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INDIA ADDS 540 SPECIES TO FAUNAL DATABASE

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Union Ministers Bhupender Yadav and Ashwini Kumar Choubey during an event in Kolkata. Debasish Bhaduri DEBASISH BHADURI

India added 540 species to its faunal database in 2021 taking the total number of animal species to 1,03,258. The country also added 315 taxa to the Indian flora during 2021, taking the number of floral taxa in the country to 55,048.

Of the 540 faunal species, 406 are new discoveries and 134 new records to India. Thirteen new genera were also discovered in 2021. Among the new species discovered is one species from mammal, 35 reptiles and 19 species of pisces.

The new mammal species discovered is *Crocidura narcondamica*, a white-toothed shrew, from Narcondam Island of the Andaman and Nicobar group of islands.

Among the reptiles discovered in 2021, notable is *Boiga whitakeri*, or Whitaker's cat snake, from the Western Ghats in Tamil Nadu.

The most number of new discoveries was from the faunal group Hymenoptera, an order of insects, comprising the sawflies, wasps, bees, and ants, in which 80 species, including one new genus, were discovered.

Dhriti Banerjee, Director, Zoological Survey of India ((ZSI), which observed its 107th foundation day on July 1, said scientists from the ZSI had contributed to 68% of the animal discoveries in 2021. She pointed out that during the COVID-19 pandemic, explorations were greatly hampered, but they have been renewed with full vigour now.

With 1.03 lakh species of fauna, India contributes to 6.1% of faunal diversity in the world.

The 315 taxa of flora added to India consist of 298 species and 17 intraspecific taxa as new to Indian flora. Of these, 204 taxa are new to science and 125 taxa are new distributional records from India. "Forty-three per cent novelties published in various national and international journals are of vascular plants; rest are non-vascular in nature. This volume records 135 angiosperms, four pteridophytes, 9 bryophytes, 28 lichens, 98 fungi, 29 algae and 12 microbes," a note from the Botanical Survey of India (BSI) said.

According to the BSI, regions such as the Western Ghats and the northeastern regions have contributed 28% of the total discoveries. In State-wise analysis, the most number of discoveries were made from Kerala with 51 taxa followed by Maharashtra and Arunachal Pradesh. In 2021, the floral discoveries include wild relatives of many potential horticultural, agricultural, medicinal, and ornamental plants such as begonia, impatiens (Balsams), legumes, zingibers and orchids.

The details of new discoveries and new records of fauna and flora were published by Bhupendra Yadav, Union Minister of Environment, Forest and Climate Change, at the headquarters of the Zoological Survey of India (ZSI) in Kolkata on Friday.

Migration of species

Speaking on the occasion, Mr. Yadav said climate change was no distant reality and science

had been very categorical on the issue. The Minister pointed out that as a consequence of climate change, a change in distributional pattern of vegetation, with species in high elevation ecosystem shifting to higher elevation had already been observed.

“Range shift and migration of animals is very much likely; the distribution of fauna needs to be monitored and periodically analysed as a priority study. Long-term studies on faunal elements of forests, aquatic, coastal and marine ecosystem are essential,” Mr. Yadav said.

The Minister also pointed out that the geo-spatial data of the ZSI would be of great importance in developing adaptive spatial planning of conservation areas.

“Recent findings of ZSI will be useful in forest management and support the national action plan to combat climate change in India,” Mr. Yadav said.

The Minister also pointed that the significance of taxonomists cannot be neglected but unfortunately the number of taxonomists was declining alarmingly.

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SWACHH SAGAR, SURAKSHIT SAGAR CAMPAIGN TO CELEBRATE INTERNATIONAL COASTAL CLEANUP DAY

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

India has a rich marine history. The marine activities were first mentioned in the Rigveda and references to the interrelationships of the ocean, sea and rivers can be found in the Indian Puranas. The diverse evidence from Indian socio-spiritual traditions, literature, poetry, sculpture, painting and from archaeology attest to the great marine traditions of India.

India's coastline of more than 7,500 km reflects our vast ocean resources. Most importantly, the Indian Ocean is the only ocean named after a country, that is, India.

Human society has been continuously benefiting from the natural wealth of the sea and the ocean. However, in the recent times, the plastic litter mostly from the land based activities, tourism and fishing reach the coast and ocean through rivers and different waterways, posing a serious threat to the marine ecosystem. R&D efforts will be undertaken to collect scientific data and information on Marine Litter in various matrices, such as coastal waters, sediments, biota, and beaches.

Globally, "International Coastal Clean Up Day" is celebrated on the third Saturday of September, every year.

This year on 17th September 2022, the Government of India along with other voluntary organizations, and the local society will run a cleanliness campaign "Swachh Sagar, Surakshit Sagar" along India's entire coastline.

This campaign will include Ministry of Earth Sciences (MoES), Ministry of Environment Forest and Climate Change (MoEFCC), Indian Coast Guard, National Disaster Management Authority (NDMA) along with other social organizations and educational institutions.

This campaign will see massive public participation both physically and virtually, mainly to make awareness about reducing the marine litter, minimal use of plastics, segregation at source and waste management.

It will be the first-of-its-kind and longest running coastal cleanup campaign in the world with highest number of people participating in it. The participation of common man will convey the message of "Swachh Sagar, Surakshit Sagar" for the prosperity of not only coastal areas but also other parts of the country.

This year's event also coincides with the celebrations of Azadi Ka Amrit Mahotsav in 75th year of the country's independence; The coastal cleanup drive will be carried out at 75 beaches across the country. A 75 days long campaign will be launched from 03rd July 2022 to raise awareness about "Swachh Sagar, Surakshit Sagar" culminating on "International Coastal Cleanup Day" on 17th September 2022.

A mobile app "Eco Mitram" has been launched to spread awareness about the campaign and also for the common people for voluntary registration for the beach cleaning activity on the 17th September 2022.

Through this campaign, a mass behavioural change among the masses is intended by raising awareness about how plastic usage is destroying our marine life.

SNC / RR

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WAKE-UP CALL: THE HINDU EDITORIAL ON MANIPUR LANDSLIDES

Relevant for: Environment | Topic: Disaster and disaster management

The landslide that occurred last week in the Tupul area in Manipur's Noney district will go down as one of the severest natural disasters in the State, with the [death toll reaching 38](#) and more than 25 people remaining trapped below the debris even as rescue efforts were on. The tragic disaster has been compounded by the debris of the landslide blocking the Ijei river, creating a significant welling up of water which could inundate low-lying areas if the "dam"-like structure is breached. While the administration has sought to ease the water outflow from the stored water, inclement weather has hampered the pace of the efforts and the government and disaster management officials must now take precautions to ensure that the consequences of the disaster do not snowball even further. The fact that such a disaster occurred in a railway construction site in a landslide-prone area should give development planners and government officials in the State pause. While the Himalayan States in northern India and other States with hill/ghat terrain such as Kerala have registered the bulk of landslides in the last decade or so according to government data, the number of such incidents in Manipur (20 between 2014 and 2020) is not insignificant. The relatively high number of casualties accompanying these landslides and the fact that the Environment Ministry has itself acknowledged that the disasters were "anthropogenically" induced are a matter of serious concern for the State. The Ministry identified the causes of landslides in Manipur as "a result of modification of slopes for construction, widening of road, quarrying for construction materials, fragile lithography, complex geological structures and heavy rainfall".

