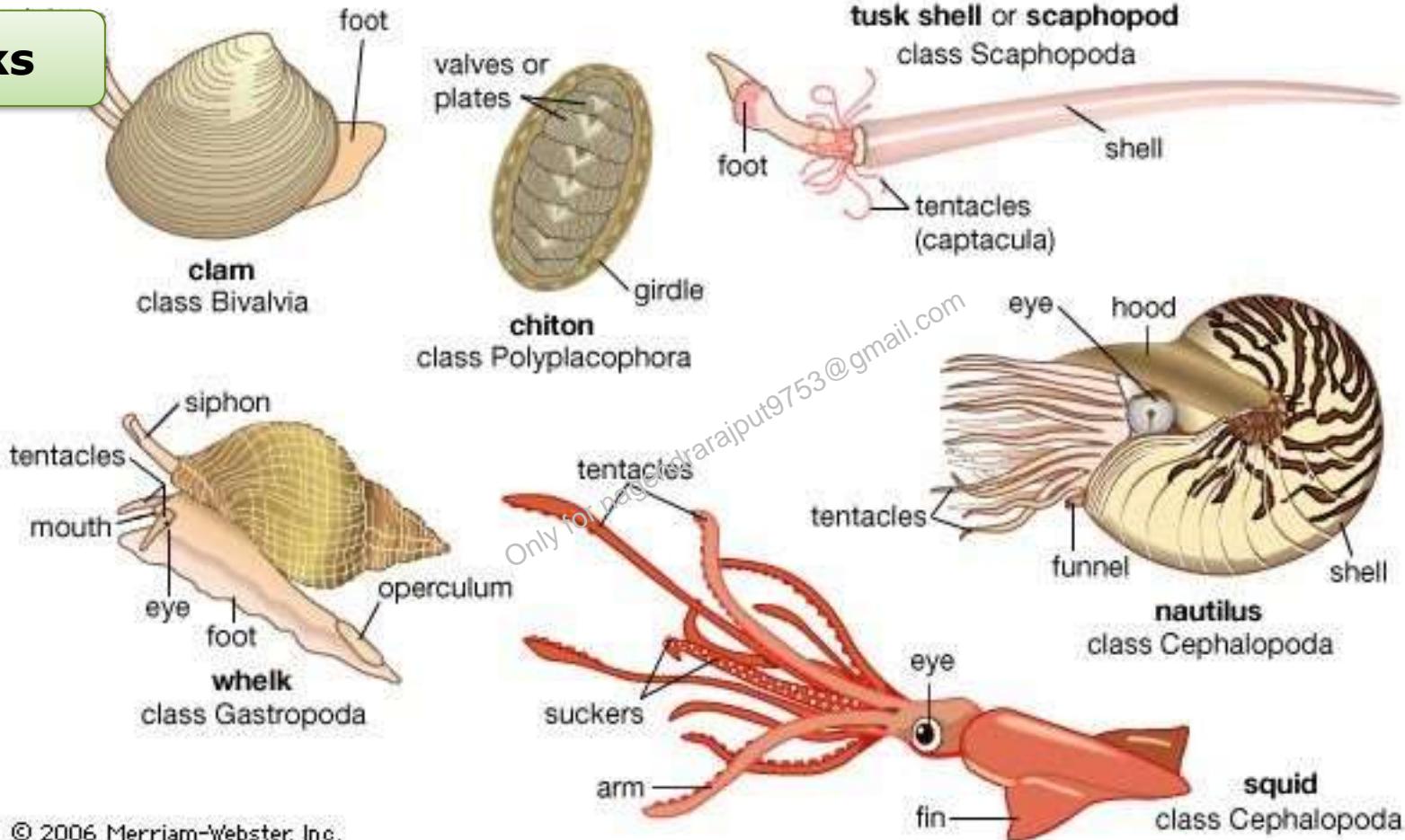
tailless whip scorpion (Amblypygi)



Crustaceans

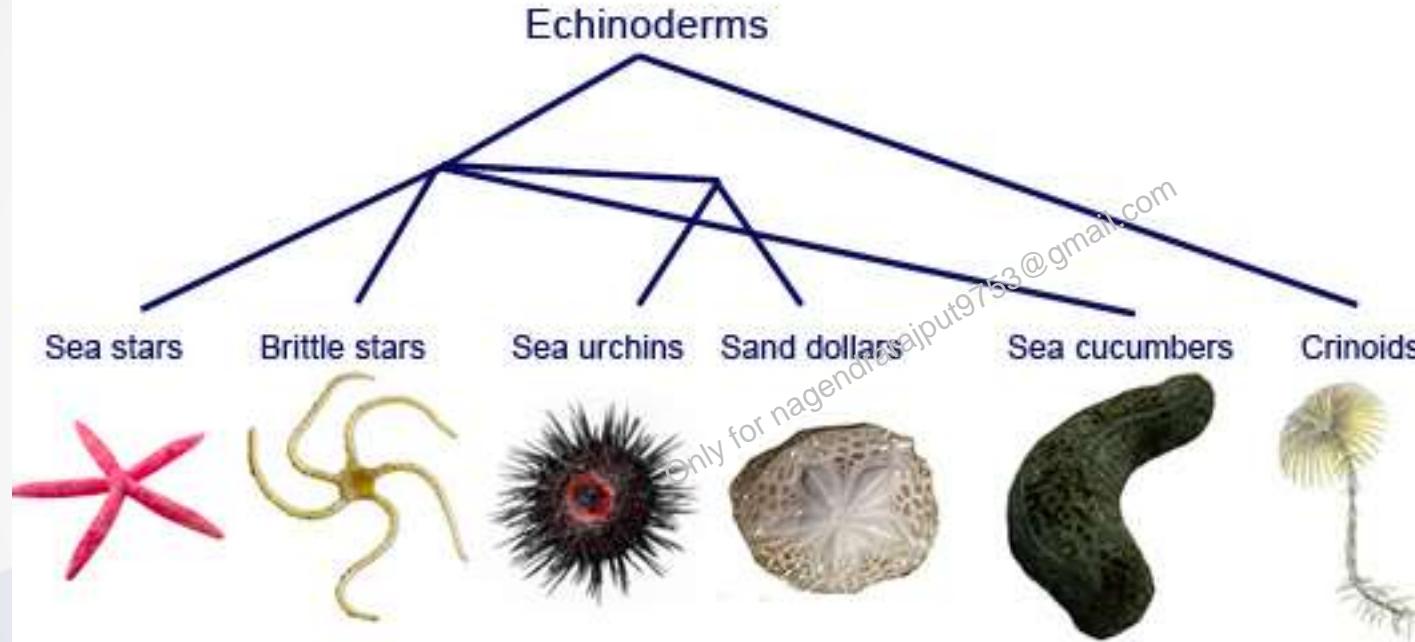


Mollusks



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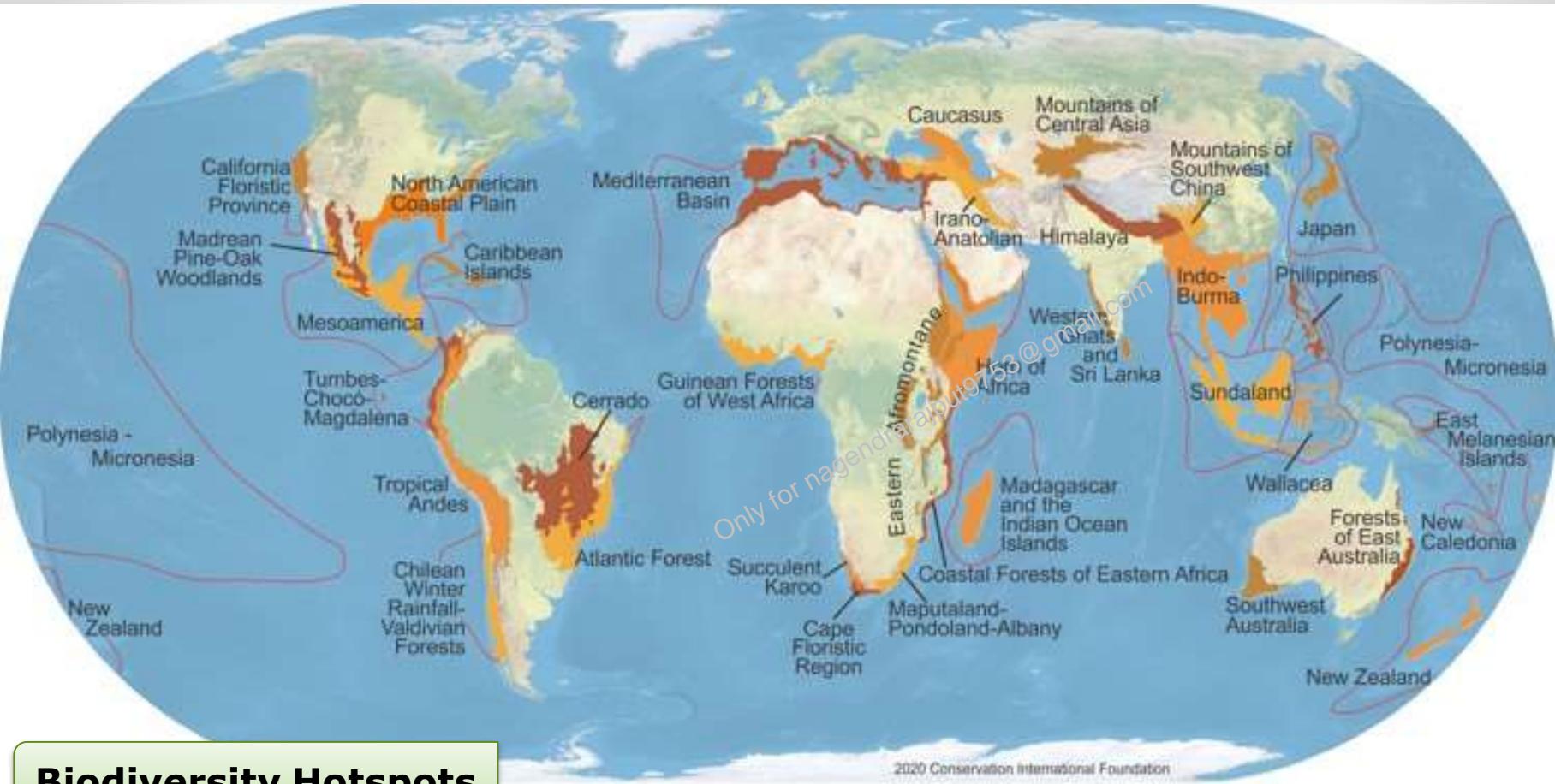
Echinoderms



