

TARGET PRELIMS 2024

BOOKLET-43; EB&CC-12

CA UPDATES

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GS FOUNDATION 2025

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2. BIODIVERSITY

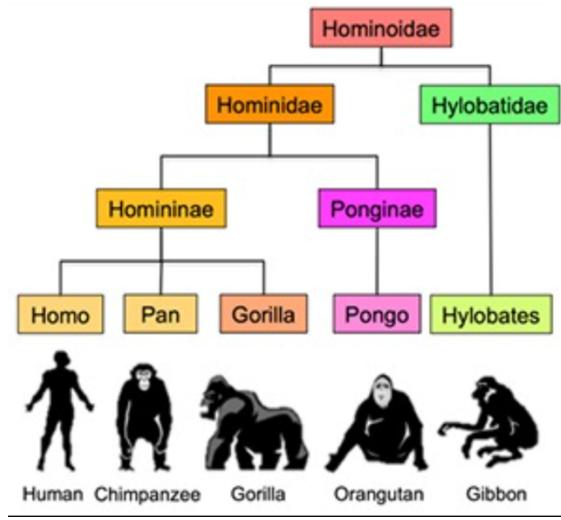
1) "MANIS MYSTERIA": NEW SPECIES OF PANGOLIN DISCOVERED IN CHINA (SEP 2023)

- A ninth species of Pangolin has been discovered through analysis of confiscated scales.
 - » **Tentative name assigned to new species:** "Manis mysteria."
- However, though the new species have been discovered, there are signs that it may be disappearing.
 - » Analysis showed genomic signature of a declining population, including low genetic diversity when compared to other pangolins. This happens because of inbreeding.
 - » **Distribution:** It remains a mystery.
 - The new species doesn't look very different from its Asian cousins, it may well have been overlooked in the wild.
- **Pangolin is amongst the most illegally traded species.**
 - » **Pangolin scales** are coveted for its use in traditional medicine, despite being made of keratin, just like fingernails.
 - » **Meat** - its meat is also considered delicacy in Asian countries.

2) GIBBONS

- Gibbons are among the fastest of all apes.
 - » Ape, (Superfamily Hominoidea), include any tailless primate of the families **Hylobatidae** (gibbons), and **Hominidae** (Chimpanzees, Bonobos, Orangutans, Gorillas, and Human Beings)
 - » Apes are distinguished from Monkeys by the complete absence of tail and the presence of appendix and by their more complex brains.
 - » **Gibbons** are referred as lesser apes.
 - » The **Gorilla, chimpanzees, bonobo, and orangutans** are called Great Apes in recognition of their comparatively large size and humanlike features.

CURRENT CLASSIFICATION SCHEME



3) HOLOCK GIBBON (CLASS: MAMMALIA; ORDER PRIMATES; FAMILY: HYLOBATIDAE)

- It is a species of gibbon found in tropical forests of southeastern Asia. It is also found in India's north-east.
- Found in India's northeast, it is one of the 20 species of gibbons found in the world and only ape found in India.
- **Estimated population** of the hoolock gibbons is 12,000.
- **Features:** Like other apes, they are intelligent, have distinct personalities, strong family bonds etc.
- They are also characterized by their vigorous vocal displays (Singing).
- **One Species, not two:**
 - **Background:** Over the decades, zoologists thought that the northeastern India housed two species of apes - The Eastern Hoolock Gibbon (Hoolock Leuconedys) found in a specific region of Arunachal Pradesh and the Western Hoolock Gibbon (Hoolock Hoolock) distributed elsewhere in the northeast.
 - **Findings of a new study:** A study led by scientists from Center for Cellular and Molecular Biology (CCMB) in 2021 proved through genetic analysis that there is only one species of apes in India. It debunked earlier research that the eastern hoolock gibbon was a separate species based on the color of its coat. The study also concluded that the two populations of the western hoolock gibbon and the assumed eastern hoolock gibbon split 1.48 million years ago.



A female in the foreground, and a male in the background

Conservation status



IUCN Status:

- **Eastern Hoolock Gibbon:** VU
- **Western Hoolock Gibbon:** EN

WPA: Schedule-1

A) THE GLOBAL GIBBON NETWORK

- In 2020, on the occasion of the International Gibbon Day (24th Oct), 20 Gibbon conservation organization came together to launch Global Gibbon Network. It included IUCN Species Survival Commission (SSC) Primate Specialist Group Section on Small Apes, International Collaboration to Conserve Gibbons and Siamang, Hainan Institute of National Parks, Eco Foundation Global etc.
- **The vision of GGN** is to safeguard and conserve a key element of Asia's natural heritage: The singing gibbons and their habitats, by promoting participatory conservation policies, legislation, and action.
- The GGN had its first meeting at Haikou in China's Hainan province from 7th - 9th July 2023.
 - The meeting highlighted several threats being faced by Hoolock gibbons in India.
 - **Felling of trees** for infra project

4) CHEETAL

IUCN Status: LC

WPA: Scheduled-II (as updated in 2022)

Distribution: Native to Indian Subcontinent (India, Nepal, Bhutan, BD, SL)

Chital have also been introduced in USA, Australia etc.

