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PT TRICKS 2023 BIODIVERSITY -ANIMALS

Covering: Basic concepts- current- terms and application

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Asian Waterbird Census

- A survey conducted as part of the Asian Waterbird Census (AWC) 2023 shows the populations of some migratory waterbirds, especially duck species visiting the Alappuzha region of Kerala, are falling.
- Duck species like Northern Shoveler, Common teal and Eurasian wigeon, sighted in the previous surveys, were totally missing this time
- Climate change has affected the number of birds visiting the region
- Asian Waterbird Census is a citizen-science programme supporting conservation and management of wetlands and waterbirds worldwide.
- AWC is part of the global International Waterbird Census (IWC) coordinated by Wetlands International.
- AWC in India was initiated in the Indian subcontinent in 1987 & is jointly coordinated by the Bombay Natural History Society (BNHS) and Wetlands International
- It helps in better implementation of the Convention on Migratory Species (CMS) and the Convention on Biological Diversity's (CBD).

Bird Species Count in Deepor Beel

- Bird Species Count Exercise was conducted in Deepor Beel Wetland, which is the only Ramsar Site in Assam
- Deepor Beel is the largest freshwater lakes in Assam and an Important Bird Area by Birdlife International.
- Deepor Beel has been designated as a Ramsar Site in November, 2002
- It is located towards the southwest of Guwahati city, Assam and is the erstwhile water channel of River Brahmaputra.
- Deepor Beel adjoins the Rani Reserve Forest from where herds of elephants come periodically to forage in the wetland.
- Deepor Beel has also suffered contamination because of a garbage dump on its edge at Paschim Boragaon.
- Its water has become toxic and it has lost many of its aquatic plants that elephants would feed on.

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Increase in Blackbuck Population

- In spite of immense losses in grassland habitats across India, the data showed an increasing trend in blackbuck population numbers
- The Blackbuck (*Antelope cervicapra*), or the Indian Antelope, is a species of



antelope native to India and Nepal

- It is widespread in Rajasthan, Gujarat, Madhya Pradesh, Tamil Nadu, Odisha, and other areas throughout peninsular India. □
- It is considered as the epitome of grassland.
- It has been declared as the State Animal of Punjab, Haryana, and Andhra Pradesh.
- Wildlife Protection Act 1972: Schedule I □ IUCN Status: Least Concern □ CITES: Appendix II
- Uttar Pradesh State Government approved the plan of setting up the Blackbuck Conservation Reserve in the trans-Yamuna belt near Prayagraj. It would be the first conservation reserve dedicated to the blackbuck.

Wayanad Wildlife Sanctuary

- Human-animal conflict has become a serious wildlife management problem in Kerala in the last few years.

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- Causes: Human population expansion, habitat degradation and fragmentation, land use transformation and rising densities of livestock in protected areas are considered as the major causes of Human-Wildlife conflict.
- Wayanad Wildlife Sanctuary (WWS) is an integral part of the Nilgiri Biosphere Reserve.
- Nilgiri Biosphere Reserve was the first from India to be included in the UNESCO designated World Network of Biosphere Reserves
- Other wildlife parks within the Reserve are: Mudumalai Wildlife Sanctuary, Bandipur National Park, Nagarhole National Park, Mukurthi National Park and Silent Valley
- Kabini river (a tributary of Cauvery river) flows through the sanctuary
- The forest types include South Indian Moist Deciduous forests, West coast semi-evergreen forests and plantations of teak, eucalyptus and Grewelia.
- Elephant, Gaur, Tiger, Panther, Sambar, Spotted deer, Barking deer, Wild boar, Sloth bear, Nilgiri langur, Bonnet macaque, Common langur, Wild dog, common otter, Malabar giant squirrel etc are the major mammals.



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Indian Skimmers

- The Godavari estuary in Andhra Pradesh has become a prime and safe habitat for the Indian Skimmer
- Another common name for Indian skimmers is Indian scissors bill. □
- They are more widespread in winter; the Indian skimmer is found in the coastal estuaries of western and eastern India.
- The species can be sighted near the Chambal River in Central India, in few parts of Odisha and in Andhra Pradesh
- IUCN Red List Status: Endangered
- The Government declared a part of the Godavari mangrove system as Coringa Wildlife Sanctuary in 1978 to rehabilitate the salt water crocodile and to protect the other endangered species, such as Olive Ridley turtles and Indian Otter

White Tufted Royal Butterfly

- White Tufted Royal Butterfly, a rare butterfly species was spotted in Kannur, Kerala.
- The butterfly is protected under Schedule 2 of the Wildlife Protection Act, 1972.
- The abundance of butterflies in any area represents rich biodiversity.
- Indicator Species: The butterfly acts as an indicator species.
- An indicator species provides information on the overall condition of the ecosystem and of other species in that ecosystem.
- It acts as a pollinator by helping in pollination and conserving several species of plants

Etalin Hydroelectric Project

- The Etalin hydroelectric project in Arunachal Pradesh has been scrapped in its present form.
- The plan combined two run-of-the-river schemes with limited storage requiring concrete gravity dams on rivers Tangon and Dri.
- The project area falls under the “richest bio-geographical province of the Himalayan zone” and “one of the mega biodiversity hotspots of the world”.
- The project area is dominated by indigenous population belonging to Idu-Mishmi tribes.