The different groups of echinoderms

Cnidarians





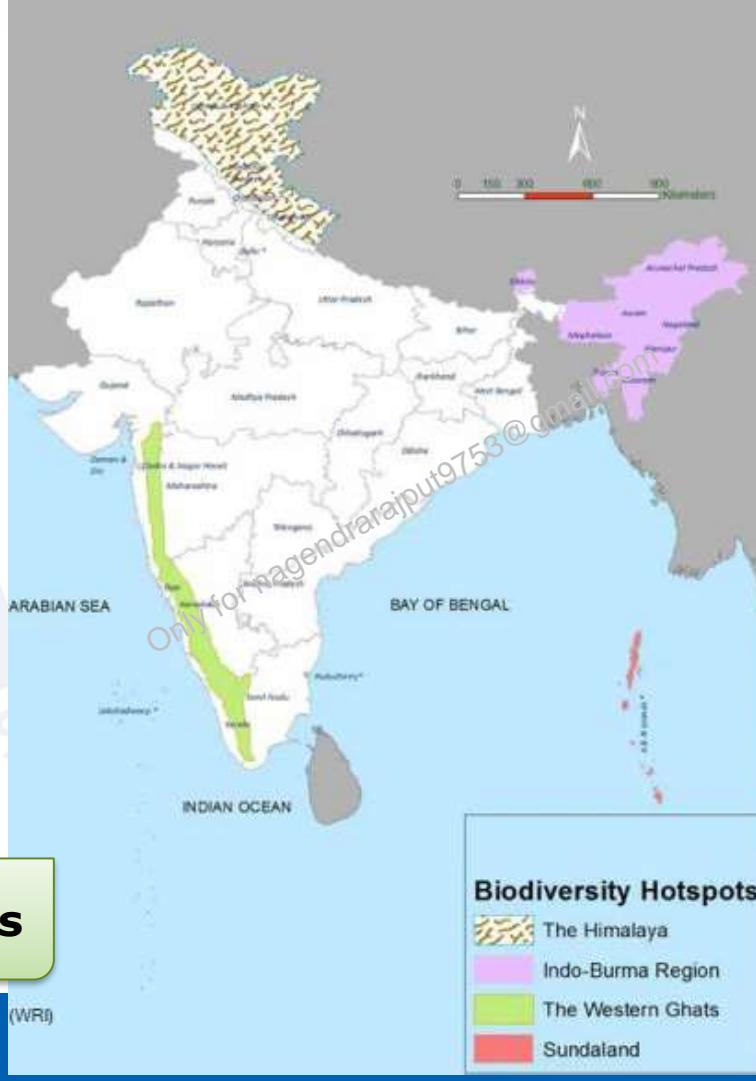
Biodiversity Hotspots

2020 Conservation International Foundation



Conservation International (conservation.org) defines 36 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.

Biodiversity Hotspots





Raflesia



Lion Tailed macaques



Western tragopan



**Grey-crowned
crocias**

Biogeographic Zone

- regions of the Earth's surface that have distinct patterns of plant and animal species distribution
- Each zone is defined by its own unique combination of environmental characteristics
 - such as temperature
 - precipitation, and
 - soil types, as well as its
 - history of geological and climatic changes.
- India:
 - 2.4% of the land area,
 - accounts for 7-8 % of the recorded species of the world.
 - More than 45,000 species of plants and 81,000 species of animals are found in India
- 10 biogeographic zones in India



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Biogeographic Zones of India

Wildlife Institute of India (WII)

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Himalaya	Semi-Arid
Deccan Peninsula	Coasts
Western Ghats	North-East
Gangatic Plain	Islands
Desert	Trans-Himalaya

Subject, Topic & Expert

Zone 1 – Trans Himalaya



Zone 2 – Himalaya



Zone 3 – Indian Desert



Zone 4 – Semi Arid



Zone 5 – Western Ghats



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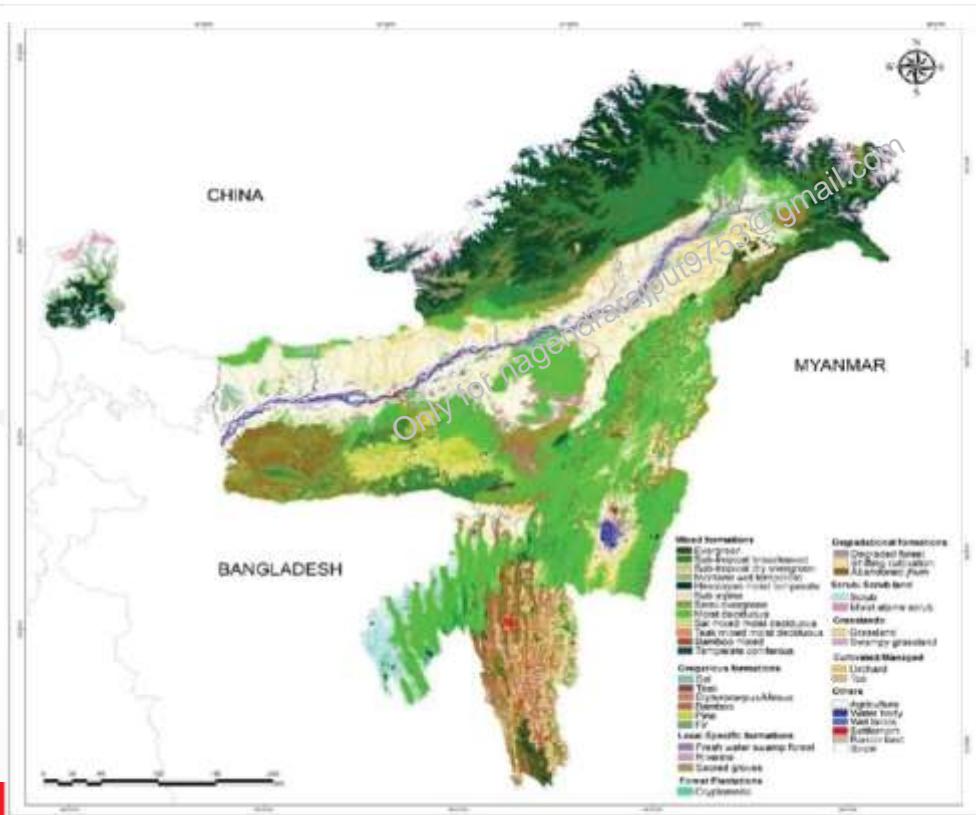
Zone 6 – Deccan Peninsula



Zone 7 – Gangetic Plain



Zone 8 – North East India



Zone 9 – Islands



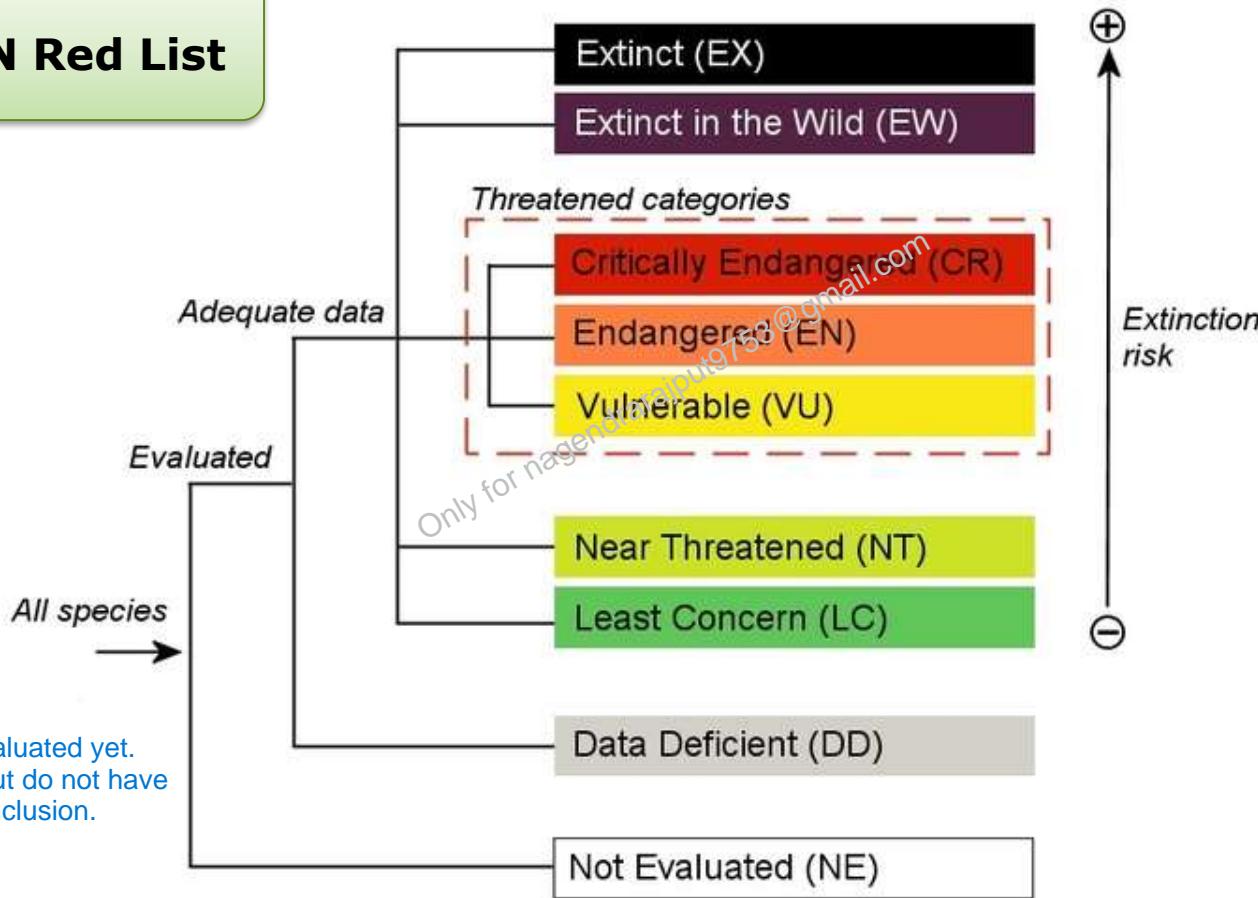
Zone 10 – Coasts



EX means no longer found anywhere.

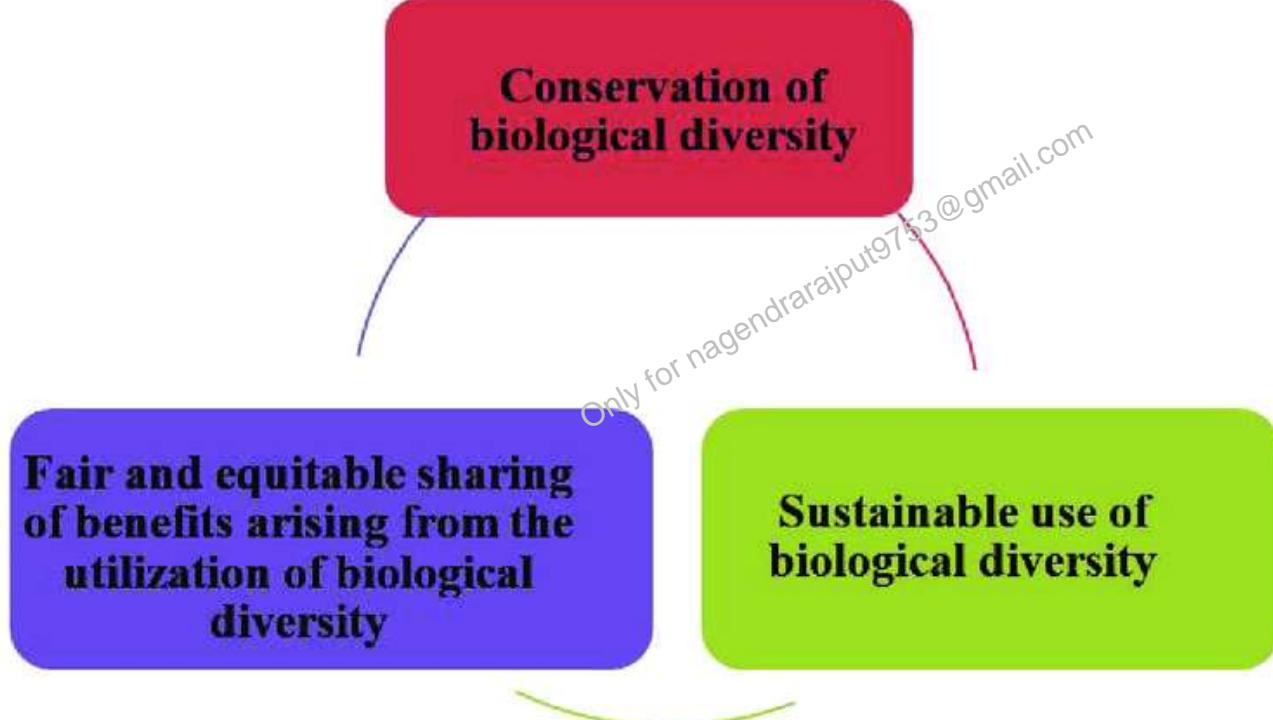
EW means species has got extinct in wild and found only in preservation.