As a post-facto exercise, the State government must look at whether sufficient soil and stability tests were done before choosing the site for railway construction work in the Tupul area. Researchers have corroborated the fact that the areas in western Manipur abutting the national highways fall under very high, high or moderate hazard zones. The severe landslide occurred in the Tupul area despite the government identifying susceptible areas in the State through the National Landslide Susceptibility Mapping project. The uncertain nature of rains, with the monsoon being more intense this year compared to predictions, has added to the problem. An early warning system for landslides is still being developed and refined by the Geological Survey of India and this could help reduce the scale of such disasters, once deployed across vulnerable States. While it is understandable that States in the Northeast are keen on accelerating connectivity projects to uplift a relatively economically backward region, disasters such as the landslide in Tupul point to the dangers of not taking ecological challenges related to deforestation seriously enough. This is a wake-up call for governments in States that are prone to landslides regularly.

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Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

NEW DELHI : India's move to ban certain single-use plastic (SUP) items will have minimal impact on the financials of listed entities in the fast moving consumer goods (FMCG) category, analysts at Kotak Institutional Equities said in a note on Monday.

The Centre banned manufacturing, imports, distribution and sale of single-use plastic items across the country, effective 1 July. Items in the list include ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, polystyrene decoration, plastic plates, cups, glasses, cutlery such as forks, spoons, knives, straws, etc.

For listed packaged consumer goods makers, exposure to such products largely includes items such as straws etc.

Analysts at Kotak Institutional Equities said a possible extension of the ban to other single-use plastic items such as sachets, pouches, wrappers and laminated tubes in the medium term could impact volumes or profitability of many consumer good categories, especially for the lower-priced stock keeping units.

The share of plastics used for these banned single-use plastic items is less than 2-3%, they added.

India has the dubious distinction of being the fifth highest country in terms of generation of plastic waste, with a discharge of 3.5 million tonne in FY20. On a per capita basis, India's plastic waste generation has almost doubled over FY2016-20.

"The current ban covers items which have a low utility and high littering potential. These are not widely used by large consumer companies and hence will have a limited impact for now. Amongst the banned items, plastic straws which are used with low value packs of juices and beverages (by companies like Dabur 2.5% sales) could see an increase in cost from Rs0.25-0.30 to Rs1-1.25 per unit as they switch to imported paper straws," the analysts said.

Meanwhile, cigarette companies have already migrated to bio-degradable plastic wraps and hence may not witness an incremental impact.

The ban on single-use plastic came into effect despite companies extensively lobbying the government to delay the transition, citing costly alternatives and their lack of easy availability.

Meanwhile, several FMCG companies said they have started production of items with paper straws. Last week companies such as Parle Agro and Dabur India told Mint that were moving ahead with plans to replace plastic straws with those made of paper. Dabur India has commenced production of Real juice packs with integrated paper straws, it said.

However, some companies had also warned of "staggered" supplies of imported paper straws. That's because India has a constraint when it comes to manufacturing of paper straws and as a result companies are relying on imports to meet demand.

The environment ministry formed a task force across all states and Union territories to check the illegal manufacture, import, stocking, distribution, sale and use of banned single-use plastic items.

Analysts at Kotak Institutional Equities added that single-use plastic aside, fast moving companies rely significantly on non-rigid plastic packs especially to package items such as biscuits, instant noodles, tea, detergent powders, shampoos, milk, edible oils, etc.

Any restrictions on those could wreck havoc to company margins, they said.

"We note that price point packs (low unit packs; primarily have plastic packaging) account for about 30% of overall volumes for companies such as HUL and about 50-60% for Britannia. Replacement of plastic with environment-friendly substitutes could increase packaging costs meaningfully especially in case of sachets; thus, any broad-based ban on single use plastic in the medium term could impact volumes as well as profitability of the sector," they added.

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RIGHT INTENT, CONFUSING CONTENT

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

Technicians dismantle electronic devices at Hyderabad's first full-fledged safe disposal facility at Earth Sense Recycle unit in Mankhal Industrial Park in Ranga Reddy district of Andhra Pradesh. | Photo Credit: Mohammed Yousuf

Last month marked a decade since the E-waste (Management and Handling) Rules came into effect in India. The Rules have been amended a few times since. The most recent amendment is the Draft E-waste Management Rules, 2022, released for public comments in May 2022 by the Environment Ministry. Despite retaining the underlying extended producer responsibility (EPR) framework, the new draft Rules depart significantly from the previous regulations.

One major change is the introduction of a market for e-waste recycling certificates. The draft rules state that producers of e-goods have to ensure that at least 60% of their produced e-waste is recycled by 2023. This shift from collection rate targets (which set targets for the collection of e-waste as a percentage of the quantity of products sold by weight in the market in the previous year) in the current Rules to recycling rate targets in the proposed Rules is another important change.

The proposed market for e-waste recycling appears unrealistic. First, large-scale recycling of e-waste is still in its infancy in India. Most of the recycling of valuable material is carried out within the informal sector using inefficient and unsafe technologies. At a time when the technical feasibility and commercial viability of different recycling technologies and approaches for e-waste components is being worked upon in India, a target to recycle 60% of the e-waste generated in 2022-23 appears too optimistic. Second, if the regulatory targets were to create a vibrant market for recycling, the existing formal and informal players would have to play a crucial role. In light of this, the complete silence on regulating registered collectors, dismantlers, and producer responsibility organisations is puzzling. Who will ensure that these entities are carrying out their responsibilities in an environmentally safe manner? Or are these entities no longer covered under the EPR framework?

In addition, the informal sector accounts for a vast majority of e-waste processed in India. Most e-waste policy debates have centred around the integration of the informal sector into the formal systems. The proposed regulations, however, place the responsibility of such integration on the State governments without specifying what the incentives are for them to do this.

Experience from European countries suggests that recycling targets would likely be much more difficult for the regulators to monitor and enforce compared to collection targets. Does the recycling target apply to every component of an e-product or does it apply to its aggregate weight? This is important because the technological complexity and cost could vary by component. If it is by aggregate weight, as the Rules indicate, it could incentivise recycling of materials that are easy and inexpensive (plastics, copper, glass) to recycle as opposed to materials that are costly and technologically more difficult to recycle but perhaps have greater environmental footprint (rare earth metals). If the Ministry and the Central Pollution Control Board (CPCB) decide to go ahead with recycling targets, they should come up with guidelines on how the regulated entities must demonstrate compliance with the targets.

The other major change is the introduction of a Steering Committee to oversee the "overall implementation, monitoring, and supervision" of the regulations. This Committee, for example, has the power to decide on the product-wise "conversion factor" that determines the value of the

recycling certificate, specify how the environmental compensation fund could be utilised, resolve disputes, and “remove any difficulty in smooth implementation of these regulations.” While such an institutional mechanism could provide more certainty in implementation, there is lack of representation in the Committee. The Rules propose the Chairman of the CPCB as the Chairperson of the Committee, which would include representatives of the Environment Ministry, the Electronics and IT Ministry, and the associations of producers and recyclers. But it is surprising that representation from science/academia and civil society organisations is not deemed appropriate.

The draft e-waste Rules propose a few positive changes, including expanding the definition of e-waste, more clearly specifying the penalties for violation of rules, introducing an environmental compensation fund based on the ‘polluter pays’ principle, and recognising the informal waste workers. The core changes it proposes within the EPR framework, however, require careful deliberation with all the relevant stakeholders before the Rules are finalised.