State Animal of Telangana

Notable Features: Sexual dimorphism

Note: Chital has become invasive in various parts of the world.

- » It has become invasive in Andaman and Nicobar Islands.
 - It was introduced to the A&N Islands for game hunting in the early 1990s by the British, an herbivore that multiplied unchecked for years in the absence of large predators and has become an expensive and invasive problem.
 - For e.g. on Netaji Subhash Chandra Bose Island (formerly known as Ross Island), which lies east of Port Blair and doesn't have any major residential enclaves, the 500 cheetals have depleted much of the low ground vegetation. The A&N Forest Department has been spending Rs 15-20 lakh per month since the past few months to feed on the islands.
- » W.e.f 2nd Aug 2022, the EU added the Chital to the invasive list of alien species and banned its import in EU.
- » It has also become invasive on many Hawaiian Islands.



Stag



Doe

5) ELEPHANT CORRIDORS

- **Why in news?**
 - **Report: Elephant Corridors of India, 2023** by Wildlife Institute of India (WII), Project Elephant (GoI), and MoEF&CC.
- **Background:**
 - Elephant Corridor is a strip of land that facilitates the movement of elephant between two or more viable habitat patches.
 - The GoI **Elephant Task Force Report, 2010** (also known as the Gajah Report), listed 88 corridors across the country.

- India has not only identified elephant corridors, but some of the critical corridors have also been restored by the efforts of forest departments of states, MoEF&CC and NGOs. Some of these restored Critical corridors include:

- Kaniyanpura - Moyar Corridor in Bandipur landscape of Karnataka
- Chilla - Motichur Corridor in the Rajaji landscape of Uttarakhand
- Thiruneli - Kudarakote corridor in the Wayanad landscape of Kerala
- Segur elephant corridor in the Mudumalai landscape of TN
- Kuldiha - Hadgarh corridor in the Simlipal landscape of Odisha
- Edayarahalli - Doddasampige corridor in MM Hills and BR Hills landscape of Karnataka
- Mudahalli - Talavadi corridor in the BR Hills Karnataka

- **Key Highlights of the 2023 Report:**

- A total of 150 elephant corridors were reported from 15 elephant range states across the four elephant bearing regions of India.
 - » WB with 26 elephant corridors has the highest number (17%) of corridors in the country.
 - » **Landscapes (Elephant bearing region) wise data:**
 - 52 corridors in the East Central Region (nearly 35%).
 - 48 corridors in the North-eastern region (nearly 32%)
 - 32 corridors in the Southern region (21%). It has to be noted that Southern region harbors the highest elephant population in the country.
 - 18 corridors in the northern region (12%). Northern region has the smallest elephant population in the country.
 - » **84% (within state boundaries);** 13% (n=19) are interstate corridors. There were also 6 transnational corridors between India and Nepal.
- Of the 88 corridors that were listed in the Gajah report, 74 were found to be presently active with respect to elephant use.
 - » **Classification:** Elephant Corridors were classified as "active" if it was being effectively used by elephants as reported by forest departments in ground survey. It was classified as "impaired" if the elephant use was perceived to be virtually non-existent.

- **Way Forward:**

- Continuous monitoring: Delineate boundaries of the corridors and include them in respective working plans and management plans.

A) DULUNG-SUBANSIRI ELEPHANT CORRIDOR (MARCH 2024)

- The Wildlife Division of the MoEF&CC has recently directed the forest departments of Arunachal Pradesh and Assam to prepare a proposal to notify the Dulung-Subansiri elephant corridor - downstream of the 2000 MW Lower Subansiri Hydroelectricity Project.
 - The corridor is functional and of vital importance in the larger landscape for elephants.
 - It facilitates east-west movement of elephants across the Subansiri river.

- An expert committee of NBWL, which was inspecting the compliance of conditions imposed by Arunachal Pradesh government, as part of the clearance of the hydroelectric project, had recommended the notification of the elephant corridor in May 2023.
- The proposal to demarcate elephant corridor will be presented during the next meeting of the National Board of Wildlife, which is the apex government body on wildlife conservation and regulation of development projects in wildlife areas.
- Notification of the elephant corridor will involve physically marking the relevant areas used by Elephants on the ground as well as potentially notifying parts of the corridor as either a WLS or a conservation reserve.
 - If the corridor is notified a protected area, it will provide legal sanctity to it.

NATIONAL BOARD OF WILDLIFE

- A statutory body constituted through **WPA, 1972**.
- It is an advisory body that helps centre for policy decisions.
- Chaired by PM, vice chairman - Minister of Environment
- Functions
 - Advises centre on policy decisions.
 - Review all wildlife related issues, approve projects in and around national parks and sanctuaries.
 - Boundaries of NP or WLS can't be changed without permission of NBW

B) ABOUT THE 2000 MW LOWER SUBANSIRI HYDRO-PROJECT

- It is being executed by the National Hydroelectric Power Corporation (NHPC), has been in the works since 2003 and is yet to be commissioned.
- It is located in the Kamle and Dhemaji districts of Arunachal Pradesh and Assam, respectively, and is being constructed on the Subansiri River, a tributary of the Brahmaputra River
- A report from Wildlife Institute of India (WII) has pointed out that hydropeaking for power generation from the project will pose a threat of sweeping away elephants, especially calves, due to flash floods.
 - Hydropeaking refers to regulating the flow of water released from a dam to generate power, depending on demands.