IUCN Red List



NE means they have not been evaluated yet.
DD means they have evaluated but do not have sufficient data to come on any conclusion.

CBD



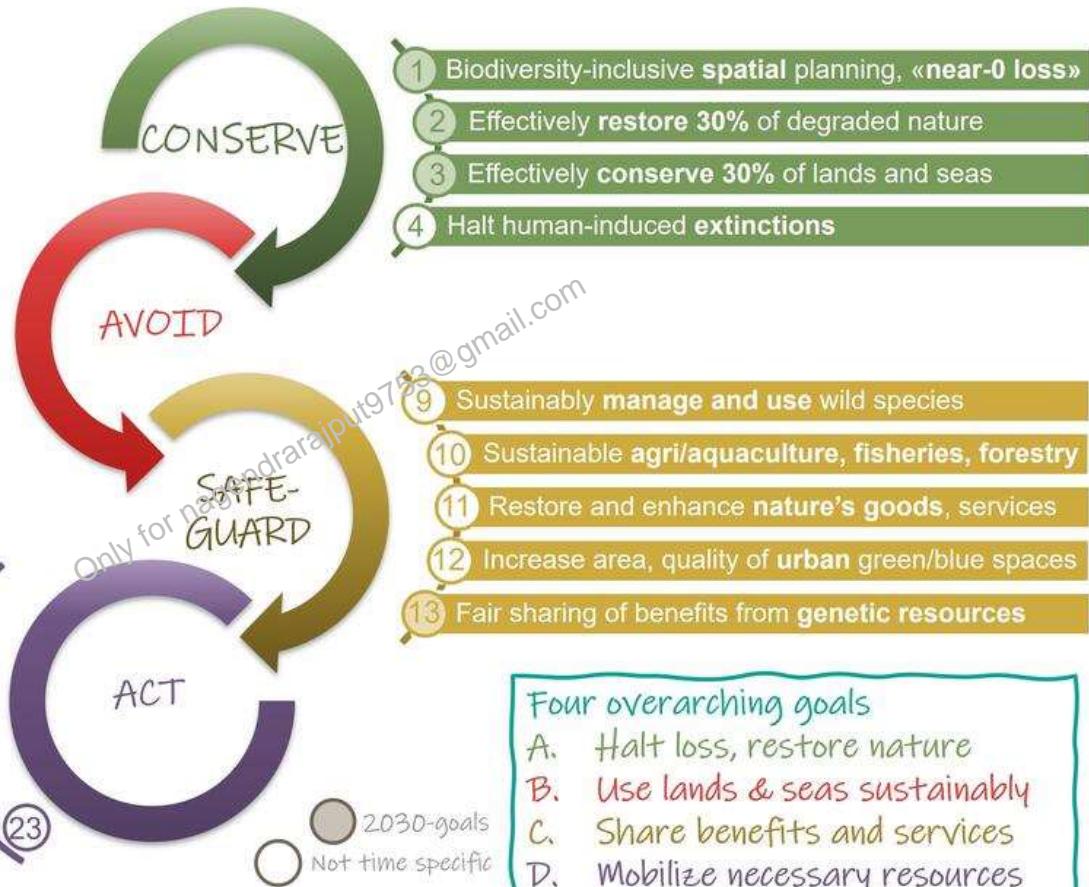


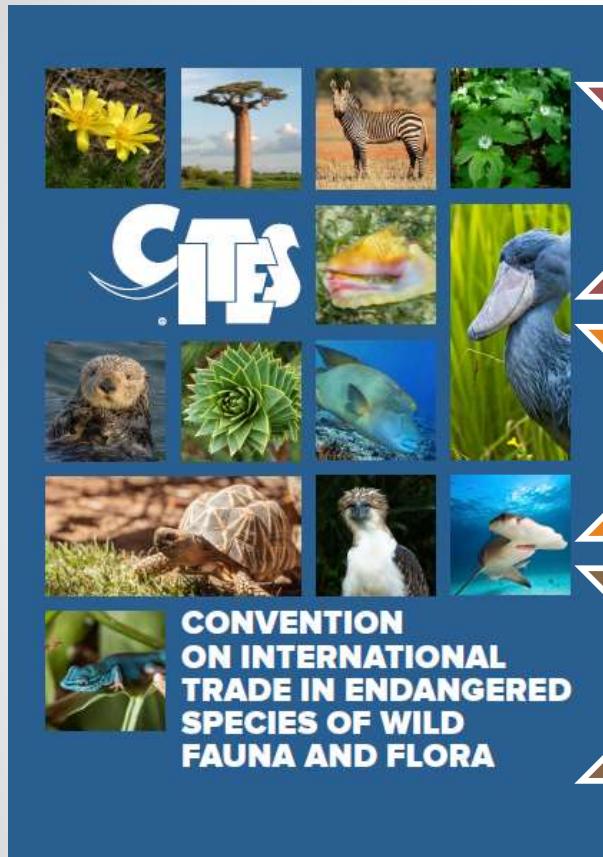
KUNMING MONTREAL GLOBAL BIODIVERSITY FRAMEWORK

2020 UN BIODIVERSITY CONFERENCE
COP 15 - CRIMPOUVE-NOMA
Montreal, Canada, 2020-2021
KUNMING-MONTREAL

- Stop unsustainable use, harvest, trade of species 5
- Reduce alien species spread by at least 50% 6
- Reduce pollution risks, impacts by at least 50% 7
- Reduce climate change impacts 8

- Mainstream biodiversity into all policy, practice 14
- Businesses to monitor, disclose nature impacts 15
- Sustainable consumption, half food waste 16
- Phase out 'perverse' subsidies, increase finance 18
- Strengthen capacity, participation, IPLC, women 17 23





Appendix I

species threatened with extinction.

Trade permitted in exceptional cases

Appendix II

not necessarily threatened with extinction

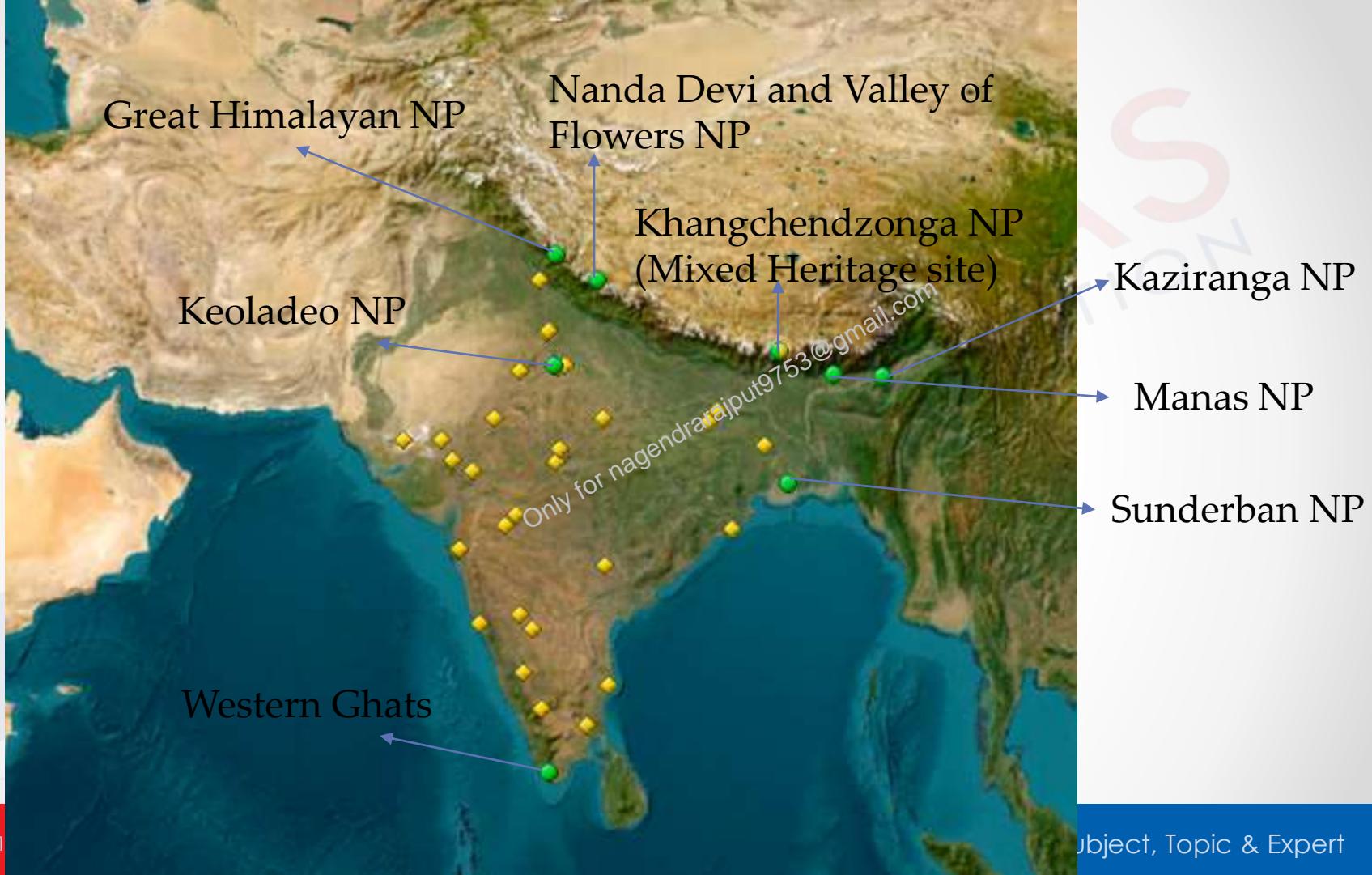
trade must be controlled to avoid utilization incompatible with their survival

