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Tiger Conservation Landscape (TCL) 3.0

NASA satellite imagery and Google Earth Engine computing power are helping scientists develop a real-time monitoring system for tiger habitat globally.

Tiger Conservation Landscapes (TCLs)
• **TCLs –** Tiger conservation landscapes (TCLs) are large blocks of habitat with low human footprint suitable for tigers. • **Attributes –** A TCL has the following attributes: • A TCL has evidence of one or more tigers over the last 10 years. • A TCL can consist of several adjacent blocks of habitat among which tigers can disperse, up to a distance of 4 km. • A TCL need not be restricted to nor contain protected areas, but instead includes the entire landscape over which tigers may disperse and become established. • A TCL must meet a minimum core area requirement for its largest block of habitat that is specific to the habitat-type in which it is found. • TCL boundaries are defined either where habitat ends with no suitable habitat within 4 km for the tiger to disperse to, or at country or ecoregion boundaries. • **Class and Priority –** TCLs are identified according to their Class and Priority. • Class refers to a TCL's current conservation status and probability for achieving conservation success in the next decade (Class I is highest, Class IV is not enough information). • TCL priority indicates priority for conservation investment, ensuring the suite of Global and Regional Priority TCLs are representative across biomes and bioregions. • **Previous TCLs** – The original iteration, called the tiger conservation unit analysis was produced in the late 1990s, and the second, TCL 2.0, in 2006. • These previous maps were static, but with improvements in technology, conservationists saw a way to make a real-time system.

- **Initiative by –** TCL 3.0 is a joint initiative of the NASA, the European Space Agency (ESA), and the Google Earth Engine.
- TCL 3.0 represents the third iteration of assessing tiger habitat across Asia and where tigers still occur.
- **Goal –** To monitor changes in real time to help stabilize tiger populations across the range.
- **Uses –** TCL 3.0 uses Earth observations such as VIIRS, MODIS and Landsat products.
- TCL 3.0 uses geographic information systems, known as GIS.
    - GIS is a technology that interprets and visualizes spatial data, such as how landscapes have changed over time, population densities, or the distance between different locations.
- **Helps in –** This helps in holistically seeing the impact of human activity on the critical habitats of tigers.

The TCL 3.0 program is a system that is open sources, meaning it can be applied not only to tigers, but to any species of concern.

- **Provides –** TCL 3.0, the mapping system provides tiger-range countries the information they need to identify priority areas, and monitor changes in the habitat and populations.
- Platform for governments to align with global initiatives, such as the Global Biodiversity Framework and Sustainable Development Goals, to address the challenges facing our ecosystems.

Groups at the Wildlife Conservation Society (one of the organizations that provided funding for the project) are already working on similar maps for vulnerable and threatened animals including lions, jaguars and bison.

- **Working of TCL 3.0 –** Satellites provide constant, high-resolution imagery, which is used to analyze suitable landscapes from space.
- This data does not show what is going on under the tree canopy.
- Hence, the second layer of data comes from human footprint analysis, data collected from field surveys about the spread of urban areas and human activities.

Unlike previous versions, the map can be updated when new information becomes available.

Quick Facts
Tiger
• Tiger is a top predator and is at the apex of the food chain. • The presence of tigers in the forest is an indicator of the well-being of the ecosystem. *Habitat loss is a primary cause of the endangerment of Panthera tigris, the planet's largest cat and cultural icon in Asia.* • Tigers are both a Flagship and Umbrella species. • As a Flagship species they are important for conservation and as Umbrella species, conservation of tigers leads to conservation of other species. *Project Tiger was launched by the Central Government in a bid to promote conservation of the species in India.*

References

1. CNN – How NASA and Google Earth are helping save tigers
2. News Nation – NASA, Google Earth assists with tiger conservation

Land acquisition for Tiger Reserve (TR)

In a first, the Tamil Nadu forest department has acquired 30.41 acres of erstwhile private patta land, situated in the core area of Srivilliputhur Megamalai Tiger Reserve (SMTR).

- The land was acquired through private negotiation under the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013.
- A sum of Rs 2.33 crore was paid to seven land owners, who volunteered to surrender their land.
- This is the ***first time in India*** where the state government has purchased private land for non-commercial use towards forest and biodiversity conservation.