6) CAPTIVE ELEPHANT (TRANSFER AND TRANSPORT) RULES, 2024

- **Background:** Under the WPA, 1972, Elephant has been kept in Schedule-1. A Schedule-1 species can't be captured and traded.
 - **Section 12** of the act allows schedule-1 animals to be translocated for 'special purposes' such as education and scientific research. They can be translocated for population management of

wildlife without harming any wild animal and collection for specimens for recognized zoos/museums.

- **Captive Elephants** because of their historical role in forest management, timber transport, presence in estates of erstwhile royal families and in temple precincts for religious purpose can be owned and therefore come under a special category. However, **strict rules guide the transfer of such elephants.**
- **Section 40(2)** of the WPA, 1972, prohibits the acquisition, possession, and transfer of a captive elephant without the written permission of the Chief Wildlife Warden of the State.
- Until 2021, the provisions explicitly said that such transactions ought not to be of a 'Commercial nature'.
- The 2021 amendment, however, allowed the transfer of elephants for 'religious or any other purposes'. This broad reason was criticized by civil society and even the Standing Committee of Parliament. But it was passed as a law.
- What do the "Captive Elephant (Transfer and Transport) Rules, 2024 say?
 - New relaxations under which captive elephants can change owners or be transferred?
 - i. Situation when an owner is no longer in a position to maintain the elephant or when a State's Chief Wildlife Warden "deems it fit and proper" to transfer the elephant in circumstances which calls for better upkeep of the elephant.
 - » Other pre-requisites for transfers within states: An elephant's health has to be ratified by a veterinarian, and the Deputy Conservator of Forests has to establish that the animal's current habitat and prospective habitats are suitable. The **Chief Wildlife Warden** on receipt of such documents may choose to reject or approve such transfer.
 - » If the transfer is taking place outside state, similar conditions apply.
 - ii. Before a transfer is affected, the "genetic profile" of the elephant has to be registered with the MoEF&CC.
 - iii. **Permission from both originating and recipient state** is required.
 - » Earlier rules required that an elephant being transferred would need permissions from Chief Wildlife Wardens of every state that the elephant passes through in the process of being ferried by road.
 - » Now, the permission only from originating and receiving states are required.
 - iv. **Conditions to be fulfilled during transfer:**
 - » The elephant must be accompanied by a mahout and an elephant assistant.
 - » A health certificate from veterinary doctor confirming fitness for transport.
 - » Proper feeding and water arrangement must be made during transport
 - » Sedative and Tranquilizers could be used to control temperamental elephants.

CHIEF WILDLIFE WARDEN (CWW)

The Chief Wildlife Warden (CWLW) is the statutory authority, under the Wildlife Protection Act, who heads the Wildlife Wing of the Forest Department and exercises complete administrative control over Protected Areas (PAs) within a state. Every PA is typically classified as a Wildlife Division and is headed by a Deputy Conservator of Forests (DCF).

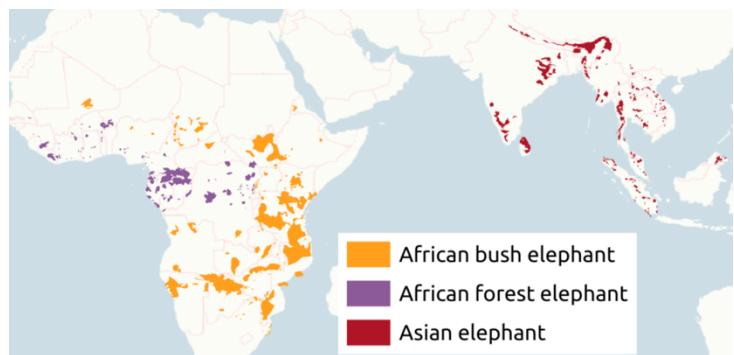
7) DNA PROFILING OF 270 CAPTIVE ELEPHANTS COMPLETED: GOI (MARCH 2023)

- In Aug 2022, while announcing the 30-year celebration of '**Project Elephant**', officials said that the DNA Profiling of elephants, which would act as the 'Aadhaar Card of captive elephants', was started. It was done for 'Gaj Soochna' mobile application for forest officials.
 - The process is being carried out in collaboration with Wildlife Institute of India.
- As of March 2023, DNA Profiling for 270 of the 2675 captive elephants in the country has been completed.
 - With the app, forest officers can identify each elephant and track it and therefore its transfer - which often takes place in case of captive elephants.
- **After the elephant profiling**, focus will be shifted to elephant care. With unique information about elephants, it will be possible to provide better medical care for them.
- **Note:** Unlike Project Tiger, the Project Elephant looks at the Welfare and Health of Captive Elephants too.