Appendix III

protected in at least one country

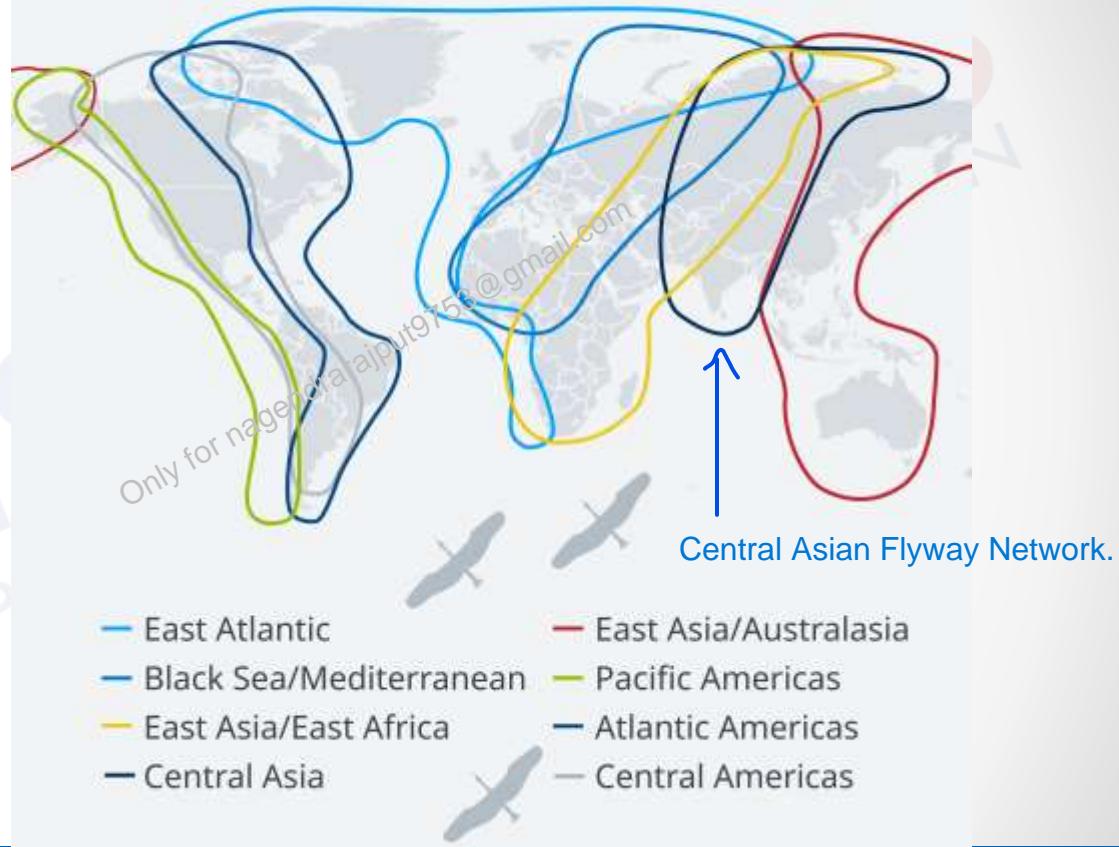
has asked other CITES Parties for assistance in controlling the trade

UNESCO Natural Heritage Sites





Migratory birds and their flyways



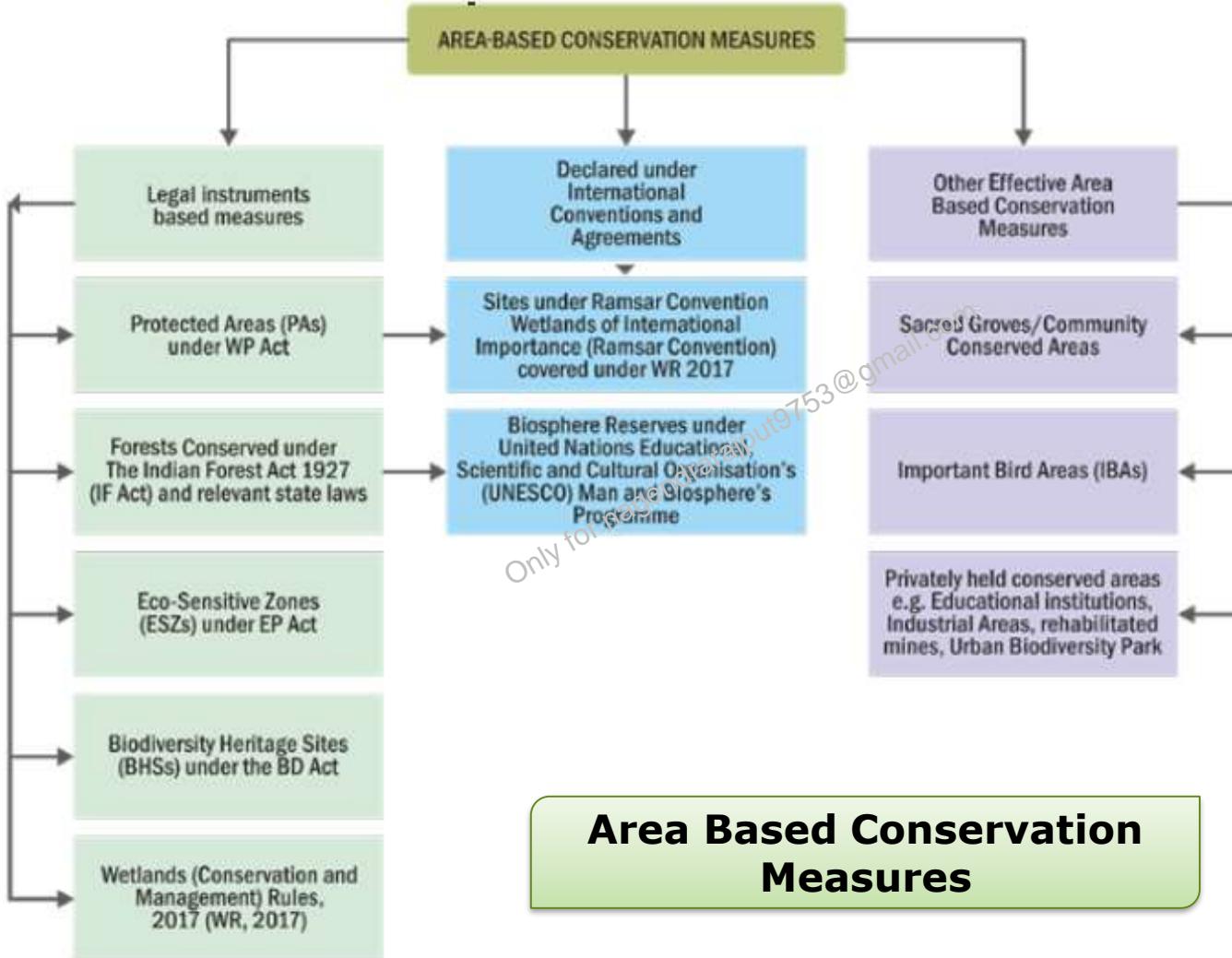
Source: wetlands.org; birdlife.org

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ic & Expert



- | | |
|--|---------------------------------|
| | HUMAN SETTLEMENT |
| | RESEARCH |
| | EDUCATION & TRAINING |
| | TOURISM |
| | Core area |
| | Buffer zones |
| | Transition area |



Some Important Species and their conservation

Tiger Conservation

- **IUCN**: Endangered, **Schedule 1 of WPA**, Appendix 1 of CITES
- **Project tiger**: Centrally sponsored scheme
- **National Tiger Conservation Authority**: under Wildlife Protection Act, 1972
- Monitoring System for Tigers – Intensive Protection and Ecological Status (**M-STRIPES**)
 - The software link provided gives access to the installable version of MSTRIPES an integrated program for GPS aided Spatial Patrolling and Ecological Assessment of Tiger Reserves and Protected areas.
- Tiger reserves: They have a core area called **Critical tiger habitat** which has a legal basis under WPA
- Global efforts:
 - Global tiger forum: inter- governmental international body
 - TX2: St. Petersburg Declaration on Tiger Conservation was adopted under the GTI and the Global Tiger Recovery Programme or TX2
 - **Conservation Assured Tiger Standards CA|TS**: a set of criteria which allows tiger sites to check if their management will lead to successful tiger conservation part of TX2

Elephant Conservation

- Elephant – **National heritage animal, Schedule 1 of WPA, Endangered under IUCN**
- Largest terrestrial animal on the planet
- **Land scale approach:** holistic approach to conservation, concerned with biodiversity and local economies, agriculture, eco-tourism, health and social benefits of the environment.
- **Project Elephant:** To protect elephants, their habitat & corridors
- **Monitoring of Illegal Killing of Elephants (MIKE) Programme: Under Resolution to CITES**
- **Asian Elephant Alliance: Five NGOs:** Elephant Family, International Fund for Animal Welfare (IFAW), IUCN Netherlands, World Land Trust (WLT) and Wildlife Trust of India (WTI).

The International Big Cat Alliance (IBCA) is a global initiative launched by India in April 2023 during the 50th anniversary of Project Tiger. Its primary aim is to conserve the world's seven major big cat species: tiger, lion, leopard, snow leopard, jaguar, puma, and cheetah.

Species Recovery programme

Integrated Development of Wildlife Habitats' (IDWH):

- Centrally Sponsored Scheme
- Assistance for the Development of National Parks and Sanctuaries
- 22 species (16 terrestrial and 6 aquatic species) have been identified by the MoEF and Wildlife Institute of India
 - objective of saving critically endangered species/ecosystems that to ensure their protection outside Protected Areas, across the wider landscape/seascape.
 - The status of critically endangered is not same as IUCN status.

Species Recovery programme

1. Asian Wild Buffalo
2. Asiatic Lion
3. Brow-Antlered Deer or Sangai
4. Dugong
5. Edible Nest Swiftlet
6. Gangetic River Dolphin
7. Great Indian Bustard
8. Hangul
9. Indian Rhino or Great One-horned Rhinoceros
10. Jerdon's Courser
11. Malabar Civet
12. Marine Turtles
13. Nicobar Megapode
14. Nilgiri Tahr
15. Snow Leopard
16. Swamp Deer
17. Vultures
18. Northern River Terrapin
19. Clouded Leopard
20. Arabian Sea Humpback Whale
21. Red Panda
22. Caracal

Asian Wild Buffalo

- IUCN status: Endangered
- Schedule I of the Wildlife (Protection) Act, 1972.
- distributed over the tracts of tall grasslands and riverine forests in India and Nepal.



Asiatic Lion Conservation Project

- Schedule 1 of Wildlife Protection Act, 1972
- Appendix-I of CITES, while
- IUCN **endangered** category
- Found in GIR forest, a dry deciduous forest ecosystem in the Saurashtra region of Gujarat,
- 5 Protected areas: **Gir National Park, Gir Sanctuary, Pania Sanctuary, Mitiyala Sanctuary and Girnar Sanctuary.**



Brow-Antlered Deer or Sangai

- Popularly called 'Sangai'
- a unique animal found only in Manipur
- State animal of Manipur
- Schedule-1 of Wildlife (Protection) Act, 1972, **Endangered** on IUCN Red List
- Only deer which has adapted itself to the swampy habitat.
- It is found in **Keibul Lamjao National Park Manipur**. It is largely seen over the floating biomass, locally called "**phumdi**" in the South Eastern part of **Loktak Lake** inside the park.