Concerns Over Aravali Safari Park

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- Some Environmental Activists have raised concerns over the 10,000-acre Aravali safari park Project proposed in Haryana
- The Aravalli safari project is being conceived and designed as a zoo safari and not a natural jungle safari to see native Aravalli wildlife in their natural habitat.
- Conservation of the Aravallis does not even get a mention in the aims of the project mentioned in the Proposition
- These are fold mountains of which rocks are formed primarily of folded crust, when two convergent plates move towards each other by the process called orogenic movement
- . They stretch for a distance of 800 km. from Himmatnagar in Gujarat to Delhi, spanning Haryana, Rajasthan, Gujarat, and Delhi.
- The Aravallis act as a barrier between the fertile plains in the east and the sandy desert in the west.
- Historically, it is said that the Aravalli range checked the spread of the Thar desert towards the Indo-Gangetic plains, serving as a catchment of rivers and plains.
- Aravallis also function as a groundwater recharge zone for the regions around that absorb rainwater and revive the groundwater level. □
- This range is considered the “lungs” for the world’s most polluted air of Delhi–National Capital Region (NCR).

Kelp Forests on Decline

- A recent study has revealed that Kelp forests are declining because of climate change
- *Ecklonia radiata*, a dominant kelp species in the southern hemisphere, is vulnerable to climate change, especially in regions near the equator.
- Kelp forests are underwater ecosystems formed in shallow water by the dense growth of several different species. □

World's Major Kelp Forests in Jeopardy

Global warming threatens ecologically and economically important underwater kelp forests. In recent years, ocean heatwaves have wiped out kelp forests along the coasts of western North America, Australia and New Zealand. The areas marked in red are all potentially threatened.



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- Kelp are large brown algae that live in cool, relatively shallow waters close to the shore. □
- They attach to the seafloor and eventually grow to the water's surface and rely on sunlight to generate food and energy
- kelp forests are always coastal and require shallow, relatively clear water
- Kelps are responsible for producing up to 60% of the carbon found in coastal invertebrates

Corals in Thailand Getting Destroyed

- It is reported that a rapidly spreading disease, commonly known as yellow band disease, is killing corals
- Scientists believe overfishing, pollution and rising water temperatures because of climate change may be making them vulnerable.
- Yellow-band disease - named for the colour it turns corals before destroying them has no cure
- The disease's impact cannot be reversed, unlike the effects of coral bleaching.
- Corals are marine invertebrates live in compact colonies
- Coral polyps live in a symbiotic relationship with a variety of photosynthetic algae called zooxanthellae, which live within their tissues.
- These algae provide the coral with energy through photosynthesis, while the coral provides the algae with a protected environment and compounds, they need for growth.
- They also play a critical role in regulating the planet's climate by absorbing carbon dioxide.
- Coral reefs act as natural buffers against the impact of climate change by absorbing wave energy, protecting coastlines and reducing the impact of storms and sea level rise.
- Methods of Conservation: Cyromesh: Storage of the coral larvae at -196°C and can be later reintroduced to the wild & Biorock: Creating artificial reefs on which coral can grow rapidly

Senna Spectabilis

- Kerala has come out with a management plan to eradicate *Senna spectabilis*, the exotic invasive plant that is posing a severe threat to the State's wildlife habitat.
- *Senna spectabilis* is a deciduous tree native to tropical areas of America.
- It is categorised as 'Least Concern' under IUCN Red List.

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- The thick foliage of the tree arrests the growth of other indigenous tree and grass species. Thus, it causes food shortage for the wildlife population, especially herbivores.
- There are many other invasive species in India. For eg: Charru Mussel, Lantana bushes, Indian Bullfrog, etc.

Indian Star Tortoise

- Illegal trade and unscientific translocations are causing major losses to the species' genetic diversity and habitat.
- Indian star tortoises are found across the Indian subcontinent, in the Central and Southern parts of India, in West Pakistan and in Sri Lanka.
- It is typically found in dry, open habitats such as scrub forests, grasslands, and rocky outcroppings.
- Due to subsequent hybridisation of these species over the years, Indian star tortoises have lost genetic diversity
- IUCN Red List: Vulnerable
- Wild Life Protection Act 1972: Schedule IV

Spot Bellied Eagle Owl

- Spot Bellied Eagle Owl was spotted for the first time in Seshachalam forest recently.
- The Spot-bellied Eagle Owl, also known as the Forest eagle-owl is a large owl species found in wooded areas, such as forests and rocky hillsides.
- The bird makes a strange scream similar to humans and it is hence called the 'Ghost of the Forest' in India.
- These eagle-owl species are distributed in India, Sri Lanka, Nepal, Bhutan, Bangladesh, Myanmar, China, Thailand, Laos, Cambodia and Vietnam.
- They are known to prey on large birds and also on mammals like golden jackals, hares, civets and chevrotains.
- International Union for Conservation of Nature(IUCN) Red list: "Least Concern".