8) BOTSWANA'S ELEPHANT PROBLEM

A) AFRICAN ELEPHANTS

- African elephants are the largest animals walking the earth. Their herd wander through 37 countries. They have large ears which allow them to radiate excess heat.
 - » There are two species of African Elephants.
 - i. The Savanna (or bush) elephant
 - ii. The Forest Elephant
 - » **Savanna elephant** are larger than the forest elephants and their tusk curve outwards. They are the largest species of elephants and the biggest terrestrial animal on earth.
 - IUCN: EN
 - » **Forest** elephants are uniquely adapted to the dense forest habitat of Congo basin. They are smaller and darker; their tusks are straighter and point downwards. There are also differences in the size and the shape of the skull and skeleton between the two species.
 - IUCN: CR



B) PROBLEM OF INCREASING ELEPHANT POPULATION IN BOTSWANA

- Why in news?
 - » The President of Botswana has threatened to send 20,000 elephants to Germany in a dispute over conservation (April 2024)
- Elephant Problem in Botswana:

Botswana has the world's highest number of elephant population roughly 1.3 lakh). This is around 33% of the world's elephant.

Why does Botswana has such large population?

- **Political Stability , and small human population** has led to the country remaining safe haven for elephants. For instance, when conflict led mass poaching in Namibia and Angola began, elephants (known to be intelligent species) stopped crossing the Chobe river, preferring to stay in the safer Botswana instead.
- **Strict Conservation Policies in Botswana:** For e.g. during peak poaching period of 2013, Botswana announced a "shoot-to-kill" policy targeting suspected poachers.

So elephant population which was 10,000 in 1960s has increased to 1.3 lakh today. Around 40% of Botswana land is inhabited by Elephants.



How large population of elephants is creating problems?

- Spike in human-animal conflict: it had become a menace for country's rural communities, regularly damaging homes, damaging crops, drinking water shortage, and trampling people and cattle to death.
- **Biodiversity loss:** Elephant tear down trees for fodder and consume large amounts of water.

- What is Botswana doing to keep the population under check?
 - » **It is giving elephants to neighbouring countries** (In 2023, it gave 8,000 elephants to Angola, and in 2022 gave 500 elephants to Mozambique).
 - » It has also lifted ban on trophy hunting in 2019. Botswana argues that it not only controls elephant population but also boosts local economy with hunters from other countries, paying as much as \$50,000 for each elephant killed.
- **Concerns:** Western countries and environmental activists have questioned the above arguments as not true or negligible.
- **Botswana Germany Issue:**
 - » Early in 2024, Germany's environment ministry suggested there should be stricter limit on importing trophies from hunting animals.
 - » **Botswana is unhappy with it.** They feel that this will impoverish people in Botswana and will also hamper efforts to control population in the country. Germany is one of the largest importers of hunting trophies in the EU.

9) ATTENBOROUGH ECHIDNA REDISCOVERED IN INDONESIA (NOV 2023)

A) ECHIDNAS (SPINY ANTEATERS)

- It is a member of **monotremes** - an egg laying group that separated from the rest of the mammal's tree of life about 200 million years ago.

- **Habitat / Distribution:** Australia and New Guinea

- In Echidnas eggs are carried in a pouch on the female's belly until the young hatches, at which point the barely developed young must find a mammary gland and latch onto it for nourishment.

- Echidnas are nocturnal and shy. This makes it difficult to find them.

- Echidnas also curl into a ball and deter predators with its spines.

- **Note:** There are 4 species of Echidnas known:

- » The short beaked Echidna (*Tachyglossus aculeatus*)
 - IUCN: LC
 - Only member of the genus *Tachyglossus*).
- » Sir David's long beaked echidna (*Zaglossus attenboroughi*)
 - IUCN: CR
 - Till its sighting recently, it was not seen since 1961.
- » Eastern Long Beaked Echidna (*Zaglossus bartoni*)
 - IUCN: VU
- » Western Long Beaked Echidna (*Zaglossus bruijnii*)
 - IUCN: CR

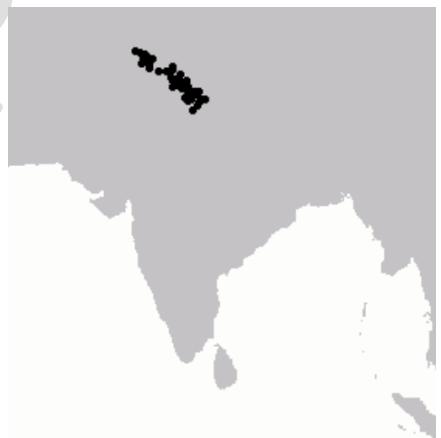
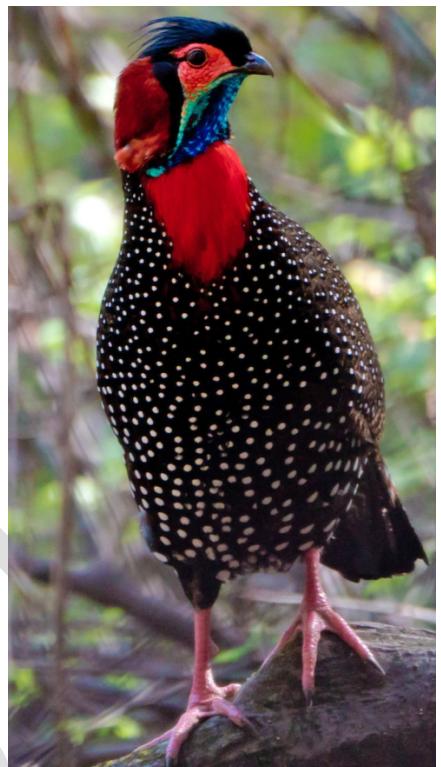


B) ELUSIVE ATTENBOROUGH ECHIDNAS REDISCOVERED IN INDONESIA (NOV 2023)

- The *Zaglossus attenboroughi*, a kind of long-beaked echidna named for famed British naturalist David Attenborough, had last been seen in 1961.
- It has never been recorded outside the extremely remote Cyclops Mountains of Indonesia's Papua region. The rediscovery has happened here only.