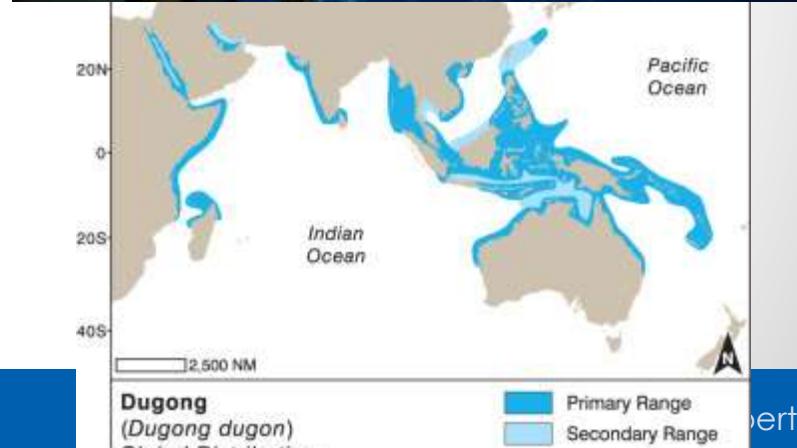
Deer vs Antelope

- Two umbrella terms that refer to a great number of different animals.
- While male deer **have antlers** which they **shed** and grow every year, antelopes have **horns that are permanent**.
- Deer antlers are branched and antelope horns are not.
- The largest antelope species are larger than the biggest deer species.
- Deer are found in every continent except Antarctica. Antelope cannot be found in the Africa and some parts of Eurasia.



Dugong

- IUCN – Vulnerable, Schedule 1 of WPA, Appendix 1 of CITES
- **herbivorous mammal** that is strictly marine
- grazes on the sea grass meadows in coastal waters and are therefore called as "Sea Cows".
- Found in shallow coastal waters of the Indian and western Pacific Oceans.
- Found mainly along **western coast** in India and Andaman and Nicobar
 - seen in the Gulf of Mannar, Gulf of Kutch, Palk Bay, and the Andaman and Nicobar Islands.



Edible Nest Swiftlet

- **IUCN:** Least Concern, Schedule 1 of WPA
- In India, this bird is **endemic to Andaman and Nicobar**, (also found in Java and Sumatra)
- Swiftlet builds a **nest that is not only edible for humans** but is considered a rare delicacy. The nest, which is built out of the bird's saliva solidifies.
- Use a form of echolocation to navigate through darkness in caves.



Gangetic River Dolphin

- IUCN: Endangered mammals, Schedule 1 of WPA
- It lives in freshwater
- They are functionally blind and have adapted to live in muddy water.
- Uses echolocation (ultrasonic sound)
- **National Aquatic Animal**
- A dedicated sanctuary: Vikramshila Gangetic Dolphin Sanctuary (VGDS), Bihar only in India



Other Dolphins

- Indus Dolphin (Bhulan):
 - State aquatic animal of Punjab
 - Endangered, freshwater and functionally blind dolphin
- Irrawaddy Dolphin:
 - Endangered
 - live in both freshwater and saltwater,
 - found in three rivers: the Ayeyarwady (Myanmar), the Mahakam (Indonesian Borneo) and the Mekong.
 - In India: Chilika lake
- Indian Ocean Humpback Dolphins
 - Indian Ocean, Endangered
- All are in Schedule 1 of WPA



Great Indian Bustard

- **IUCN:** Critically Endangered, Schedule 1 of WPA
- Covered under **Bonn Convention**
- Indicator species of grassland
- endemic to Indian sub continent – India and Pakistan
- **State bird of Rajasthan**
 - Project Godawan: desert National Park
- There are four species of Bustards in India Great Indian Bustard, Lesser Florican, Bengal Florican and Houbara Bustard
 - They are terrestrial birds, one of the heaviest flying birds in world found mainly in dry grassland.



Hangul

- Aka Kashmir Stag
- **IUCN**: Critically Endangered, Schedule 1 of WPA
- found in the temperate grasslands of western Himalayas.
- now confined only to the Kashmir Valley
- **Dachigam National Park**, Kashmir
- State animal of J&K (Now an UT)



Indian Rhino

- Aka Great One-horned Rhinoceros
- **IUCN:** Vulnerable, WPA Schedule 1
- exists only in a few small population units generally situated in the north-eastern India and in Nepal.
- Remarkable work in their recovery by India and Nepal (Indian Rhino Vision 2020)
- National parks of Assam especially **Kaziranga National park**
- They primarily graze, with a diet consisting almost entirely of grasses
- The rhinoceros is the second-largest terrestrial mammal, behind the elephant.
- Javan and Sumatran Rhino – IUCN: Critically endangered, White Rhino – Near Threatened



Jerdon's Courser

- A nocturnal bird endemic to India.
- found in the Eastern Ghats of Andhra Pradesh.
- It is currently known only from the **Sri Lankamalleswara Wildlife Sanctuary**
- **IUCN:** Critically Endangered



Malabar Civet

- A nocturnal mysterious animal endemic to Western Ghats now
- IUCN: Critically Endangered, Schedule 1 of WPA
- Very little is known about its habitat and niche
- It was reported to be extinct by 1960, but rediscovered 2 decades later



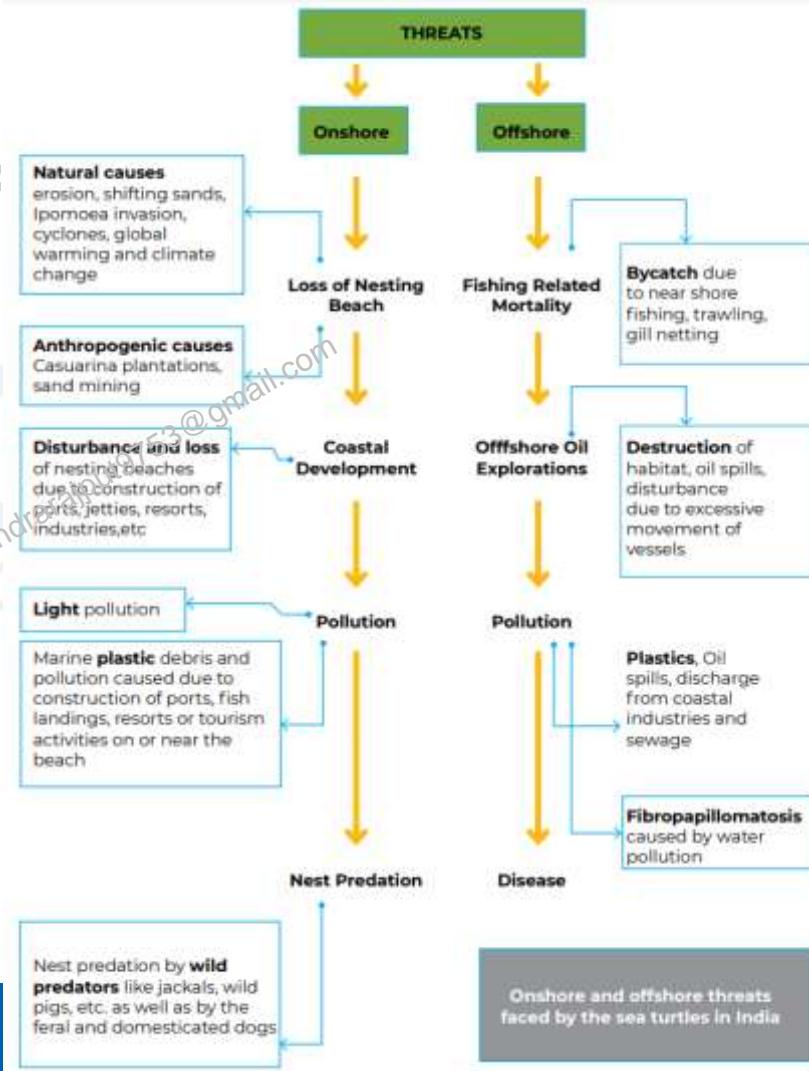
Marine Turtles

- Five species of sea turtles are known to inhabit Indian coastal waters and islands.
- All turtles are part of schedule 1 of WPA.
- These are the
 - Olive Ridley Turtles
 - Green Turtles
 - Hawksbill Turtles
 - Loggerhead Turtles
 - Leatherback Turtles
- They play vital role in transportation of nutrients from the highly productive marine habitats such as sea-grass beds to energy-poor habitats like sandy beaches.
- This helps reverse the usual flow of nutrients from land to sea.



National Marine Turtle Action Plan:

- Conserve Species, their habitat and reduce negative impacts on survival of marine turtles;
- Improve the understanding of marine turtles and their habitats, through a coordinated mechanism;
- Promote Awareness and Education on conservation of marine turtles and their habitats;
- Enhance livelihoods of coastal communities through promoting sustainable ecotourism
- Increase national, regional and international cooperation on marine turtle conservation.



Marine Turtles

- **Olive Ridley Turtles**
 - IUCN – Vulnerable
 - Gahirmatha beach of Odisha is largest mass nesting site for the olive ridley turtles in India.
- **Green Turtles**
 - IUCN – Endangered
 - Herbivore turtle
- **Hawksbill Turtles**
 - Critically Endangered
 - They maintain the health of coral reefs. As they remove prey such as sponges from the reef's surface, they provide better access for reef fish to feed.
- **Loggerhead Turtles**
 - Vulnerable
 - named for their large heads that support powerful jaw muscles
- **Leatherback Turtles**
 - Vulnerable
 - largest sea turtle species and also one of the most migratory, crossing both the Atlantic and Pacific Oceans.



Nicobar Megapode

- Large, brownish bird with a small gray Found
- IUCN: Vulnerable
- Found in the Nicobar Islands. Builds a large mound for a nest
- newly-hatched chicks dig themselves out and become immediately independent.



Nilgiri Tahr

- a mountain goat
- IUCN: Endangered, Schedule 1 of WPA
- Found in ridge forests of the southern Western Ghats.
- The ideal habitat is the rocky outcrops adjacent to the shola-grasslands and other ridge forests.
- Most of the population confined to Eravikulam National Park in Kerala and Grizzled Giant Squirrel Wildlife Sanctuary in Tamil Nadu.



Snow Leopard

- IUCN – Vulnerable, Schedule 1 of WPA, Appendix 1 of CITES
- one of the most mysterious cats in the world.
- Highly adapted to life on the cold, rocky slopes of High Asia
- Government of India has identified the snow leopard as a flagship species for the high-altitude Himalayas.
- Geographical range encompasses a large part of the western Himalayas, including the Union Territories of Jammu and Kashmir and Ladakh, Himachal Pradesh, Uttarakhand and Sikkim and Arunachal Pradesh



Swamp Deer

- Aka Barasingha
- confined to the States of Uttarakhand, Uttar Pradesh, Assam, and Madhya Pradesh in India
- IUCN - Vulnerable



Vultures of India

This poster depicts the nine species of Vultures reported from India and their identification features along with their IUCN Redlist Status



White-rumped Vulture
Gypus bengalensis
By Sunetra Sarker
Red-headed Vulture
Sarcogyps calvus
By Devanshu Mehta
Indian Vulture
Gypus indicus
By Sanjiv Singhvi

Slender-billed Vulture
Gypus tenuirostris
By Arunava Bhattacharya
Bearded Vulture
Gypaetus barbatus
By Ashutosh Duttal

Cinereous Vulture
Aegypius monachus
By Aditya Chauhan
Egyptian Vulture
Necrosyrtes monachus
By Suresh Kumar
Himalayan Griffon
Gypaetus himalayensis
By Suresh Kumar

CR = Critically endangered
EN = Endangered
NT = Near threatened
LC = Least concern

Vultures

- Vultures keep the environment clean, by scavenging on animal carcasses.
- A major threat to vultures is the use of the painkiller, diclofenac for veterinary purposes
- Vulture Action Plan 2020-25 for the conservation of vultures in the country.
- there are Vulture Conservation and Breeding Centres in India, of which three are directly administered by the Bombay Natural History Society.