Srivilliputhur Megamalai Tiger Reserve (SMTR)

• The SMTR is located across the Madurai, Virudhunagar and Teni districts of Tamil Nadu.
• SMTR came into being in 2021, making it the youngest of the five tiger reserves in the state and India's 51st Tiger Reserve.

Other tiger reserves in Tamil Nadu

Tiger Reserve	Established in
Kalakkad-Mundanthurai	1988
Mudumalai	2007
Anamalai	2008
Sathyamangalam	2011

• SMTR was formed by combining the Grizzled Squirrel Wildlife Sanctuary and Megamalai Wildlife Sanctuary.
• It will function as a connecting link between Kerala's Periyar Tiger Reserve and Tamil Nadu's Southern Kalakkad-Mundanthurai Tiger Reserve.
• SMTR is a peculiar conservation site, as hundreds of acres of its core area are private patta lands, which are used for cultivating coffee and cardamom.
• During British rule, pristine forest spreads were destroyed and cultivation was promoted.
• Later, these lands were owned by different zamindars such as those from Gandamanaickanur, Erasakkanaickanur, Saptur and Seithur.

- The land acquired by the state government is locally known as Yegan Raja Board.
- The titular Yegan Raja had been a lumberjack who assembled a sizable crew to work for British officers.
- He had exploited the forests for British officers, who in return arranged lands for him from the Gandamanur zamindar.
- The land has been passed on to various others since then.

Reference

The New Indian Express – TN acquires patta land in tiger reserve for conservation

World Air Quality Report 2023

Delhi world's most polluted capital, India has 3rd worst air quality – World Air Quality Report.

- **Released by –** Swiss organisation IQAir.
- **IQAir –** A Swiss air quality technology company, prepares the annual world air quality reports based on data from monitoring stations operated by governments, institutions and organisations across the world.

- **Data –** Report includes 7,812 locations in 134 countries, regions and territories.

Causing an estimated one in every nine deaths worldwide, air pollution is the greatest environmental threat to human health.

- **Key Findings –** India had the ***third-worst air quality*** out of 134 countries in 2023 after Bangladesh and Pakistan.
- **PM2.5 Concentration –** India (54.4 micrograms per cubic metre), Bangladesh (79.9 micrograms per cubic metre) and Pakistan (73.7 micrograms per cubic metre).
- In 2022, India was ranked as the eighth most polluted country with an average PM2.5 concentration of 53.3 micrograms per cubic metre.

According to the WHO, air pollution is responsible for an estimated 7 million premature deaths worldwide every year.

- **Delhi –** Delhi's PM2.5 levels worsened from 89.1 micrograms per cubic metre in 2022 to 92.7 micrograms per cubic metre in 2023, *taking it to the top spot in the world's most polluted cities list.*
- The national capital was ranked the most polluted capital city in the world four times on the trot starting in 2018.
- **Begusarai –** Begusarai, in Bihar stood out as the most polluted metropolitan area globally with an average PM2.5 concentration of 118.9 micrograms per cubic metre.
- The city did not even figure in the 2022 rankings.

It is estimated that 1.36 billion people in India experience PM2.5 concentrations exceeding the World Health Organisation (WHO) recommended annual guideline level of 5 micrograms per cubic metre.

- **Impact –** Exposure to PM2.5 air pollution leads to and exacerbates numerous health conditions, including but not limited to asthma, cancer, stroke and lung disease.
- Exposure to elevated levels of fine particles can impair cognitive development in children, lead to mental health issues, and complicate existing illnesses, including diabetes.

The IQAir report for 2022 had stated that roughly 60% of cities in India had recorded annual PM2.5 levels at least seven times higher than the WHO guidelines (annual guideline level at 5 micrograms per cubic metre).

References

1. Indian Today – Delhi world’s most polluted capital
2. Business Standard – Begusarai of Bihar, most polluted city in the world
3. Live Mint – India’s pollution worsens

Captive Elephant (Transfer or Transport) Rules, 2024

The Centre has notified a set of rules called the Captive Elephant (Transfer or Transport) Rules, 2024 that liberalise the conditions under which elephants may be transferred within or between states.

- **Released by –** The Ministry of Environment Forest and Climate Change.
- Until August 2022, the Wildlife Protection Act explicitly prohibited the trade in wildlife including both wild and captive elephants.
- However amendments to the Act brought in an exemption that for the first time allowed captive elephants to be transferred.