Rama Mohana Turaga and Kalyan Bhaskar teach sustainability and public policy at IIM Ahmedabad and XLRI, Jamshedpur, respectively. Views are personal

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MINT

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Global Livability Index 2022: EIU ranked national capital Delhi at 140, and finance capital Mumbai at 141 out of 173 surveyed cities. This was followed by Chennai at 142 and Ahmedabad at 143

The dream cities of the Indian sub-continent might not be livable after all!

This includes, the national capital [Delhi](#), the city of dreams Mumbai and the silicon valley of India- Bengaluru.

Notably, the Karnataka's capital city ranked as the least livable city in India!

The Economist Intelligence Unit (EIU) is the research and analysis division of The Economist Group, a global media and information services company.

The EIU on 24 June released its Global Livability Index 2022, which ranks cities across the world on their 'livability' quotient or condition of living offered in a city.

What is the livability of a city?

According to Economist Intelligence Unit's (EIU) Global Livability Index 2022, the livability of a city is determined by 5 factors-- stability, healthcare, culture and environment, education and infrastructure.

Stability and culture and environment have the highest weightage — 25% each — while healthcare and infrastructure get a weightage of 20% each and education has a weightage of 10%.

This the first time that the index has included [Chennai](#), Bengaluru and Ahmedabad; earlier reports only featured Delhi and Mumbai among Indian cities.

Where does Indian cities stand?

All five Indian cities that figure in the Economist Intelligence Unit's (EIU) Global Livability Index 2022 ranked measly in the index. The Index analysed living conditions in 173 cities across the world.

New Delhi, Mumbai, Chennai, [Bengaluru](#) and Ahmedabad were surveyed by the index and they ranked between 140 and 146. The ideal score is 100. Among Indian cities, New Delhi received the top rank of 140, with a livability score of 56.5. This was followed by Mumbai at 141 (score 56.2), Chennai at 142 (score 55.8), Ahmedabad at 143 (score 55.7) and Bengaluru at 146 (score 54.4).

Infrastructure brings down Bengaluru

Karnataka's capital city Bengaluru had been ranked as the most livable city in term of 'ease of living' in March, 2021 in a survey conducted by the Urban Development Ministry. However, the IT city saw a sharp downfall, owing to poor infrastructure.

The city received a score of 46.4 (out of 100) in infrastructure, the lowest among all Indian cities.

The infrastructure score is based on quality of roads, public transportation system, international links, energy provision, telecommunications, water and availability of good quality housing.

Bengaluru attracts a lot of young people every year flocking to the tech hub in search of jobs at large corporate houses, MNCs or start-ups.

Even Pakistan's Karachi (51.8), amongst the five least liveable cities in the world in the index, scored better than Bengaluru on infrastructure parameter. Bengaluru's infrastructure score was equal to Lagos in Nigeria, the third-least livable city in the world.

Congress slams BJP for Bengaluru's score

The Karnataka Congress slammed the Basavaraj Bommai led BJP government in the state after its capital city ranked as the least livable city in India.

"This report is proof that the BJP government has failed to deliver in the last three years," Karnataka Congress working president Ramalinga Reddy, a former Bengaluru affairs minister, told a news conference. "On infrastructure, Bengaluru has score Bengaluru has scored 46.4 out of 100. This is the same as Lagos in Nigeria. Karachi in Pakistan has a better score of 51.8," Reddy pointed out. "The government claims to have given 6,000 crore to Bengaluru. If the money was spent properly, then then the city wouldn't have fallen to this level. The CM should, at least now, wake up," he added.

Delhi, Mumbai, Ahmedabad, Chennai

Delhi with 62.5 scored the highest, followed by Mumbai at 55.4 and both Chennai and Ahmedabad ay a score of 50 each.

In the culture and environment parameter — based on weather, corruption, social and religious restrictions, sporting availability, culture and ratings on food and drink and consumer goods and services — Ahmedabad scored the least with 44.4. Mumbai was on the top in this category with a score of 50.7, followed by Delhi (48.6), Bengaluru (47.2) and Chennai 46.5.

However, Ahmedabad with a score of 65 came on the top on the stability parameter, which mainly is a reflection of law-and-order situation in the city. Bengaluru, Chennai and Mumbai scored 60 each, while Delhi with 50 was the last.

In the healthcare parameter, which measures the quality of public and private healthcare infrastructure along with availability of medicines, Chennai, Delhi and Bengaluru scored 58.3 each and Mumbai and Ahmedabad 54.2 each.

In education, calculated on availability of private education and its quality and public education indicators, Delhi, Chennai and Bengaluru scored 75 each, while both Mumbai and Ahmedabad scored 66.7.

What EIU said

If a city's livability score is between 50-60, as in the case of Indian cities, then "livability is substantially constrained", according to the EIU's suggestions.

The survey suggests employers a provision of an allowance based on the discomfort a city

offers to the employees.

“Companies pay a premium (usually a percentage of a salary) to employees who move to cities where living conditions are particularly difficult, such as excessive physical hardship or a notably unhealthy environment. EIU has given a suggested allowance to correspond with the rating. However, the actual level of the allowance is often a matter of company policy. It is not uncommon, for example, for companies to pay higher allowances—perhaps up to double EIU’s suggested level”, the report said.

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EXPLAINED

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

Complete overhaul: The government has banned the manufacture, import, stocking, distribution, sale, and use of all identified single-use plastic items with effect from July 1. | Photo Credit: PTI

The story so far: A ban on the use of single-use plastics that was notified by the Union Environment Ministry on August 2021 came into effect on July 1 this year. The notification said national and State-level control rooms would be set up to check illegal manufacture, import, stocking, distribution, sale and use of banned single use plastic items. The Plastic Waste Management Amendment Rules, 2021, will also prohibit manufacture, import, stocking, distribution, sale and use of plastic carry bags having thickness less than 120 microns with effect from December 31, 2022.

The Centre defines it as an object made of plastic that is intended to be used “only once” before being disposed off or recycled. For the purposes of the ban, there is a list of 21 items that come under the definition of single-use plastic including ear buds with plastic sticks, plastic sticks for balloons, plastic flags, candy sticks, ice-cream sticks, thermocol for decoration, plates, cups, glasses, cutlery such as forks, spoons, knives, straw, trays, wrapping or packing films around sweet boxes, invitation cards, and cigarette packets, plastic or PVC banners less than 100 microns, stirrers.

These objects were listed by the Environment Ministry in August when it notified the Plastic Waste Management Amendment Rules, 2021. Single-use plastic items such as these had “low utility and high littering potential,” it noted. Plastic packaging waste, a major contributor to the much larger problem of plastic waste pollution, isn't yet covered under the phase-out of single-use plastic items. Mineral water bottles or plastic bottles of aerated drinks are unaffected by the ban, though, in popular imagination, they are representative of ‘plastic pollution.’

So far 32 States/UTs have reportedly constituted a dedicated Task Force to eliminate the use of single-use plastics. Of these 14 states/UTs and 12 Central Ministries, as of March, had developed action plans describing how they would be enforcing this.

A few States, for example Maharashtra, already have legislation banning the manufacture and storage of such plastic. But implementing it wasn't always successful as there was regular supply from States where such bans were not in force. An all-India ban, it's hoped, would make enforcement more effective.

According to the Environment Protection (EP) Act, violating the ban could invite “punitive action”. Manufacturers and distributors of single-use plastic goods were directed to have zero inventory by June 30, according to officials in the Union Environment Ministry. The EP Act says that violating the ban could invite a five-year imprisonment and a fine of upto 1 lakh, or both. If the violations are repeated, it could mean additional fines up to 5000 for each day. There are different penalties for companies, organisations, and government departments under the EP Act.