WILDLIFE CONSERVATION BOND

- Also Known as Rhino Bond, WCB is a five-year \$150m sustainable development bond, to protect and increase black rhino populations in two protected areas in South Africa.
- WCB is an outcome-based World Bank structured bond that channels private capital to finance conservation activities.

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- Together with financing from Global Environment Facility (GEF), WCB transfers project risk from donors to investors.
- GEF was established at Rio Earth Summit, 1992 to help developing countries and countries with economies in transition to meet objectives of environmental conventions and agreements

Greater Scaup

- It is a rare species of duck (locally known as Sadangman) that was recently sighted in Loktak lake (Manipur) after a gap of over 90 years
- Loktak lake is famous for Keibul Lamjao National Park and Sangai the dancing deer.
- Greater Scaup is a migratory bird widely distributed across Arctic and Subarctic regions where it mainly nests in coastal tundra habitats.
- It belongs to the family of Anatidae.
- IUCN status: Least Concern

NEELAKURINJI

- Ministry of Environment, Forest and Climate Change (MoEF) has listed Neelakurinji under Schedule III of Wildlife (Protection) Act, 1972, including it on list of protected plants.
- It is a shrub that grows in the shola forests of Western Ghats in South India.
- Neelakurinji flowers bloom once every 12 years.
- Plant is named after the famous Kunthi River which flows through Kerala's Silent Valley National Park
- Blue colour of Kurinji has given Nilgiri hills its name, literally meaning Blue Mountains.

SANKHYA SAGAR WETLAND

- An artificial lake in MP- Sankhya Sagar, has virtually disappeared under a thick layer of an invasive aquatic plant (hyacinth), threatening the biodiversity of the water body.
- Sankhya Sagar - a Ramsar site (declared in 2022), is a wetland site designated internationally important by UNESCO.
- The lake helps maintain the ecological balance of the Madhav National Park.
- The lake is home to marsh crocodile aka 'Mugger' which is a Schedule I reptilian species
- Water hyacinth is an invasive plant species (macrophytes) native to South Africa.

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Water hyacinth is an invasive plant species (macrophytes) native to South Africa.

- India has 75 sites (as of August 2022) recognised under Ramsar convention.

GENETICALLY ENGINEERED TREES

- USA is debating whether to allow a genetically engineered (GE) version of the American chestnut tree (currently extinct)
- The US has already developed and field tested the GE version, known as Darling 58, and is now awaiting clearance
- China allows commercial plantation of GE Poplar Tree (insect-resistant)
- India experimenting with GE Rubber tree (extreme climatic stress-tolerant).
 - This is made possible by inserting MnSOD gene (manganese-containing Superoxide Dimutase)
- A genetically modified tree is a tree whose DNA has been modified using genetic engineering techniques.
- It can help in fighting climate change by sequestering more carbon; boost biofuel production; help in growing more timber, pulp etc.
- Concerns: GE Trees may contaminate other trees along with animals; not many scientific studies done on the long-term impact of GE trees

MANIPUR'S HEIMANG

- Heimang is a popular plant in Manipur with a long history of culinary and medicinal use among communities in countries.
- The spherical fruit has a citrus-like tartness and, it is packed with nutrients such as polyphenols, flavonoids, and antioxidants.
- Traditional healers of Manipur called maibas or maibis, prescribe heimang for common gastrointestinal problems like diarrhoea and dysentery
- The research found that compounds isolated from the stem of the heimang tree can significantly suppress HIV-1 activity in vitro.
- Local communities in the state also use heimang leaves to prepare a herbal shampoo called chinghi by boiling them with rice water.

ZEBRAFISH

- A protein found in the backbone of zebrafish that plays a positive role in disc maintenance and promotes regeneration in aged discs can help promote regeneration in degenerated human discs.
- a protein called Cellular communication network factor 2a (Ccn2a) secreted from intervertebral disc cells induces disc regeneration in aged degenerated discs by promoting cell proliferation and cell survival

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- Scientists have discovered a new species of dwarf boa in the Ecuadoran Amazon and named it after an Indigenous activist.
- The name honours early 20th-century Indigenous rights activist Dolores Cacuango.

SALTIE CENSUS 2023

- The population of saltwater crocodiles in the water bodies of Bhitarkanika National Park and has marginally increased in 2023, according to the annual reptile census.
- Techniques used for the census: Spotlights at night, GPS, and Photographic Interpretation to measure the length and age of the crocodiles
- 'BAULA' PROJECT: 'Baula' is the Oriya term for Saltwater Crocodile.
- Odisha is having the distinction for the existence of all three species of Indian crocodilians

[Crocodile species in India - AspireIAS](#)

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All the Best to all my Economics students...
Hope this material will help you.
God bless...
Jai Hind

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