10) WESTERN TRAGOPAN (TRAGOPAN MELANOCEPHALUS)

- It is a medium sized pheasant found along the range of Himalayas from northwestern parts of Pakistan to Kashmir, Himachal and Uttarakhand in India.
- Like other pheasants, the species shows sexual dimorphism.
 - **Male** appears mostly dark with prominent white dots all over.
 - **Female** is brownish Grey in color with paler underparts and is finely streaked with white.
- **IUCN: VU**
- **State Bird of Himachal Pradesh.**
- **Threats:** Habitat loss, hunting, and other anthropogenic factors.
- **Captive Breeding:**
 - Because of efforts by government of Himachal Pradesh, there has been steady growth in population of the bird in captivity in the State's Sarahan Pheasantry, the conservation breeding centre. The population was 2 in 2002 and has increased to 47 individuals in 2023.
- **Next Challenge** is of re-introduction in wild.
 - In 2019, four families (Four males, four females) and a few chicks were released in two phases, one in 2020 and the other in 2021 in the Daranghati WLS in the vicinity. While most of them perished, one had not perished on records. It's a fair success as per the international scientific standards.



11) HOUSE SPARROW (PASSER DOMESTICUS) (GOURIYA IN HINDI)

The House sparrow is a bird of the sparrow family Passeridae, found in most parts of the world.

- It is native to most of Europe, the Mediterranean basin, and a large part of Asia.
- It's intentional or accidental introductions to many regions, including parts of Australasia, Africa, and the Americas, make it the most widely distributed wild bird.

Habitation: It is strongly associated with human habitation and can live in urban and rural settings.



- It feeds on the seeds of grains and weeds but is an opportunistic eater and commonly eats insects and many other foods.
- In Sanskrit it is called Chataka. But there is one other Sanskrit name called Grihabalibhuj, since it captures the nature of a house sparrow. It is a bird that feeds on offerings strewn around the house.

IUCN status: LC

- But IUCN has remarked that the population is showing declining trend.

State Bird of Delhi and Bihar

Unique Features:

- **Anting:** Birds rub insects (usually ants) on their bodies to get relief from parasites. This behaviour is known as anting. The body fluids of the ants are thought to repel parasites.

World Sparrow Day: 20th March

It is a joint initiative by the India-based **Nature Forever Society** in collaboration with the France-based **Eco-Sys Action Foundation** and other national and international organizations across the world. Since 2009, we have been observing World Sparrow Day on March 20 every year.

Note: Nature forever society was formed with a vision to involve citizens from all walks of life, diverse backgrounds and different parts of the country and the world.

Why the sparrow population decreasing in Urban Areas:

- **Not enough food and nesting sites:**
 - » **Shrinking Green Space** - Not enough food and nesting sites
 - » **Modern Urban Architecture:** For e.g. in the past, houses had ventilators (Roshandaan) and invariably sparrows or pigeons will build nest in the ventilators. Age of air conditioners have eradicated ventilators.
 - » **Vanishing Home Gardens** - which used to be a food source for sparrows.
- **Increased pesticide use:** It has reduced insects on which sparrows depended.

Goraiya Gram: It means a house of sparrow and this village for sparrows have been set up in Garhi Mandu forest, one of the four city forests in Delhi.

12) DODO (EFFORTS TOWARDS DE-EXTINCTION)

About Dodo Bird: Dodo is an extinct bird which was endemic to island of Mauritius.

- It had evolved into a **flightless bird** because of lot of food resources available on ground and absence of predators.
- Though the dodo has historically been portrayed as being fat and clumsy, it is now thought to have been well-adapted for its ecosystem.
- It used **gizzard stones** - they swallowed stones and retained them in their guts to grind away at stubborn elements in their diet.
- But Dutch Colonists first landed in Mauritius in 1598. Dodos disappeared around 80 years later. It was because it was hunted for meat and other animals such as Dogs, cats, rats etc also wreaked havoc on the defenseless dodos and their eggs.
- **The closest relative of Dodo was the also extinct and flightless Rodrigues solitaire.**



Dodo skeleton cast (left) and model based on modern research (right), at [Oxford University Museum of Natural History](#)

- The closest living relative of Dodo is the Nicobar Pigeon.