The Environment Ministry told the Rajya Sabha last July of its plan to phase out some categories of single use plastic by 2022. A draft outlining the manner in which the ban was to be implemented was issued in March and involved amending the Plastic Waste Management Rules, 2016. Before the amendments came into force, the Plastic Waste Management Rules only prohibited the manufacture, import, stocking, distribution, sale and use of carry bags and plastic sheets less than 50 microns in thickness in the country. There is a ban on sachets using

plastic material used for storing, packing or selling gutkha, tobacco and pan masala. Since October 2021, there is a ban on the manufacture, import, stocking, distribution, sale and use of carry bags made of virgin or recycled plastic less than 75 microns as opposed to 50 microns under the earlier version of the rules. At the 4th United Nations Environment Assembly in 2019, India piloted a resolution on addressing single-use plastic products pollution.

The All India Plastic Manufacturers Association has said that the ban would shutter 88,000 units in the plastic manufacturing business. These employ close to a million people and contribute to exports worth 25,000 crore. Fast Moving Consumer Goods companies (FMCG) would be severely affected by the the ban due to their dependence on plastic straws, plates. Their replacements, industry representatives say, are available but cost much more than their plastic alternatives. There is also limited capacity in India to provide biodegradable replacements. Average and prominent consumer goods companies have written to the government requesting a six-month extension before the ban takes effect and that companies that are likely to go out of business be compensated. The government has, however, signalled its firm commitment to the ban. Environment Minister Bhupender Yadav said the government had multiple consultations with the industry since 2018. Stakeholders had nearly a year to find alternatives to the use of such plastic and that industries should work to introduce new technologies and alternatives to preserve livelihoods of those who worked in plastic manufacturing industries, he added.

Unlike thicker and denser plastic material, single-use plastic objects being light and flexible are less amenable to being recycled. While 99% of plastic is recycled, they constitute heavier plastics that are likely to be collected by ragpickers and plastic waste recyclers. Single use plastics do not provide an incentive enough for the effort needed to collect them and hence they lie around, leach their toxins into the soil and cause environmental damage in both land and sea.

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HIMACHAL PRADESH HIT BY FLASH FLOODS AND LANDSLIPS

Relevant for: Environment | Topic: Disaster and disaster management

People crossing a flooded area after a cloudburst at Manikaran valley in Kullu district on Wednesday. PTI-

At least four persons are believed to have been washed away in the Parvati River after a cloudburst hit Chojh village in Himachal Pradesh's Kullu district on Wednesday.

A woman drowned in the Malana river after a 'flash flood' at the Malana Hydroelectric Project site in Kullu's Bhuntar. In Shimla's Dhalli, a young woman died and two others were injured after rains triggered a landslide.

In Chojh village, the cloudburst occurred around 6 a.m., causing a huge inflow of water into the already swollen Parvati as heavy monsoon rain had lashed the region late in the night on Tuesday. "Four persons, who were reportedly washed away in the Parvati river, are still missing. Rescue teams are on the job," Sudesh Kumar Mokhta, State Disaster Management Director, told *The Hindu*.

Mr. Mokhta said 30 employees were trapped in a building after a flash flood at the Malana Hydroelectric Project site on the Malana in Kullu's Bhuntar. All of them were rescued by the local administration. "A woman drowned at the dam site," he said.

Flash flood struck Murang village in Kinnaur district's Thungi Khad, but no loss was reported, according to the State's Emergency Operation Centre. Landslip was reported in Bilaspur town of the State.

With heavy rain lashing the region, the Kullu administration, anticipating landslips, flash floods and cloud bursts in the district, directed all the campsites adjoining river banks and in landslip-prone areas to be removed. Deputy Commissioner issued the order under Sections 30 and 34 of the Disaster Management Act, 2005. Also, all types of water sports-adventure activities, including rafting, kayaking, and zip lines across water bodies, have been banned.

Chief Minister Jai Ram Thakur reviewed the preparedness to tackle emergency situations with Deputy Commissioners and Superintendents of Police of all districts through video conferencing.

The Chief Minister directed the officers to make foolproof arrangements for disaster management. He said adequate number of people and machinery should be deployed in areas prone to landslides and other disasters.

Mr. Thakur directed that appropriate steps be taken at camping sites situated on the banks of rivers in the State. He said Quick Reaction Teams and Emergency Operation Centres should be functional round-the-clock at the district and sub-division level for disaster management.

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MINT

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

NEW DELHI : India makes up 17% of the world's population but accounts for only 4% of global carbon emissions, said Bhupender Yadav, Union minister for environment, forest and climate change.

Addressing the 'Hariyali Mahotsav'—Tree Festival, Yadav said developed nations with the same percentage of population account for nearly 60% of carbon emissions. "India has demonstrated the essence of mindful consumption of resources to the worldm," he said.

He said the importance of the ban on single use of plastics from 1 July and requested for shared responsibility from the citizens to ensure its full implementation. "Efforts are being directed in creation of alternative solutions for an eco-friendly sustainable future. India hosts rich biodiversity and in spite of the various anthropogenic challenges faced, the country thrives with 52 tiger reserves and 31 elephant reserves and many other endemic, vibrant wildlife and rich forests," he said.

Speaking on the occasion, Union minister of state for environment, forest and climate change, Ashwini Kumar Choubey said tackling climate change is among the major challenges confronting the world. He reiterated Prime Minister Narendra Modi's clarion call for Lifestyle for Environment (LiFE) and the importance of trees in Indian vedas and mythology.

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A PLAN THAT IS MUCH MORE THAN JUST PLANTING TREES

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

'Beyond the environmental benefits, there is the human dimension that is at the front and centre' | Photo Credit: Getty Images

Last month, about 100 women, employed under the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), were seen digging pits, planting trees and watering them in Nangal Khurd village, in Mansa district in Punjab, just in time for [World Environment Day](#) that is observed every year on June 5. Working alongside them were over 50 young people from a local club. The district administration was involved too. It was an example of community effort.

Let us move to this month. It is also time for Van Mahotsav, which literally means "celebrate the forest". The history of Van Mahotsav Day goes back to July 1947, when it was first organised by the Punjabi botanist, M.S. Randhawa. Subsequently, in 1950, Kanaiyalal Maneklal Munshi, an environmentalist and Union Minister of Agriculture and Food, expanded its reach and national scope. In today's world, forests need to be celebrated more than ever before. Simultaneously, more forests need to be created and restored. However, there is much debate about the efforts around tree planting. Is there a right way to do it? Are there dos and don'ts when it comes to mass tree-planting? Let us step back for the bigger picture.

According to the International Union for Conservation of Nature (IUCN), deforestation and forest degradation contribute around 12% of global greenhouse gas emissions. The total area occupied by primary forests in India has decreased by 3.6%.

Typically, governments have relied on afforestation and reforestation as a means of establishing trees on non-treed land. These strategies have now evolved. The focus is now on forest landscape restoration — the process of regaining ecological functionality and improving human welfare across deforested or degraded forest landscapes.

This approach keeps in mind multiple land uses and people's needs in the short and long terms. Forest landscape restoration seeks to involve communities in the process of designing and executing mutually advantageous interventions for the upgradation of landscapes. Nearly two billion hectares of degraded land in the world (and 140 million hectares in India) have scope for potential restoration as forest land.

A crucial aspect of this process is to ensure the diversity of the species while planting trees. Natural forests with diverse native tree species are more efficient in sequestering carbon than monoculture tree plantations. Planting diverse species is also healthier for local communities and their livelihoods. An international study published earlier this year in the journal, *Science*, found that diversifying species in forest plantations has a positive impact on the quality of the forests.