Northern River Terrapin

- IUCN – Critically Endangered, Schedule 1 of WPA, Appendix I of CITES
- It can be found in India, Bangladesh and South East Asia.
- It lives in coastal mangrove estuaries and creeks, but ventures far upstream during the breeding season.



Turtles, Tortoise and Terrapin

- Turtle, tortoise, and terrapin are all names for the hard-shelled, egg-laying reptiles
- All belong to taxonomic order Chelonia
- Turtle is often used to refer to sea turtles that rarely leave the ocean.
- Tortoise, on the other hand, is usually used to refer to turtles that spend most of their time on land.
 - tortoises don't have webbed feet, since they don't spend much, if any, time in the water.
- Terrapins are turtles that spend time both on land and in brackish, swampy water.

Clouded Leopard

- IUCN: Vulnerable
- CITES: Appendix 1
- is found across Southeast Asia and the Himalayas
- Their chief prey are gibbons, macaques, slow lorises, small deer and wild boars, which they ambush from the trees or stalk from the ground.



Arabian Sea Humpback Whale

- IUCN – Endangered
- Part of Convention on the Conservation of Migratory Species of Wild Animals
- One of the largest mammals of the planet (Blue whale is the largest mammal)



ARABIAN SEA HUMPBACK WHALES

THREATS TO ASHW



Bycatch; 30-40% of whales photographed off Oman have scars from **entanglement in fishing gear**.



Ship strike: The region hosts many ports and some of the busiest **shipping lanes** in the world.



Underwater noise and risk of pollution from **oil and gas activities**.



Habitat degradation from **coastal development**, shipping and construction noise.

LEGEND



AREAS WHERE ASHW REGULARLY OBSERVED DURING RESEARCH



AREAS WHERE ASHW REPORTED BY FISHERS AND OTHERS



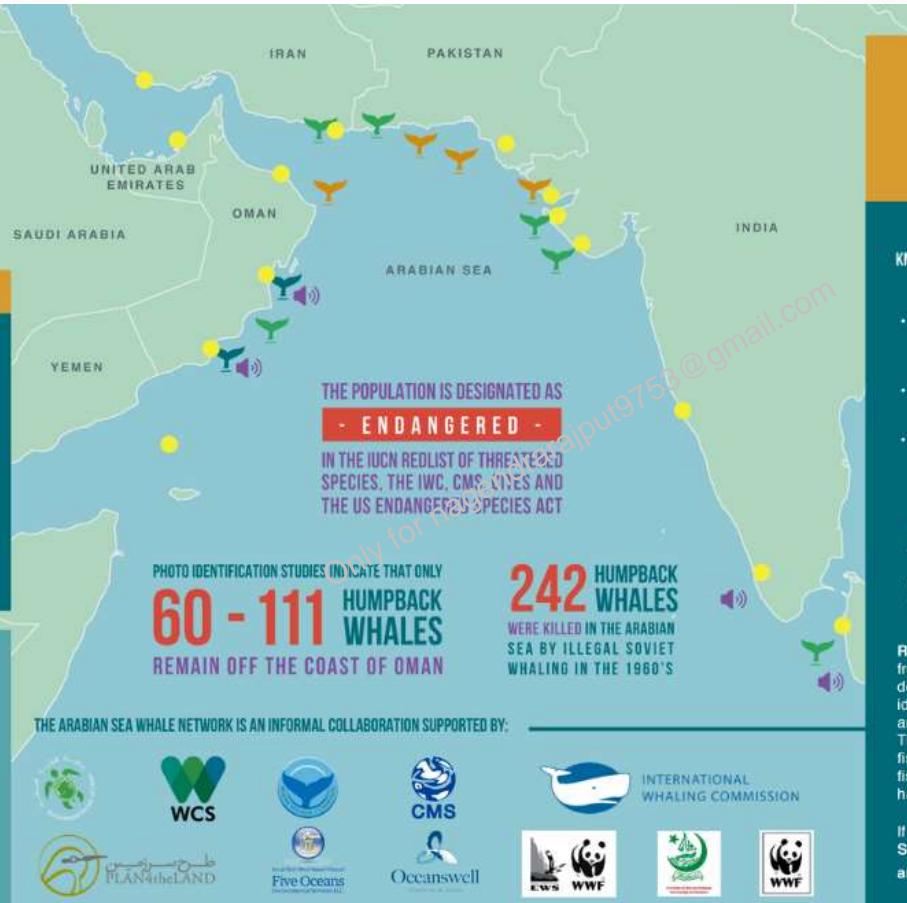
ASHW STRANDINGS OR ENTANGLEMENTS



RECORDINGS OF ASHW SONG



LOCATIONS OF ARABIAN SEA WHALE NETWORK MEMBER PROJECTS



WITHOUT ACTION, THIS SMALL,
UNIQUE POPULATION OF WHALES
COULD DISAPPEAR

KNOWLEDGE GAPS THAT HINDER EFFECTIVE CONSERVATION:

- How far does the ASHW range extend outside of Oman, and which areas are critical for feeding and breeding?
- How many whales remain in the Arabian Sea?
- How can threats be most effectively mitigated?



ARABIAN SEA WHALE NETWORK

ARABIAN SEA WHALE NETWORK MEMBERS ARE COLLABORATING TO ADDRESS THESE KNOWLEDGE GAPS

Research methods include collection of data from fishers and other types of vessels; dedicated boat surveys with photo-identification; satellite tracking; genetic sampling and acoustic monitoring.

The network aims to work with government, fisheries and industry to mitigate the threats of fishing gear entanglement, ship strike, and habitat degradation.

If you are interested in learning **HOW YOU CAN SUPPORT** these efforts, please visit our website: arabianseawhalenetwork.org

Red Panda

- IUCN – Endangered, Schedule 1 of WPA
- Found in Nepal, Bhutan, India, and China to Myanmar
- In India, this elusive species is found in Sikkim, Arunachal Pradesh, Darjeeling and Kalimpong districts of West Bengal
- State Animal of Sikkim
- indicator species of Eastern Himalayas, red pandas are mainly Bamboo feeder



Caracal

- IUCN – Least concern, Schedule 1 of WPA
- extraordinary ability to catch birds in flight
- found in Africa, the Middle East, Central and South Asia
- long legs, a short face, long canine teeth, and distinctive ears
- primarily nocturnal animal
- Significant decline in India



Two important rivers -- one with its source in Jharkhand (and known by a different name in Odisha), and another, with its source in Odisha - merge at a place only a short distance from the coast of Bay of Bengal before flowing into the sea. This is an important site of wildlife and biodiversity and a protected area. Which one of the following could be this ?

2011

- (a) Bhitarkanika
- (b) Chandipur-on-sea
- (c) Gopalpur-on-sea
- (d) Simlipal

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Three of the following criteria have contributed to the recognition of Western Ghats-Sri Lanka and Indo-Burma regions as hotspots of biodiversity :

1. Species richness
2. Vegetation density
3. Endemism
4. Ethno-botanical importance
5. Threat perception
6. Adaptation of flora and fauna to warm and humid conditions

Which three of the above are correct criteria in this context ?

- (a) 1, 2 and 6
- (b) 2, 4 and 6
- (c) 1, 3 and 5
- (d) 3, 4 and 6

There are two criterieas for hotspots of biodiversity -
1) At least have 1500 endemic species of Vascular capability.
2) At least it must have lost 70% of its vegetation.

2011

The Himalayan Range is very rich in species diversity. Which one among the following is the most appropriate reason for this phenomenon ?

- (a) It has a high rainfall that supports luxuriant vegetative growth
- (b) It is a confluence of different biogeographical zones
- (c) Exotic and invasive species have not been introduced in this region
- (d) It has less human interference

2011

With reference to India, consider the following Central Acts :

1. Import and Export (Control) Act, 1947
2. Mining and Mineral Development (Regulation) Act, 1957
3. Customs Act, 1962
4. Indian Forest Act, 1927

2011

Which of the above Acts have relevance to/bearing on the biodiversity conservation in the country ?

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- (a) 1 and 3 only
 - (b) 2, 3 and 4 only
 - (c) 1, 2, 3 and 4
 - (d) None of the above Acts

A sandy and saline area is the natural habitat of an Indian animal species. The animal has no predators in that area but its existence is threatened due to the destruction of its habitat. Which one of the following could be that animal ?

- (a) Indian wild buffalo
- (b) Indian wild ass
- (c) Indian wild boar
- (d) Indian gazelle

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2011

Biodiversity forms the basis for human existence in the following ways :

1. Soil formation
2. Prevention of soil erosion
3. Recycling of waste
4. Pollination of crops

Select the correct answer using the codes given below.

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2011

- (a) 1, 2 and 3 only
- (b) 2, 3 and 4 only
- (c) 1 and 4 only
- (d) 1, 2, 3 and 4

Which one of the following is *not* a site for *in-situ* method of conservation of flora ?

- (a) Biosphere Reserve
- (b) Botanical Garden
- (c) National Park
- (d) Wildlife Sanctuary

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2011

The “Red Data Books” published by the International Union for Conservation of Nature and Natural Resources (IUCN) contain lists of

1. Endemic plant and animal species present in the biodiversity hotspots.
2. Threatened plant and animal species.
3. Protected sites for conservation of nature and natural resources in various countries.

Select the correct answer using the codes given below :

- (a) 1 and 3
- (b) 2 only
- (c) 2 and 3
- (d) 3 only

2011

Consider the following statements :

1. Biodiversity is normally greater in the lower latitudes as compared to the higher latitudes.
2. Along the mountain gradients, biodiversity is normally greater in the lower altitudes as compared to the higher altitudes.

Which of the statements given above is/are correct ?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

2011

How does National Biodiversity Authority (NBA) help in protecting the Indian agriculture?

1. NBA checks the biopiracy and protects the indigenous and traditional genetic resources.
2. NBA directly monitors and supervises the scientific research on genetic modification of crop plants.
3. Application for Intellectual Property Rights related to genetic/biological resources cannot be made without the approval of NBA.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

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2012

Consider the following protected areas :

1. Bandipur
2. Bhitarkanika
3. Manas
4. Sunderbans

Which of the above are declared Tiger Reserves?

- (a) 1 and 2 only
- (b) 1, 3 and 4 only
- (c) 2, 3 and 4 only
- (d) 1, 2, 3 and 4

2012

In which one among the following categories, of protected areas in India are local people **not** allowed to collect and use the biomass?