A) EFFORTS TOWARDS DE-EXTINCTION

- An ambitious project which is a collaboration between genetic engineering company Colossal Biosciences and the Mauritian Wildlife Foundation - promises to not just bring the dodo back to life, but also re-introduce it in its once native habitat in Mauritius.
- **How?**
 - » Team of scientists at Colossal have sequenced the entire genome of the dodo using DNA extracted from a skull in the collection of the Natural History Museum of Denmark.
 - This is now being compared to genome of Rodrigues Solitaire to understand the unique features of Dodo.
 - Colossal has also sequenced the gene of the Nicobar pigeon, the dodo's closest extant relative, and found its primordial germ cells (PGCs). PGCs are basically the embryonic precursors of a species' sperm and egg.
 - The Nicobar Pigeon's PGC will now be edited to express the physical traits of dodo, with the insight gathered from the comparison of the genomes of all three birds.
 - » These edited PGCs will then be inserted into the embryos of a sterile chicken and rooster, who will act as 'interspecies surrogates'. In theory when the chicken and rooster reproduce, they will give birth to a dodo offspring.
- Re-introduction will be another huge challenge: Because Mauritius of past doesn't exist anymore.

13) PENGUINS (DOMAIN: EUKARYOTA; KINGDOM: ANIMALIA; PHYLUM: CHORDATA; CLASS: AVES; ORDER: SPHENISCIFORMES; FAMILY: SPHENISCIDAE)

Penguin are species of flightless marine birds.

Distribution:

They live primarily in southern hemisphere.

The majority of species live not in Antarctica but rather between latitudes 45 degree and 60-degree S, where they breed on islands.

A few penguins also inhabit temperature regions, and one, the Galapagos penguin, live at the Equator.

Population: The total population of some species, such as emperor penguins are estimated in the hundreds of thousands, but most species of smaller penguins certainly run into millions.

Key threats:

Climate Change and rising ocean temperature

Locomotion and Orientation:



Penguins are adapted for rapid locomotion in water, in which the wings, or flippers, are used for propulsion; i.e. the birds fly underwater. When moving at high speed, they frequently leave the water in leaps that carry them a metre or more through the air; It is during this time they breathe.

On land, penguins are much more awkward, even amusing, as they rock from side to side as they walk. Despite their short legs, they can run with surprising speed.

On snow or ice, many penguins "toboggan", sliding on the belly as they propel themselves with the feet and flippers.

14) EMPEROR PENGUIN

Emperor Penguin (*Aptenodytes forsteri*)

It is the largest, tallest and heaviest of all living penguins.

Distribution: It is endemic to Antarctica.

Features: Like other penguins, it is flightless, with streamlined body, and wings stiffened and flattened into flippers for a marine habitat.

Food: Fish, crustaceans such as krills, and cephalopods, such as squids.

Special Feature: it is the only penguin that breeds during the Antarctic winter. Emperor penguin trek 50-120 km over the ice to breeding colonies which can contain upto several thousand individuals. Females lay a single egg in May/June that is incubated solely by the males, but parents share the chick rearing duties.

IUCN: NT

Negative Impact of Climate Change: Antarctica's melting sea ice killed thousands of emperor penguins chicks.

- In late 2022, four out of five emperor penguin colonies located in Antarctica's Bellingshausen region experienced total breeding failure due to sea ice loss.
- Upto 10,000 emperor penguin chicks across four colonies may have died.
- **Why?**
 - Emperor penguins hatch their eggs and raise their chicks on the ice that forms around the continent each Antarctic winter and melts in the summer month.
 - If the sea ice breaks up under them, the young chicks will drown or freeze to death.
 - The sea ice disappeared before the start of the emperor Chick's fledging period, during which they develop their waterproof adult wings and learn to swim.



15) ADELIE PENGUIN

Adelie penguin (*Pygoscelis adeliae*) is a species of penguin common along the entire coast of the Antarctic continent. It is the only place it is found.

In March 2024, a team of researchers found 532 dead Adelie penguin, with thousands more thought to have died.

Reasons: The researchers suspect the deadly H5N1 bird flu virus killed the penguins, the field test were inconclusive. Samples have been sent to labs for more details.



16) GALAPAGOS PENGUIN

Galapagos Penguin (*Spheniscus mendiculus*): It is the most northerly of all penguin species. It inhabit the western part of the Galapagos Islands; Some organisms may occasionally venture to other islands of archipelago.

It is among the smallest of all penguins species.

Physical Features: It is a species of penguin characterized by the presence of narrow C-shaped band of white feathers, that extends beyond from the eye to the chin on each side of the head and a single band of black feathers that cuts across the large region of white feathers on the breast.



17) FISH: GHOL (BLACK SPOTTED CROAKER) (SCIENTIFIC NAME: PROTONIBEA DICANTHUS)

- It is not only considered a delicacy but is valued for its medicinal properties in many countries. **Ghol fish bladder** is among Gujarat's high value exports.
- It is a large fish, and a single fish can weigh as much as 25 kg.
- It is also known as Sea Gold for its high market value. It is also known as fisherman's lottery. As 1 kg of the bladder can fetch upto Rs 25,000 kg.
- **Distribution:** Widely distributed in the Indo-Pacific region from the Persian Gulf to the Pacific Ocean.
- **IUCN:** NT
- **State Fish of Gujarat:** In 2023, the state of Gujarat announced Ghol as their state fish during the Global Fisheries Conference in Ahmedabad.
 - Boost attempts to conserve and create awareness about the fish.