In Punjab, for instance, the community is proactively planting native species such as Jhand (*Prosopis cineraria*), Desi Kikar (*Acacia nilotica*) and Pharwan (*Tamarix aphylla*), which are resilient and acclimatised. And most of these saplings have a high survival rate of 90%, a vital requirement for sustainable reforestation activities.

Tree planting comes with varied environmental and ecological benefits. Forests are integral in

regulating ecosystems, influencing the carbon cycle and mitigating the effects of climate change. Annually, forests absorb roughly 2.6 billion tonnes of carbon dioxide. This absorption includes nearly 33% of the carbon dioxide released from burning fossil fuels.

But beyond the environmental benefits, there is the human dimension that is at the front and centre. Millions of lives and livelihoods are intertwined with our forests. Forests are a boon for local communities and their livelihoods by functioning as a resource base for goods and services. India is an agrarian economy. According to academics from the World Resources Institute, forest ecosystems enrich soil fertility and water availability, enhancing agricultural productivity, and in turn the rural economy. Tree planting prevents erosion and stems flooding. Sustainable forest crops reduce food insecurity and empower women, allowing them to gain access to more nutritional diets and new income streams. Agroforestry lessens rural-to-urban migration and contributes to an increase in resources and household income. Planting trees is deeply linked to the 'wholistic' well-being of all individuals, the community, and the planet.

The span 2021-2030 is the UN Decade on Ecosystem Restoration, emphasising efforts to restore degraded terrestrial ecosystems including forests. In 2011, the Bonn Challenge was launched with a global goal to restore 150 million hectares of degraded and deforested landscapes by 2020 and 350 million hectares by 2030. India joined the Bonn Challenge in 2015, pledging to restore 26 million hectares of degraded and deforested land by 2030. An additional carbon sink of 2.5 billion-3 billion tonnes of carbon dioxide equivalent through forest and tree cover is to be created by 2030.

There are a myriad government programmes such as Compensatory Afforestation, the National Afforestation Programme, the National Mission for a Green India (Green India Mission), the Nagar Van scheme and the Forest Fire Prevention and Management Scheme to name a few. There is a spotlight on youth via the Green Skill Development Programme for youth who aspire to attain employment in the environment and forest sectors. State governments are not far behind either, a case in point being Telangana, which has initiated a large-scale tree planting programme called 'Telanganaku Haritha Haram'.

However, forest restoration in India faces hurdles in terms of the identification of areas for restoration, a lack of importance accorded to research and scientific strategies in tree planting, stakeholders' conflicts of interest, and financing.

So, what is the right way to undertake tree plantation drives? To be successful, forest landscape restoration must be implemented proactively, bolstering landscapes and forest ecosystems to be durable and adjustable in the face of future challenges and societal needs. It also needs the involvement and the alignment of a host of stakeholders including the community, champions, government and landowners. The restoration of natural forest ecosystems can be strengthened through participatory governance by engaging stakeholders —as in the Punjab example. Vulnerable forest-dependent communities should be factored in, and any effort should be tailored to the local socio-economic context and landscape history of a region.

The women and youth of Mansa district are securing the future of their communities and their well-being while maximising the rewards of tree-planting. Let us pledge to truly celebrate the forests by doing it the right way. That is the maha utsav our forests need.

Vishal Chowla is Leader, RoundGlass Foundation. Venkatesh Raghavendra is Strategic Adviser, RoundGlass Foundation. Special inputs by Sruthakeerthy Sriram

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QUESTION CORNER

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Until now, common toads were thought to be terrestrial. The highest toad in this study was found three metres up a tree — and scientists say there is a chance the toads might be venturing even higher.

This is the first time that the tree climbing potential of amphibians has been investigated at a national scale (*PLOS ONE*).

The research was led by the University of Cambridge and Froglife, and supported by wildlife charity People's Trust for Endangered Species (PTES).

Common toads are regarded as typical terrestrial amphibians, which spend their time both on land and in water during breeding. To date there have only been a handful of documented sightings of common toads in trees in the U.K.

Consequently, common toads and U.K. amphibians in general have never been surveyed for in trees. Over 50 common toads were found during surveys of hazel dormouse nest boxes (located 1.5m above ground) and tree cavities usually used by bats, says press release.

Many of the cavities were small or not visible from the ground, so it is unclear how toads are finding them and how difficult it is for toads to climb particular trees.

Toads were not found in boxes or tree holes with other species, however they were found using old nests made by dormice and even birds.

While 50 records is not a huge number, it suggests that toads spend more time in trees than was previously thought. The discovery suggests that tree cavities might represent an even more important ecological feature than conservationists previously thought. It highlights the importance of protecting our remaining natural woodland habitats, especially ancient trees with veteran features (such as hollows, cracks and other natural cavities) for all wildlife.

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Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

NEW DELHI : Increased levels of ammonia, phosphates and total dissolved solids (TDS)—way beyond their safety limits— have been observed in the Yamuna, an official of the Delhi Jal Board (DJB) said. The official said the high levels of these pollutants, insufficient supply of raw water and dry river beds have affected water supply in the national capital.

The ammonia concentration in the river has increased to two parts per million (PPM), higher than the safety limit of 0.5 PPM. This affected the water supply in parts of Delhi on Friday and Saturday, with the water treatment plants (WTP) at Wazirabad, Chandrawal and Okhla running at capacity to treat the polluted water with chlorine. "The treatment plants are stopped by DJB when the content of ammonia is high and cannot be treated. This is what affects the supply of water," the spokesperson from DJB said.

Ammonia levels in water are also harmful for aquatic life because they make it more alkaline. The recent discovery of a large number of dead fish in the Yamuna can also be linked to the ammonia toxicity. "Since the availability of raw water is less, the levels of ammonia have gone up. The levels will come down with the onset of monsoon in Delhi," the spokesperson added. Levels of phosphate, a pollutant which is responsible for a toxic white foam in the river, have also increased from the safety limit of 0.1 PPM to 0.7 PPM. "We have identified new pollutants in the Yamuna which should not be there. The levels of phosphate should be not more than 0.1 PPM but we are observing them to be 0.7 PPM at the moment," a government official said.

Phosphates are an ingredient used in many detergents. Domestic wastewater, industrial effluents, idol immersion, pesticide residue and untreated sewage are some of the sources of this pollutant in the river. "Lakhs of unauthorized industries that release effluents in the river are the leading cause of the pollution," said Manoj Mishra, convener, Yamuna Jiye Abhiyan.

The TDS levels in the river have also shot up to 600 PPM which indicates heavy pollution, as compared to the regular levels of TDS of around 100-150 PPM. "The recent cloud burst has resulted in a lot of sediment in the water which has led to the high levels of TDS. The water, once treated at the WTP, will have the normal level of TDS," the DJB spokesperson said.

Queries sent to the Delhi Pollution Control Committee (DPCC) and Central Pollution Control Board (CPCB) on Friday remain unanswered.

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PACIFIC LEADERS DECLARE CLIMATE EMERGENCY

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Pacific island national leaders declared a climate emergency on Friday and agreed to try to bring Kiribati back to the region's main diplomatic grouping.

Kiribati announced it had withdrawn from the 18-member Pacific Islands Forum ahead of a leaders' summit in Fiji this week. The move was seen as a sign of China's growing influence in the region.

The leaders "welcomed and fully supported" the new Australian government's commitment to the forum's climate change priorities, Australian Associated Press reported.