- (a) Biosphere Reserves
- (b) National Parks
- (c) Wetlands declared under Ramsar Convention
- (d) Wildlife Sanctuaries

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2012

Consider the following kinds of organisms :-

1. Bat
2. Bee
3. Bird

Which of the above is/are pollinating agent/agents?

- (a) 1 and 2 only
- (b) 2 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

2012

Which one of the following groups of animals belongs to the category of endangered species?

- (a) Great Indian Bustard, Musk Deer, Red Panda and Asiatic Wild Ass
- (b) Kashmir Stag, Cheetal, Blue Bull and Great Indian Bustard
- (c) Snow Leopard, Swamp Deer, Rhesus Monkey and Saras (Crane)
- (d) Lion-tailed Macaque, Blue Bull, Hanuman Langur and Cheetal

2012

2012

What is the difference between the antelopes Oryx and Chiru?

- (a) Oryx is adapted to live in hot and arid areas whereas Chiru is adapted to live in steppes and semi-desert areas of cold high mountains
- (b) Oryx is poached for its antlers whereas Chiru is poached for its musk
- (c) Oryx exists in western India only whereas Chiru exists in north-east India only
- (d) None of the statements (a), (b) and (c) given above is correct

Only for nandita9753@gmail.com

Which of the following can be threats to the biodiversity of a geographical area?

1. Global warming
2. Fragmentation of habitat
3. Invasion of alien species
4. Promotion of vegetarianism

Select the correct answer using the codes given below :

- (a) 1, 2 and 3 only
- (b) 2 and 3 only
- (c) 1 and 4 only
- (d) 1, 2, 3 and 4

2012

Consider the following :

1. Black-necked crane
2. Cheetah.
3. Flying squirrel
4. Snow leopard

Which of the above are naturally found in India?

- (a) 1, 2 and 3 only
- (b) 1, 3 and 4 only
- (c) 2 and 4 only
- (d) 1, 2, 3 and 4

2012

Vultures which used to be very common in Indian countryside some years ago are rarely seen nowadays. This is attributed to

- (a) the destruction of their nesting sites by new invasive species
- (b) a drug used by cattle owners for treating their diseased cattle
- (c) scarcity of food available to them
- (d) a widespread, persistent and fatal disease among them

2012

Consider the following animals :

1. Sea cow
2. Sea horse
3. Sea lion

Which of the above is/are mammal/mammals?

- (a) 1 only
- (b) 1 and 3 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

2013

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Consider the following :

1. Star tortoise
2. Monitor lizard
3. Pygmy hog
4. Spider monkey

Which of the above are naturally found in India?

- (a) 1, 2 and 3 only
- (b) 2 and 3 only
- (c) 1 and 4 only
- (d) 1, 2, 3 and 4

2013

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Consider the following pairs :

1. Nokrek Bio-sphere Reserve : Garo Hills
2. Logtak (Loktak) Lake : Barail Range
3. Namdapha National Park : Dafla Hills

Which of the above pairs is/are correctly matched?

- (a) 1 only
- (b) 2 and 3 only
- (c) 1, 2 and 3
- (d) None

2013

Consider the following pairs :

<i>National Park</i>	<i>River flowing through the Park</i>
----------------------	---

1. Corbett
National Park : Ganga
2. Kaziranga
National Park : Manas
3. Silent Valley
National Park Kaveri

Which of the above pairs is/are correctly matched?

- (a) 1 and 2
- (b) 3 only
- (c) 1 and 3
- (d) None

2013

In which of the following States is lion-tailed macaque found in its natural habitat?

1. Tamil Nadu
2. Kerala
3. Karnataka
4. Andhra Pradesh

Select the correct answer using the codes given below.

- (a) 1, 2 and 3 only
(b) 2 only
(c) 1, 3 and 4 only
(d) 1, 2, 3 and 4

2013

Consider the following fauna of India :

1. Gharial
2. Leatherback turtle
3. Swamp deer

Which of the above is/are endangered?

2013

- (a) 1 and 2 only
- (b) 3 only
- (c) 1, 2 and 3
- (d) None

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With reference to Bombay Natural History Society (BNHS), consider the following statements :

1. It is an autonomous organization under the Ministry of Environment and Forests.
2. It strives to conserve nature through action-based research, education and public awareness.
3. It organizes and conducts nature trails and camps for the general public.

Which of the statements given above is/are correct?

- (a) 1 and 3 only
- (b) 2 only
- (c) 2 and 3 only
- (d) 1, 2 and 3

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2014

With reference to a conservation organization called 'Wetlands International', which of the following statements is/are correct?

1. It is an intergovernmental organization formed by the countries which are signatories to Ramsar Convention.
2. It works at the field level to develop and mobilize knowledge, and use the practical experience to advocate for better policies.

Select the correct answer using the code given below.

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

2014

Other than poaching, what are the possible reasons for the decline in the population of Ganges River Dolphins?

1. Construction of dams and barrages on rivers
2. Increase in the population of crocodiles in rivers
3. Getting trapped in fishing nets accidentally
4. Use of synthetic fertilizers and other agricultural chemicals in crop-fields in the vicinity of rivers

Select the correct answer using the code given below.

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1, 3 and 4 only
- (d) 1, 2, 3 and 4

2014

Consider the following :

1. Bats
2. Bears
3. Rodents

The phenomenon of hibernation can be observed in which of the above kinds of animals?

2014

- (a) 1 and 2 only
- (b) 2 only
- (c) 1, 2 and 3
- (d) Hibernation cannot be observed in any of the above

If you walk through countryside, you are likely to see some birds stalking alongside the cattle to seize the insects disturbed by their movement through grasses. Which of the following is/are such bird/birds?

1. Painted Stork
2. Common Myna
3. Black-necked Crane

Select the correct answer using the code given below.

- (a) 1 and 2
- (b) 2 only
- (c) 2 and 3
- (d) 3 only

2014

Which of the following have coral reefs?

1. Andaman and Nicobar Islands
2. Gulf of Kachchh
3. Gulf of Mannar
4. Sunderbans

Select the correct answer using the code given below.

- (a) 1, 2 and 3 only
- (b) 2 and 4 only
- (c) 1 and 3 only
- (d) 1, 2, 3 and 4

2014

Lichens, which are capable of initiating ecological succession even on a bare rock, are actually a symbiotic association of

- (a) algae and bacteria
- (b) algae and fungi
- (c) bacteria and fungi
- (d) fungi and mosses

46. Consider the following pairs :

Wetlands

*Confluence of
rivers*

- | | | |
|---------------------------------|---|--------------------------------------|
| 1. Harike Wetlands | : | Confluence of Beas and Satluj/Sutlej |
| 2. Keoladeo Ghana National Park | : | Confluence of Banas and Chambal |
| 3. Kolleru Lake | : | Confluence of Musi and Krishna |

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2014

Which of the above pairs is/are correctly matched?

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

The most important strategy for the conservation of biodiversity together with traditional human life is the establishment of

- (a) biosphere reserves
- (b) botanical gardens
- (c) national parks
- (d) wildlife sanctuaries

Among the following organisms,
which one does **not** belong to the
class of other three?

- (a) Crab
- (b) Mite
- (c) Scorpion
- (d) Spider

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Consider the following international agreements :

1. The International Treaty on Plant Genetic Resources for Food and Agriculture
2. The United Nations Convention to Combat Desertification
3. The World Heritage Convention

Which of the above has/have a bearing on the biodiversity?

- (a) 1 and 2 only
- (b) 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

2014

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2014

- Which one of the following is the correct sequence of a food chain?
- (a) Diatoms-Crustaceans-Herrings
 - (b) Crustaceans-Diatoms-Herrings
 - (c) Diatoms-Herrings-Crustaceans
 - (d) Crustaceans-Herrings-Diatoms

2015

Which of the following National Parks is unique in being a swamp with floating vegetation that supports a rich biodiversity?

- (a) Bhitarkanika National Park
- (b) Keibul Lamjao National Park
- (c) Keoladeo Ghana National Park
- (d) Sultanpur National Park

2015

With reference to the International Union for Conservation of Nature and Natural Resources (IUCN) and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which of the following statements is/are correct?

1. IUCN is an organ of the United Nations and CITES is an international agreement between governments.
2. IUCN runs thousands of field projects around the world to better manage natural environments.
3. CITES is legally binding on the States that have joined it, but this Convention does not take the place of national laws.

Select the correct answer using the code given below.

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

With reference to ‘dugong’, a mammal found in India, which of the following statements is/are correct?

1. It is a herbivorous marine animal.
2. It is found along the entire coast of India.
3. It is given legal protection under Schedule I of the Wildlife (Protection) Act, 1972.

Select the correct answer using the code given below.

- (a) 1 and 2
- (b) 2 only
- (c) 1 and 3
- (d) 3 only

2015

Which one of the following is the national aquatic animal of India?

- (a) Saltwater crocodile**
- (b) Olive ridley turtle**
- (c) Gangetic dolphin**
- (d) Gharial**

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2015

2015

Which one of the following National Parks has a climate that varies from tropical to subtropical, temperate and arctic?

- (a) Khangchendzonga National Park
- (b) Nandadevi National Park
- (c) Neora Valley National Park
- (d) Namdapha National Park

With reference to an organization known as 'BirdLife International', which of the following statements is/are correct?

1. It is a Global Partnership of Conservation Organizations.
2. The concept of 'biodiversity hotspots' originated from this organization.
3. It identifies the sites known/referred to as Important Bird and Biodiversity Areas.

Select the correct answer using the code given below.

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

2015

In which of the following regions of India are you most likely to come across the 'Great Indian Hornbill' in its natural habitat?

- (a) Sand deserts of northwest India
- (b) Higher Himalayas of Jammu and Kashmir
- (c) Salt marshes of western Gujarat
- (d) Western Ghats

2016

What is/are unique about 'Kharai camel', a breed found in India?

1. It is capable of swimming up to three kilometres in seawater.
2. It survives by grazing on mangroves.
3. It lives in the wild and cannot be domesticated.

Select the correct answer using the code given below.

2016

- (a) 1 and 2 only
- (b) 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

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With reference to 'Red Sanders', sometimes seen in the news, consider the following statements :

1. It is a tree species found in a part of South India.
2. It is one of the most important trees in the tropical rain forest areas of South India.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

2016

From the ecological point of view, which one of the following assumes importance in being a good link between the Eastern Ghats and the Western Ghats ?

- (a) Sathyamangalam Tiger Reserve
- (b) Nallamala Forest
- (c) Nagarhole National Park
- (d) Seshachalam Biosphere Reserve

2017

Consider the following statements in respect of Trade Related Analysis of Fauna and Flora in Commerce (TRAFFIC) :

1. TRAFFIC is a bureau under United Nations Environment Programme (UNEP).
2. The mission of TRAFFIC is to ensure that trade in wild plants and animals is not a threat to the conservation of nature.

Which of the above statements is/are correct ?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

2017

According to the Wildlife (Protection) Act, 1972, which of the following animals ***cannot*** be hunted by any person except under some provisions provided by law ?

1. Gharial
2. Indian wild ass
3. Wild buffalo

Select the correct answer using the code given below :

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

2017

2017

If you want to see gharials in their natural habitat, which one of the following is the best place to visit ?