- **Rules –** Captive elephants can be transferred when an owner is no longer in a position to maintain the elephant, the elephant will likely have a better upkeep than in the present circumstances.
- **Chief Wildlife Warden –** Otherwise, when a state's Chief Wildlife Warden deems it fit and proper in the circumstances of the case for better upkeep of the elephant.
- Before a transfer within the state, an elephant's health has to be ratified by a veterinarian and the Deputy Conservator of Forests must establish that the animal's current habitat and prospective habitat are suitable.
- The Chief Wildlife Warden on receipt of such documents may choose to reject or approve the transfer.
- If the transfer involves moving the elephant outside of a state, similar conditions apply.
- **Genetic profile –** Before a transfer is effected, the genetic profile of the elephant has to be registered with the Ministry of Environment, Forest and Climate Change.

Elephant exemption

- The elephant being transferred ought to be accompanied by a mahout and an elephant assistant
- A health certificate from a veterinary practitioner to the effect that the elephant is fit for transport and is not showing any sign of musth or infectious or contagious disease, is to be obtained
- The transport shall be carried out after the mandatory quarantine period as advised by the veterinary practitioner is over, in case of contagious disease
- The elephant shall be properly fed and given water before loading
- Necessary arrangements shall be made to provide food and water to the elephant en route
- Tranquilisers/sedatives shall be used to control nervous or temperamental elephants upon prescription by the veterinary practitioner.
- **Committee –** A Parliamentary Committee, led by Congress Rajya Sabha MP, Jairam Ramesh, had recommended the deletion of this exemption clause for elephants.
- It also recommended providing only an exemption for elephants owned by temple trusts.
- **Final Version of the Act –** The final version of the amended act, however retains the clause on allowing the movement of captive elephants.
- However only animals with an existing certificate of ownership may be moved.

The government of India in the year 2010 declared Elephant as the national heritage animal of the country on the recommendations of the standing committee of the national board for wildlife.

References

1. The Hindu – Centre notifies rules for transfer of 'captive' elephants
2. India Today – Centre releases new rules for captive elephant mobility
3. Hindustan Times – Captive elephant transfer rules notified

Signals Technology Evaluation and Adaptation Group (STEAG)

Army raises elite unit to work on critical technologies having military applications.

- STEAG will undertake research and evaluation of futuristic communication technologies like 6G, Artificial Intelligence (AI), Machine Learning (ML) and quantum computing for military use.
- STEAG will be headed by a Colonel rank officer.
- STEAG is mandated to nurture technologies spanning the complete spectrum of wired and wireless systems.
- It will carry out technical scouting, evaluation, development, management of core ICT solutions, and provide user interface support by maintenance and upgradation of contemporary technologies available in the environment.
- The setting up of STEAG is part of the Army's efforts to develop technologies considering the future battlefield.
- STEAG will help bridge the divide between the armed forces on the one hand and industry and academia on the other.
- STEAG is aligned with the tenets of Atmanirbhar Bharat and Start-Up India.

References

1. The Hindu – Army raises elite unit to work on critical technologies
2. Times of India – Army raises elite tech unit
3. Economic Times – Indian Army establishes elite tech unit STEAG

Other Important Topics
Exercise Tiger Triumph
• It is a ***bilateral tri-service*** Humanitarian Assistance and Disaster Relief (HADR) exercise between ***India and the U.S.*** • **Aim –** To develop interoperability for conducting HADR operations and refine Standard Operating Procedures (SOPs) to enable rapid and smooth coordination between both countries.
Space-borne Assistant and Knowledge Hub for Crew Interaction (SAKHI)

• It is a multi-purpose app that will help astronauts on ***Gaganyaan space flight mission*** to carry out a range of tasks.
• **Developed by - *Indian Space Research Organisation (ISRO)***.
• It monitors the health of the astronauts, help them stay connected with Earth and even alert them about their blood pressure, heart rate and oxygen saturation, dietary schedules.
• It will keep the crew connected with the onboard computer and ground-based stations, guaranteeing a seamless communication link.