Australia, the wealthiest and most populous of the forum nations, has committed to reduce greenhouse gas emissions by 43% below 2005 levels by the end of the decade.

The nations are eyeing "progress on turning pledges into action" consistent with containing global warming to 1.5 degrees Celsius.

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A NEW MARINE RECORD FROM RUSHIKONDA BEACH IN VISAKHAPATNAM

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

New record of polyclad flatworm in Rushikonda coast in Visakhapatnam. | Photo Credit: Special Arrangement

One balmy morning, when marine biologist Sri Chakra Pranav Tamarapalli and his teammates Vimal Raj, Manish Manick and Pavan Sai Varma were walking along the Rushikonda during their usual research trips, they stumbled upon a brilliant blue creature making its way through the rocky tidal pools. Fascinated by the colour and shape, they were quick to click pictures and videos. "Initially, we thought it could be a nudibranch sea slug; but upon close observation we realised it was very thin and had branched guts like a polyclad," says Pranav.

The vibrant coloured benthic organism was a species of polyclad flatworm *Pseudoceros galatheensis*, recorded for the first in Andhra Pradesh and East Coast mainland India.

Marine flatworms, also called polyclads, are usually seen in nearshore areas in tropical and subtropical areas. They are predatory and mainly feed on marine organisms like sponges, ascidians, crabs and other smaller organisms. Their role is vital as predators in coral reefs and other shallow water marine ecosystems. Their brilliant colour warns other predators that they are toxic and should not be consumed. "Though there are many recorded species of polyclad flatworms around the world, very less is known about them in the east coast of India, where the records were not described until recently. This makes this discovery significant and underlines the need for research in marine biology along the east coast, which has several such surprises that need to be documented," says Pranav, founder and project manager, East Coast Conservation Team (ECCT), who along with Greenpaw, established the first record of the marine flatworms from the region.

This species was first identified in the Andamans in 2017 by Sudhanshu Dixit from the Zoological Survey of India. "This is not just the first range extension of the species but also the first record of the entire order of polycladida in the east coast," adds Pranav.

The organism is about three centimetres in length with a light blue body and dark blue margins. A yellow median line beautifully passes through the middle. These organisms are usually seen in rocky as well as intertidal areas. They have two folds on the anterior side called pseudo tentacles with around 12 eyes spots on each fold that are used for sensing light. As thin as paper, they can surprisingly prey upon organisms like crabs by hunting them!

Visakhapatnam coast and the coast of Andhra Pradesh has a lot of potential in marine research, as very less data is available at present about marine ecosystems. ECCT and Greenpaw have started a project called Intertidal Biodiversity of Andhra Pradesh in which they involve everyday people to be citizen scientists in data collection for conservation. Any one with interest can join their Beginner Marine Explorer walks they conduct in collaboration with another city-based firm Wilded. "We have recorded more than 130 intertidal species through the project and expect to collect more data with help of citizen scientists who can join us," says Pranav.

Andhra Pradesh has the second largest shoreline in India and has a lot of potential for marine research and conservation. "We have varied shores ranging from sandy, muddy and rocky

shores that host different types of organisms. We also have varied ecosystems under water that are yet to be discovered. Marine megafauna such as sharks, rays, marlins, dolphins, whales and porpoises are abundant in our waters and waiting to be studied," he adds.

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AN EFFORT TO SAVE THE SNAKES OF NAGARJUNASAGAR SRISAILAM TIGER RESERVE

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

A snake being rescued by snake rescuer at NSTR. | Photo Credit: SPECIAL ARRANGEMENT

It was around dusk and Kalicharan had just settled down to have his lunch after a tiring day in the agricultural fields in Srisailam when he received the call. The voice on the other end had a sense of urgency and urged him to rush to a spot about a kilometre from Kalicharan's place. Prepared for a long night ahead, he reached the location within minutes. Before him was an adult python trapped in a borewell pipe in a house. It took over nine hours of wait for Kalicharan to rescue the python, which was later released in the forests of Nagarjunasagar Srisailam Tiger Reserve (NSTR) under the presence of the forest officials.

Kalicharan is one of the four snake rescuers trained by conservation organisations like the Eastern Ghats Wildlife Society (EGWS) in collaboration with the Andhra Pradesh Forest Department to address human-snake conflict in the complex geographical terrain of NSTR. The project of training the locals in snake rescue operations and capacity building workshops initiated by the forest department was kickstarted six months ago. "Every day, we rescue nearly five snakes from the fringe villages in NSTR. On an average, more than 90 snakes are rescued in a month," says Vignesh Appavu, Divisional Forest Officer, Markapur.

The largest tiger reserve in India, NSTR encompasses an area of 3,568.09 sq. kilometres in the Nallamala hill ranges of Andhra Pradesh. The landscape hosts a breathtaking stretch of thick forest and incredibly rich wildlife. Here, the Bengal tiger shares its habitat with more than 60 species of reptiles, including an array of snakes. These reptiles are unique in many ways: they have no eyelids, no external ears, no limbs and sense their surroundings using their tongue. The forest also has the 'Big Four' species of venomous snakes — Russell's viper, common krait, common cobra and the saw scaled viper.

Snakes have always been an object of fear, fascination and superstition. "Throughout evolutionary history, studies have shown that humans and other primates are likely to have an attention bias toward threats such as snakes. Our innate fear stems out of this. But the issue at NSTR is more complex," says Vignesh. Sunnipenta and Srisailam are twin towns located within the tiger reserve. In Srisailam alone, the livelihood of 6,000 people depends on the Srisailam temple and the forest. Human-snake conflict has become more frequent here. "Until 2008, a major part of NSTR was inaccessible due to naxal issues. Over the years, wildlife protection has improved. But at the same time, human population has grown exponentially. Human habitations have spread in revenue areas of the region which originally used to be inhabited by snakes," adds Vignesh. Due to rapid expansion of human settlements and land use changes in the fringe villages, human-snake conflict has risen in many areas around the reserve. Snakes enter houses in search of rats and other resources like water and shelter.

When the AP Forest Department was faced with this peculiar problem, they realised the need to sensitise locals and involve them in the rescue operations.

Managing a huge tiger reserve is a herculean task for the forest department. An additional task of dealing with snake conflicts called for a different participatory approach. "Whenever a snake is on the loose, people call snake rescuers engaged by the forest department. These snake rescuers operate in different locations and are trained professionally in snake rescue,

rehabilitation and snakebite management,” says Murthy Kantimahanti, founder of Eastern Ghats Wildlife Society, an organisation working closely with the forest department to provide training to the locals.

AP Forest Department and EGWS have shot a documentary film called Snakes of Nallamala in NSTR to showcase how active engagement with the locals has helped mitigate human-animal conflict. “The film was shot at different locations of the tiger reserve covering the forests and landscapes at Pedacheruvu, Pulicheruvu, Naramamidi Cheruvu, Bairlutu range, Srisailam and Dornala Road and Gundem among others,” says Murthy. On World Snake Day observed on July 16, the forest department will be releasing the film to showcase the on-going snake conservation work.

Snake are well adaptive and can be found in various habitats of the reserve. They can be arboreal (living on trees), terrestrial (living on land) and aquatic (living in water). “Snakes are one of the most successful living animals in the evolutionary timescale of earth. Not all snakes are venomous. In fact, a majority of them are harmless and non-venomous. Snakes feed on destructive rodents and are also eaten by many other natural predators in the wild. Thus, they are important for a healthy ecosystem. In NSTR, humans and snakes have been coexisting since time immemorial,” says Murthy.