- (a) Bhitarkanika Mangroves
- (b) Chambal River
- (c) Pulicat Lake
- (d) Deepor Beel

2017

The term 'M-STIPES' is sometimes seen in the news in the context of

- (a) Captive breeding of Wild Fauna
- (b) Maintenance of Tiger Reserves
- (c) Indigenous Satellite Navigation System
- (d) Security of National Highways

In India, if a species of tortoise is declared protected under Schedule I of the Wildlife (Protection) Act, 1972, what does it imply ?

- (a) It enjoys the same level of protection as the tiger.
- (b) It no longer exists in the wild, a few individuals are under captive protection; and now it is impossible to prevent its extinction.
- (c) It is endemic to a particular region of India.
- (d) Both (b) and (c) stated above are correct in this context.

2017

In which one of the following States is Pakhui Wildlife Sanctuary located ?

- (a) Arunachal Pradesh
- (b) Manipur
- (c) Meghalaya
- (d) Nagaland

2018

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Which one of the following National Parks lies *completely* in the temperate alpine zone?

- (a) Manas National Park
- (b) Namdapha National Park
- (c) Neora Valley National Park
- (d) Valley of Flowers National Park

2019



Consider the following statements :

1. Asiatic lion is naturally found in India only.
2. Double-humped camel is naturally found in India only.
3. One-horned rhinoceros is naturally found in India only.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

2019

Which of the following are in Agasthyamala Biosphere Reserve?

- (a) Neyyar, Peppara and Shendurney Wildlife Sanctuaries; and Kalakad Mundanthurai Tiger Reserve
- (b) Mudumalai, Sathyamangalam and Wayanad Wildlife Sanctuaries; and Silent Valley National Park
- (c) Kaundinya, Gundla Brahmeswaram and Papikonda Wildlife Sanctuaries; and Mukurthi National Park
- (d) Kawal and Sri Venkateswara Wildlife Sanctuaries; and Nagarjunasagar-Srisailam Tiger Reserve

2019

Consider the following statements :

1. Some species of turtles are herbivores.
2. Some species of fish are herbivores.
3. Some species of marine mammals are herbivores.
4. Some species of snakes are viviparous.

Which of the statements given above are correct?

- (a) 1 and 3 only
- (b) 2, 3 and 4 only
- (c) 2 and 4 only
- (d) 1, 2, 3 and 4

2019

29. Consider the following pairs :

<i>Wildlife</i>	<i>Naturally found in</i>
1. Blue-finned Mahseer	: Cauvery River
2. Irrawaddy Dolphin	: Chambal River
3. Rusty-spotted Cat	: Eastern Ghats

Which of the pairs given above are correctly matched?

2019

(a) 1 and 2 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

With reference to Indian elephants, consider the following statements :

1. The leader of an elephant group is a female.
2. The maximum gestation period can be 22 months.
3. An elephant can normally go on calving till the age of 40 years only.
4. Among the States in India, the highest elephant population is in Kerala.

Which of the statements given above is/are correct ?

- (a) 1 and 2 only
- (b) 2 and 4 only
- (c) 3 only
- (d) 1, 3 and 4 only

2020

Which of the following Protected Areas are located in Cauvery basin ?

1. Nagarhole National Park
2. Papikonda National Park
3. Sathyamangalam Tiger Reserve
4. Wayanad Wildlife Sanctuary

Select the correct answer using the code given below :

- (a) 1 and 2 only
- (b) 3 and 4 only
- (c) 1, 3 and 4 only
- (d) 1, 2, 3 and 4

2020

With reference to India's biodiversity, Ceylon frogmouth, Coppersmith barbet, Gray-chinned minivet and White-throated redstart are

- (a) Birds
- (b) Primates
- (c) Reptiles
- (d) Amphibians

2020

Which one of the following protected areas is well-known for the conservation of a sub-species of the Indian swamp deer (Barasingha) that thrives well on hard ground and is exclusively graminivorous?

- (a) Kanha National Park
- (b) Manas National Park
- (c) Mudumalai Wildlife Sanctuary
- (d) Tal Chhapar Wildlife Sanctuary

Which of the following are the most likely places to find the musk deer in its natural habitat ?

1. Askot Wildlife Sanctuary
2. Gangotri National Park
3. Kishanpur Wildlife Sanctuary
4. Manas National Park

Select the correct answer using the code given below :

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 and 4 only
- (d) 1 and 4 only

2020

2020

If a particular plant species is placed under Schedule VI of The Wildlife Protection Act, 1972, what is the implication ?

- (a) A licence is required to cultivate that plant.
- (b) Such a plant cannot be cultivated under any circumstances.
- (c) It is a Genetically Modified crop plant.
- (d) Such a plant is invasive and harmful to the ecosystem.

With reference to India's Desert National Park, which of the following statements are correct ?

1. It is spread over two districts.
2. There is no human habitation inside the Park.
3. It is one of the natural habitats of Great Indian Bustard.

Select the correct answer using the code given below :

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

2020

Among the following Tiger Reserves, which one has the largest area under “Critical Tiger Habitat” ?

- (a) Corbett
- (b) Ranthambore
- (c) Nagarjunsagar-Srisailam
- (d) Sunderbans



In the nature, which of the following is/are most likely to be found surviving on a surface without soil?

1. Fern
2. Lichen
3. Moss
4. Mushroom

Select the correct answer using the code given below.

(a) 1 and 4 only

(b) 2 only

(c) 2 and 3

(d) 1, 3 and 4

2021

2021

Which one of the following is used in preparing a natural mosquito repellent?

- (a) Congress grass
- (b) Elephant grass
- (c) Lemongrass
- (d) Nut grass

Consider the following kinds of organisms :

1. Copepods
2. Cyanobacteria
3. Diatoms
4. Foraminifera

Which of the above are primary producers in the food chains of oceans?

- (a) 1 and 2
- (b) 2 and 3
- (c) 3 and 4
- (d) 1 and 4

2021

Consider the following animals :

1. Hedgehog
2. Marmot
3. Pangolin

To reduce the chance of being captured by predators, which of the above organisms rolls up/roll up and protects/protect its/their vulnerable parts?

- (a) 1 and 2
- (b) 2 only
- (c) 3 only
- (d) 1 and 3

2021

Which one of the following is a filter feeder?

- (a) Catfish
- (b) Octopus
- (c) Oyster
- (d) Pelican

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Which of the following are detritivores?

1. Earthworms
2. Jellyfish
3. Millipedes
4. Seahorses
5. Woodlice

Select the correct answer using the code given below.

2021

- (a) 1, 2 and 4 only
- (b) 2, 3, 4 and 5 only
- (c) 1, 3 and 5 only
- (d) 1, 2, 3, 4 and 5

Which of the following have species that can establish symbiotic relationship with other organisms?

1. Cnidarians
2. Fungi
3. Protozoa

Select the correct answer using the code given below.

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2021

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

With reference to 'palm oil', consider the following statements :

1. The palm oil tree is native to Southeast Asia.
2. The palm oil is a raw material for some industries producing lipstick and perfumes.
3. The palm oil can be used to produce biodiesel.

Which of the statements given above are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

2021

Consider the following statements :

1. Moringa (drumstick tree) is a leguminous evergreen tree.
2. Tamarind tree is endemic to South Asia.
3. In India, most of the tamarind is collected as minor forest produce.
4. India exports tamarind and seeds of moringa.
5. Seeds of moringa and tamarind can be used in the production of biofuels.

Which of the statements given above are correct?

(a) 1, 2, 4 and 5

(b) 3, 4 and 5

(c) 1, 3 and 4

(d) 1, 2, 3 and 5

2021

Which of the following is *not* a bird ?

- (a) Golden Mahseer
- (b) Indian Nightjar
- (c) Spoonbill
- (d) White Ibis

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2022

With reference to Indian laws about wildlife protection, consider the following statements :

1. Wild animals are the sole property of the government.
2. When a wild animal is declared protected, such animal is entitled for equal protection whether it is found in protected areas or outside.
3. Apprehension of a protected wild animal becoming a danger to human life is sufficient ground for its capture or killing.

Which of the statements given above is/are correct ?

- (a) 1 and 2
- (b) 2 only
- (c) 1 and 3
- (d) 3 only

2022

2022

Certain species of which one of the following organisms are well known as cultivators of fungi ?

- (a) Ant
- (b) Cockroach
- (c) Crab
- (d) Spider

Consider the following statements :

Statement-I :

Marsupials are not naturally found in India.

Statement-II :

Marsupials can thrive only in montane grasslands with no predators.

Which one of the following is correct in respect of the above statements?

- (a) Both Statement-I and Statement-II are correct and Statement-II is the correct explanation for Statement-I
- (b) Both Statement-I and Statement-II are correct and Statement-II is not the correct explanation for Statement-I
- (c) Statement-I is correct but Statement-II is incorrect
- (d) Statement-I is incorrect but Statement-II is correct

2023

'Invasive Species Specialist Group' (that develops Global Invasive Species Database) belongs to which one of the following organizations?

- (a) The International Union for Conservation of Nature
- (b) The United Nations Environment Programme
- (c) The United Nations World Commission for Environment and Development
- (d) The World Wide Fund for Nature

Consider the following fauna :

- 1. Lion-tailed Macaque**
- 2. Malabar Civet**
- 3. Sambar Deer**

How many of the above are generally nocturnal or most active after sunset?

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raiput9753@gmail.com

2023

- (a) Only one**
- (b) Only two**
- (c) All three**
- (d) None**

2023

Which of the following organisms perform waggle dance for others of their kin to indicate the direction and the distance to a source of their food?

- . (a) Butterflies
- (b) Dragonflies
- (c) Honeybees
- (d) Wasps

Consider the following statements :

1. Some mushrooms have medicinal properties.
2. Some mushrooms have psycho-active properties.
3. Some mushrooms have insecticidal properties.
4. Some mushrooms have bioluminescent properties.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

2023

Consider the following statements regarding the Indian squirrels :

1. They build nests by making burrows in the ground.
2. They store their food materials like nuts and seeds in the ground.
3. They are omnivorous.

How many of the above statements are correct?

2023

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- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Consider the following statements :

1. Some microorganisms can grow in environments with temperature above the boiling point of water.
2. Some microorganisms can grow in environments with temperature below the freezing point of water.
3. Some microorganisms can grow in highly acidic environment with a pH below 3.

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

2023

2023

**Which one of the following makes a tool
with a stick to scrape insects from
a hole in a tree or a log of wood?**

- (a) Fishing cat**
- (b) Orangutan**
- (c) Otter**
- (d) Sloth bear**

Consider the following statements :

Once the Central Government notifies an area as a 'Community Reserve'

1. the Chief Wildlife Warden of the State becomes the governing authority of such forest
2. hunting is not allowed in such area
3. people of such area are allowed to collect non-timber forest produce
4. people of such area are allowed traditional agricultural practices

How many of the above statements are correct?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All four

2023

Consider the following statements :

1. In India, the Biodiversity Management Committees are key to the realization of the objectives of the Nagoya Protocol.
2. The Biodiversity Management Committees have important functions in determining access and benefit sharing, including the power to levy collection fees on the access of biological resources within its jurisdiction.

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2
- (d) Neither 1 nor 2

2023