Mission 414

• The Election Commission (EC) of India has launched a special campaign in ***Himachal Pradesh*** to maximize voter turnout in ***414 polling stations.***
• These stations registered less than 60% voting in the last Lok Sabha polls.
• Mission 414 aims to reach out to the voters at the ground level and educate them about exercising their right to vote.
• EC also set up another initiative, related to 8 Assembly constituencies where turnout of women voters was less than men.
• **'Mahila Preraks' (motivators)** would be appointed to motivate women to vote.

> ***Article 326 -*** *The right to vote is a constitutional right.*

Heterobilharzia Americana

In a first, Southern California recently discovered a dog-killing flatworm parasite in the Colorado River.
• Heterobilharzia Americana is a flatworm also called a ***liver fluke***, can cause ***canine schistosomiasis,*** which affects dogs' livers and intestines.
• The researchers found that 2 varieties of snails could transmit the parasite ***Galba cubensis and Galba humilis.***
• It was previously predominantly observed in Texas and other Gulf Coast states, U.S.
• Treatments are available for infected dogs, these options do not always produce positive results and infections may eventually necessitate euthanasia.
H. americana is not directly transmitted between dogs or humans, can cause swimmer's itch, a red rash where it penetrates human skin.

Noctis Volcano

• It is a recently discovered Volcano on Mars, nestled between Noctis Labyrinthus and Valles Marineris.
• It is one of the largest structure in Mars size, bigger than the size of Mt.Everest.
• The discovery was made using data from a suite of missions including NASA's Mariner 9, Viking Orbiter 1 and 2, Mars Global Surveyor, Mars Odyssey, and Mars Reconnaissance Orbiter.

E-crop

• It is a crop simulation model-based device which provides periodical advice as SMS to growers about water and nutrient (nitrogen, phosphorus and potassium) requirements.
• It was developed by Santhosh Mithra of the Central Tuber Crops Research Institute (CTCRI), Kerala.
• The Indian Patent Office recently granted patent to E-Crop with retrospective effect from 2014.

Farmers, through an app 'krihi kruthya', also record and send the data on the soil moisture content to the server.

Turahalli forest

• Turahalli is a deciduous shrub forest located in Bengaluru, Karnataka.
• The forest is the last forest surviving in Bengaluru.

Malaria in Odisha

National Centre for Vector Borne Diseases Control (NCVBDC) marks that Odisha has topped the list of states for malaria cases in 2023 with 18.7% recently.

Malaria in numbers

• **Odisha – 18.7%** followed by Chhattisgarh, Jharkhand, West Bengal, Tripura, Maharashtra and Uttar Pradesh.
• **The annual parasite index (API) -** 0.52 in 2022 increased to 0.93 in 2023.

Elimination programmes

• **'Durgama Anchalare Malaria Nirakaran' (malaria elimination in less accessible areas), or 'DAMaN'** is a public health program that aims to control malaria in hard-to-reach and high-endemic areas in Odisha.
• The National Framework for Malaria Elimination (NFME) launched by the Centre in 2016 set the goal to eliminate malaria from the ***entire country by 2030.***

Malaria

• Malaria is a disease caused by a Plasmodium parasite.
• It is usually transmitted by the bite of infected female Anopheles mosquitoes.
• The severity of malaria varies based on the species of Plasmodium – Plasmodium falciparum and Plasmodium vivax are fatal.
• It is both preventable and curable.

Negative interest rate policy

Bank of Japan exits world's last negative-rate regime in landmark policy shift recently.

• A negative interest rate policy (NIRP) is a monetary policy that allows central banks to set interest rates ***below 0%.***
• This policy used to encourage borrowing, spending, and investment, rather than hoarding cash.
• Central banks and regulators use negative interest rates when there are ***signs of deflation.***
• In a negative interest rate environment, borrowers are paid interest instead of paying interest to lenders.
• NIRP is seen as a "last resort" policy to use after exhausting all other options.

Wolf dogs

The Department of Animal Husbandry and Dairying recently issued a letter to states to not issue any licences or permit for sale and breeding of dogs it considers to be 'ferocious' and 'dangerous for human life'.

• Wolf dogs are produced by breeding a wolf with any of a variety of domestic dogs, including Akitas, German shepherds, Alaskan malamutes, and huskies.

• The term "wolf dog" is often used interchangeably with "wolf hybrid".

• People keeping wolf dogs will be punishable under the ***Wild Life (Protection) Act, 1972***.

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