The forest department now wants to replicate the same model in other fringe villages of the reserve forest

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FOREST FIRES RAGE IN SOUTHWEST EUROPE

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

Checking blaze: Wildfires continue to spread in the Gironde region of southwestern France, forcing 14,000 people to evacuate to temporary shelters. SDIS 33/Reuters SDIS 33/Reuters

Firefighters struggled to contain wildfires sweeping across southwest Europe on Sunday as a heatwave showed no sign of abating, with Britain poised to set new temperature records this coming week.

Blazes raging in France, Greece, Portugal and Spain have destroyed thousands of hectares of land, forced thousands of residents and holidaymakers to flee and killed several emergency personnel since last week.

Second heatwave

It is the second heatwave engulfing parts of southwest Europe in weeks. Scientists blame climate change and predict more frequent and intense episodes of extreme weather such as heatwaves and drought.

A study published in June in the journal *Environmental Research: Climate* concluded it was highly probable that climate change was making heatwaves worse.

Firefighters in France's southwestern Gironde region were fighting to control two forest blazes that have devoured nearly 11,000 hectares since Tuesday.

The wildfires have forced more than 14,000 people — residents and tourists combined — to decamp. Seven emergency shelters have been set up.

Meteo France forecast temperatures of up to 40 degrees Celsius in parts of southern France on Sunday, with new heat records expected on Monday.

"The heat is intensifying. The heatwave is spreading across the country," the weather office said.

France placed 37 departments on orange high alert on Sunday.

Authorities in the French Alps urged climbers bound for Mont Blanc, Europe's highest mountain, to postpone their trip due to repeated rock falls caused by "exceptional climatic conditions" and "drought".

The call comes after a section of Italy's biggest Alpine glacier gave way in early July, killing 11 people.

Spanish officials reported around 20 wildfires in the country from the south to Galicia in the far northwest, where blazes have destroyed around 4,500 hectares of land. Another fire burning in the Mijas mountain range has destroyed about 2,000 hectares of land.

In Portugal, almost the entire country remained on high alert for wildfires despite a slight drop in temperatures, after hitting 47 degrees Celsius — a record for the month of July — on Thursday. Only one major fire was burning on Sunday in the north.

At least 1,000 deaths have been attributed to the heatwave in Portugal and Spain so far.

'Red' alert in U.K.

In Greece, the civil defence service had brought under control a wildfire raging on the Mediterranean island of Crete since Friday.

In the U.K., the weather office issued a first-ever "red" warning for extreme heat, cautioning there was a "risk to life".

The Met Office said temperatures in southern England could exceed 40C on Monday or Tuesday for the first time, leading some schools to say they would stay closed next week.

(With Reuters inputs)

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TINY DRAGONFLY MAY BE WORLD'S LONGEST-DISTANCE FLIER

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

A beautiful dragonfly spotted in Tirunelveli. Photo: A. Shaikmohideen (for representative purpose only).

A small dragonfly found in several countries including India may be the animal world's most prolific long distance traveller — flying thousands of miles over oceans as it migrates across continents, scientists say.

Scientists at the Rutgers University-Newark (RU-N) found that populations of this dragonfly, called *Pantala flavescens*, in locations as far apart as Texas, eastern Canada, Japan, Korea, India, and South America, have genetic profiles so similar that there is only one likely explanation.

Prolific travellers

These insects travel distances that are extraordinarily long for their small size, breeding with each other, and creating a common worldwide gene pool that would be impossible if they did not intermingle, researchers said.

"This is the first time anyone has looked at genes to see how far these insects have travelled," said Jessica Ware, assistant professor of biology at RU-N.

"If North American *Pantala* only bred with North American *Pantala*, and Japanese *Pantala* only bred with Japanese *Pantala*, we would expect to see that in genetic results that differed from each other," said Ms. Ware. "Because we don't see that, it suggests the mixing of genes across vast geographic expanses," she said.

They have the adaptations

"These dragonflies have adaptations such as increased surface areas on their wings that enable them to use the wind to carry them," Ms. Ware said.

Dragonflies, in fact, have already been observed crossing the Indian Ocean from Asia to Africa.

"They are following the weather. They're going from India where it's dry season to Africa where it's moist season, and apparently they do it once a year," said Daniel Troast, who analysed the DNA samples in Ms. Ware's lab.

These need moisture to multiply

"Moisture is a must for *Pantala* to reproduce, and that is why these insects would be driven to even attempt such a perilous trip," Ms. Ware said.

The species depends on it. While many will die en route, as long as enough make it, the species survives.

Flight patterns appear to vary. The hardiest of the dragonflies might make the trip nonstop,

catching robust air currents or even hurricane winds and gliding all the way.

Others may be puddle jumpers.

Freshwater as breeding ground

Pantala need freshwater to mate and lay their eggs — and if they spot a freshwater pool, even on an island in the middle of an ocean — it is likely they use those pools to mate, researchers said.

After the eggs hatch and the babies are mature enough to fly — which takes just a few weeks — the new dragonflies join the swarm's intercontinental and now multi-generational trek right where their parents left off.

New record-holders

Monarch butterflies migrating across North America were thought to be the longest migrating insects, travelling about 4,023 kilometres each way, but *Pantala* breaks any migrating record they would have, with its estimated range of 7,081 kilometres or more, researchers said.

The study was published in the journal *PLOS ONE*.

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THE INDIAN ANTARCTIC BILL, 2022

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

- The Indian Antarctic Bill, 2022 was introduced in Lok Sabha on April 1, 2022. The Bill seeks to give effect to the Antarctic Treaty, the Convention on the Conservation of Antarctic Marine Living Resources, and the Protocol on Environmental Protection to the Antarctic Treaty. It also seeks to protect the Antarctic environment and regulate activities in the region. Key features of the Bill include:
- **Applicability:** The provisions of the Bill will apply to any person, vessel or aircraft that is a part of an Indian expedition to Antarctica under a permit issued under the Bill. Areas comprising of Antarctica include: (i) the continent of Antarctica, including its ice-shelves, and all areas of the continental shelf adjacent to it, and (ii) all islands (including their ice-shelves), seas, and air space south of 60°S latitude.
- **Central committee:** The central government will establish a Committee on Antarctic Governance and Environmental Protection. The Committee will be chaired by the Secretary of the Ministry of Earth Sciences. 10 members, not below the rank of joint secretary, will be nominated from various Ministries and organisations such as defence, external affairs, National Centre for Polar and Ocean Research, and National Security Council Secretariat. In addition, two experts from Antarctic environment and geo-political fields will be nominated by the central government.
- The functions of the Committee include: (i) granting permits for various activities, (ii) implementing and ensuring compliance of relevant international laws for protection of Antarctic environment, (iii) obtaining and reviewing relevant information provided by parties to the Treaty, Convention, and Protocol, and (iv) negotiating fees/charges with other parties for activities in Antarctica.
- **Need for permit:** A permit by the Committee or written authorisation from another party to the Protocol (other than India) will be required for various activities such as: (i) an Indian expedition to enter or remain in Antarctica, (ii) a person to enter or remain in an Indian station in Antarctica, (iii) a vessel or aircraft registered in India to enter or remain in Antarctica, (iv) a person or vessel to drill, dredge or excavate for mineral resources, or collect samples of mineral resources, (v) activities which may harm native species, and (vi) waste disposal by a person, vessel or aircraft in Antarctica.
- Before a permit is granted by the Committee, the applicant has to carry out an environmental impact assessment of the proposed activities. Moreover, a permit must not be granted unless a waste management plan has been prepared for the expedition by the Committee.
- **Prohibited activities:** The Bill prohibits certain activities in Antarctica including: (i) nuclear explosion or disposal of radioactive wastes, (ii) introduction of non-sterile

soil, and (iii) discharge of garbage, plastic or other substance into the sea which is harmful to the marine environment.