18) FISH OTOLITHS (SEA GEM)

- **Why in news?**
 - Fish Otolith ornaments make market debut (March 2024)
- **What is Fish Otolith?**
 - Fish otoliths are biomineralized ear stones. They help fish hear and provide it a sense of balance.

- They are important in fish studies as they have species shapes and grow throughout their life.
- Counting the annual growth rings on the otoliths is a common technique in estimating the age of the fish.
- They were known to Romans and Egyptians as Lucky stones and continues to be used in countries like Brazil.

Ornaments made of Otoliths now in market:

- This the first-time ornaments from fish otoliths are being produced and sold in and organized and sustainable manner.
- It has been made possible due to efforts of enthusiastic fisherwomen in Vizhinjam (Kerala), trained by scientists from Central Marine Fisheries Research Institutions (CMFRI).
 - The ornament has been crafted by fisherwomen under SHG Sea Gems Mahila Sahrudam Group. It recently went on display at Kerala Arts and Crafts Village showroom Kovalam, Thiruvananthapuram.



3. POLLUTION

1) SOLAR WASTE: REPORT

- Introduction:**
 - Solar waste** refers to waste generated during the manufacturing of solar modules and waste from the field (project lifetime)
 - E-Waste Management Rules, 2022** includes solar waste in the definition of E-waste.
- Current Situation of India:** Report: "Enabling a circular Economy in India's Solar Industry - Assessing the Solar Waste Quantum"
 - The analysis was done by MNRE and Council on Energy, Environment and Water (CEEW), a climate think tank in March 2024
 - Generation of solar waste:** 100 Kilotons in FY22-23. It is expected to reach 600 kt by 2030 (this report is referring to end of life waste)
 - The current solar capacity of India was 66.7 GW as of March 2023 which is expected to go to 293 GW by 2030.
 - Therefore, management of solar waste has to be given very high priority.
 - 5 States** - Rajasthan, Gujarat, Karnataka, TN, and Andhra Pradesh - will be responsible for around 67% of the waste produced.
 - Critical Minerals:** Discarded modules also contain critical minerals such as Silicon, Copper, tellurium, and Cadmium. These minerals have been classified as critical minerals for the country's economic development and national security.

- **Key Recommendations of the Report:**

- » **Maintain a comprehensive database; Promote Recycling; Shift towards high-value recycling:**
 - Conventional recycling involves mechanical process like crushing, sieving, and shearing of the waste. This method is able to recycle glass, aluminium, and copper, more valuable materials like silver and silicon can't be recovered through this method.
 - High value recycling involves mechanical, thermal and chemical processes, to recycle the module. It is also able to recycle silver and silicon.

2) THE SC SET ASIDE A NOTIFICATION ISSUED BY THE MOEF&CC IN 2020 THAT EXEMPTED EXTRACTION OF ORDINARY EARTH FOR LINEAR PROJECTS, SUCH AS ROADS AND RAILWAY CONSTRUCTION, FROM OBTAINING ENVIRONMENTAL CLEARANCE (EC) (MARCH 2024)

- **Background:**

- » In Sep 2006, MoEF&CC notified activities that would require prior EC.
- » In Jan 2016, another notification was issued which exempted certain category of projects from this requirement.
- » In March 2020, third notification added "Extraction or sourcing or borrowing of ordinary earth for the linear projects such as roads, pipelines etc." to the list of exempted activities.

- **Why the exemption?**

- » The general purpose of the exemption was to conform to the amendments made to the Mines and Minerals (Development and Regulation) Act, 1957 in March 2020, allowing new lessees to continue mining for two years with the statutory clearance and license issued to their predecessors.
- » The Centre also argued before the NGT that the exemption was necessary "for the aid of general public", and would help "the Kumhars (potters), farmers, gram panchayats, vajaras, oads of Gujarat".
- » Government also said that grant of exemption was a policy matter that didn't warrant judicial interference.

- **Challenge to the Exemption:**

- » The exemption was challenged before the NGT on the ground that allowing the extraction of earth indiscriminately was arbitrary and violative of Article 14 of the Constitution of India.
- » The petitioner also argued that the exemption violated the Supreme Court verdict in **Deepak Kumar versus the State of Haryana (2012)** which required for prior EC in the leases.
- » Ministry had also "circumvented the legal procedure of inviting public objections before issuing the 2020 notification by wrongly exercising its powers to do away with such requirements "under the garb of 'public interest' during the COVID-19 national lockdown.

- **NGT in Oct 2020**, asked government to "revisit" the notification within three months and held that **the ministry should strike a balance and instead of being blanket exemption**, it needs to be hedged by appropriate safeguards.

- Center sat on NGT order until the matter went to SC. After SC concluded the hearing and reserved the judgement, the MoEF&CC notified that exemption in question would be subject to the compliance of SOP and environmental safeguards issued in this regard from time to time.
- Supreme Court Verdict:
 - "Completely unguided and blanket exemption" was arbitrary and violative of Article 14 because the 2020 notification didn't even define linear projects, or specify the quantum and extraction area. This defeats the purpose of EP Act.
 - The court held that the Ministry offered no justification for concluding "that in the public interest, the requirement of public notice should be dispensed with" at any stage - neither in the notification itself or in its submissions to the NGT and SC.
 - Even the Aug 2023 notification failed to elaborate on the concept of linear projects, specify the authority responsible for environmental safeguards, restrictions on the quantum of extraction etc.
 - The court also said that it failed to understand the undue haste shown by Central government in issuing the impugned notification which was issued two days after the nationwide lockdowns was imposed.
- Past cases where these kinds of exemptions have been brought under Judicial Scrutiny:
 - In July 2021, through a notification Ministry sought to perpetuate an amnesty window opened for just six months in March 2017 to clear projects under the "violation category" and issued ex-post facto approval to more than 100 projects, until the Supreme court stayed it in Jan 2024.
 - In March 2024, the High Court of Kerala quashed a 2014 notification that exempted institutions and industrial sheds with build-up areas of more than 20,000 sq m from obtaining EC

4. CLIMATE CHANGE AND ASSOCIATED ISSUES

1) INITIATIVES TO TAKE AHEAD THE 'LIFE' – LIFESTYLE FOR ENVIRONMENT

- To take ahead LiFE movement announced by the Hon'ble PM in 2021, MoEF&CC has introduced two pioneering initiatives that indicates the country's proactive approach to climate change, sustainability, and promotion of eco-conscious practices.
- Both the programs Green Credit Program (GCP) and The Ecomark Scheme were notified in Oct 2023.

A) GREEN CREDIT PROGRAM (GCP)

- The program is a domestic voluntary market mechanism which incentivize environmental actions across diverse sectors and by different stakeholders like individuals, communities, ULBs, private sector etc.
 - Under environmental actions, 8 activities have been identified. It includes : Afforestation, Water Conservation; Sustainable Agriculture, Waste management, air pollution reduction, mangrove conservation and restoration; Ecomark (a government scheme to identify environment friendly products) and sustainable building and infrastructure.

- The environmental actions will earn Green credits and these green credits will be tradable and those earning them will be able to put these credits up for sale on a proposed domestic market platform.
- In its initial phase, the GCP focuses on two key activities: Water Conservation and Afforestation.
- **Institutional Framework:**
 - The GCP's governance framework is supported by inter-ministerial Steering Committee.
 - The Indian Council for Forestry Research and Education (ICFRE) serves as the GCP administrator, responsible for program implementation, management, monitoring and operation.
 - The Green Credit Registry and trading platform, being developed by ICFRE along with experts, would facilitate the registration and thereafter, buying and selling of Green Credits.
- **How to obtain Green Credit:**
 - **Registration of the Activity:** To obtain Green Credits, Individuals and entities must register their activities through the central government's dedicated app/website www.moefcc-gcp.in.
 - **Verification:** The administrator will verify the activity through a designated agency, with self verification for small projects.
 - **Granting of Certificate:** After completion of the verification, the administrator will grant Green Credit Certificate which will be tradable on the green credit platform.
- **How is Green Credit Initiative different from Carbon Credit Initiative:**
 - **Carbon Credit** can be claimed by reducing carbon footprint, whereas Green Credit has a much wider scope and can be claimed by various types of environment friendly activities.
 - While carbon market (carbon credit) is more focused at industry and corporations, green credit program can benefit individuals and communities.
- **How will Green Credit work in case of afforestation:**
 - Under the initiative, registered and approved entities can pay to finance afforestation in specific tracts of degraded forest, and wasteland. The actual afforestation will be carried by the forest department. Two years after planting - and following an evaluation by ICFRE - each planted tree could be worth one 'green credit'.
 - **How credits can be used?**
 - » These credits can be bought to meet obligations under Corporate Social Responsibility (CSR) and Environmental, Social, and Governance (ESG). It can also be used to meet compensatory afforestation requirements under the Forest (Conservation) Act.
 - This green credit could be used by companies which have diverted forest land and non-forest purposes and razed thousands of trees to offset some of their obligations under India's compensatory afforestation laws.
 - **Weeks** after the Union Environment Ministry announced the rules for its Green Credit Program (GCP), ten states have identified parcels of degraded forests land that will be made available for individuals, groups, public and private sector units to earn - and potentially trade - green credits.

- **Concerns:**
 - **Linking Green Credits to Compensatory afforestation** activities is even trickier as the program in essence facilitates the creation of land banks that could be easily diverted to commercial entities **and contribute to even greater level of diversion of forest land.**

B) THE ECOMARK SCHEME

- The Scheme replaces the previous notification and provides accreditation and labelling for household and consumer products that meet specific environment criteria while maintaining quality standards as per Indian norms.
 - Products accredited under the scheme will adhere to specific environment criteria, ensuring minimal environment impact.
- It will build consumer awareness; and encourage eco-conscious choices.
- It will also motivate manufacturers to shift towards environment friendly products.
- The scheme also seeks to ensure accurate labelling and prevent misleading information about the products.
- **Administrator:** The CPCB administers the eco-mark scheme in partnership with Bureau of Indian Standards (BIS), which is the national body for standards and certification.

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