- **Offences and penalties:** The Bill specifies penalties for contravention of its provisions. For instance, conducting a nuclear explosion in Antarctica will be punishable with an imprisonment of 20 years which may extend to life imprisonment and a fine of at least Rs 50 crore. Drilling for mineral resources or introducing non-native animals or plants in Antarctica without a permit will be punishable with imprisonment up to seven years and a fine between Rs 10 lakh and Rs 50 lakh. The central government may notify one or more Sessions Courts to be the Designated Court under the Bill and specify its territorial jurisdiction to try offences punishable under the Bill.

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'DON'T APPLY ESG BLINDLY ON DEVELOPING COUNTRIES'

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

V. Anantha Nageswaran

Global investors must not apply standards related to sustainability and Environment, Social and Governance (ESG) norms indiscriminately for developing countries, Chief Economic Adviser V. Anantha Nageswaran said on Wednesday.

Dismissing concerns about India's continued reliance on coal-fired power, he pointed out that this was not out of sync with the developed world, as even European countries were reconsidering their stance against non-renewable energy sources like coal and had revived interest in nuclear power that India was very actively pursuing.

"Many countries still rely on coal, including developed nations," the CEA said in a discussion at the FinTech Festival India. "We should not just look at the proportion of coal-fired power plants, but also the trend... the share of power generated by non-fossil fuel-based power plants is increasing," he added.

'Energy security'

"Austria, Denmark and Germany have either restarted their coal-fired power plants or delayed their shutting down. They have said they will cut down reliance on Russian oil and gas from the end of this year and phase it out over the next few years... So when push comes to shove, energy security becomes more important for every nation rather than the so-called green transition. That cannot be different for developing countries," Mr. Nageswaran asserted.

The transition towards completely green energy sources needs to involve different sources of energy, Mr. Nageswaran said, including nuclear power and natural gas. "In Europe, after Germany swore off nuclear power plants, they are also now re-examining it. The U.K. is very interested too," he pointed out.

'Need time'

Many of the standards that satisfy investors, such as sustainability and ESG norms, cannot be applied indiscriminately in developing countries that need more time and distinct pathways compared with the developed world, he said.

"In the process of ensuring that only genuine green projects are funded, the risk is that we exclude a lot of countries from receiving the kind of investment they need, which will further compound the problem. As of many things in life, the road to hell is paved with good intentions and there is always scope for unintended consequences playing out," he cautioned.

"We always have to keep one eye on our development priorities as well as preparing for the long-term climate change mitigation efforts. This is a balancing act and there is no ready template to manage this. We have to improvise as we go along, by keeping the goals in mind," he said.

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CHEETAHS LIKELY TO ARRIVE IN KUNO BEFORE AUGUST 15

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

New home: The agreement signed by India and Namibia on Wednesday will prepare the ground for the relocation of the first batch of cheetahs from southern Africa to Madhya Pradesh.

India came one step closer to bringing back the world's fastest animal to the country with an agreement signed in Delhi on Wednesday between the Union government and the visiting Namibian Deputy Prime Minister and Minister of International Relations, Netumbo Nandi Ndaitwah.

The cheetah was declared extinct in the country in 1952, and the agreement, which has been negotiated for some years, will prepare the ground for the relocation of the first batch from southern Africa to the Kuno National Park in Madhya Pradesh, with officials trying to complete the transfer before August 15.

"The [agreement] seeks to promote conservation and restoration of cheetah in their former range from which the species went extinct," Environment and Forests Minister Bhupender Yadav said in a tweet after the signing ceremony for what he called an "historic" MoU (memorandum of understanding), which took place in the presence of External Affairs Minister S. Jaishankar.

"Completing 75 glorious years of Independence with restoring the fastest terrestrial flagship species, the cheetah, in India, will rekindle the ecological dynamics of the landscape," he said.

The MoU focused on biodiversity conservation, and the sharing of expertise between the two countries, technological applications, collaborations on climate change, pollution and waste management, and the exchange of personnel for training and education in wildlife management. However, the government is yet to reveal whether it has already procured the cheetahs, how many will be transferred in the first trial, and when they are likely to be brought to India.

According to officials, plans for the cheetah translocations to Kuno are in compliance with the IUCN's guidelines, with particular focus on the forest site quality, prey density and the current carrying capacity for a large mammal like the cheetah. "While the current carrying capacity for the Kuno National Park is a maximum of 21 cheetahs, once restored, the larger landscape can hold about 36 cheetahs," said a note issued by the government on Wednesday, adding that the carrying capacity could be further enhanced by expanding the area to other parts of the Kuno wildlife division. Kuno had earlier been identified for the translocation of Gujarat's Gir lions, but the State government has refused to allow them to be transferred out, despite a Supreme Court order rejecting its pleas.

One-year trial

The cheetahs will arrive in India for a one-year trial. The project for the cheetah — the only wild cat to go extinct in Independent India — was put back on track in 2020 when the Supreme Court lifted a stay on the original proposal to introduce African cheetahs from Namibia into the Indian habitat on an experimental basis. In May 2012, the court had stalled the plan to initiate the foreign cheetahs into the Kuno sanctuary in Madhya Pradesh fearing they would come into conflict with the plan for bringing lions into the same sanctuary. The court had also expressed concern about whether the African cheetahs would find a favourable climate in the sanctuary.

The government said special programmes were being conducted to educate local villagers in Kuno including outreaches to “sarpanches [village head men], local leaders, teachers, social workers, religious figures and NGOs”, with a local mascot named “Chintu Cheetah” to sensitise populations to the importance of the project and guidelines for the cheetah-human interface.

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Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

According to the study, the occurrence of Uranium in ground water beyond the BIS permissible limits (0.03 mg/l) of water were observed in around 409 groundwater samples against 14,377 samples analysed by the CGWB in around 18 States

NEW DELHI : The Central Ground Water Board (CGWB) conducted a study to map areas with Uranium contaminated ground water.

According to the study, the occurrence of Uranium in ground water beyond the BIS permissible limits (0.03 mg/l) of water were observed in around 409 groundwater samples against 14,377 samples analysed by the CGWB in around 18 States.

Bishweswar Tudu, Minister of state, in a written reply to a question in Lok Sabha said that the data generated by CGWB is shared with respective State Governments for taking suitable remedial action.

The Government of India, in partnership with states is implementing the Jal Jeevan Mission (JJM) – Har Ghar Jal since August, 2019 to make provision of potable tap water supply in adequate quantity, of prescribed quality and on regular & long-term basis to every rural household by 2024.

In addition, under JJM, while allocating the funds to States/ UTs, 10% weightage is given to the population residing in habitations affected by chemical contaminants including heavy metals and while planning for potable water supply to household through tap connection, priority is to be given to quality-affected habitations.

As per Department of Atomic Energy (DoAE), hydrogeological and stable isotope tracer investigations carried out in the groundwater around the Tummalapalle uranium mining project have confirmed that there is no association between uranium mining industry and elevated uranium levels in ground water. The Uranium occurrence is natural which has been confirmed from the investigations.

DoAE has established by the scientific investigations that no damage is caused to borewells and crops due to UCIL operations at Tummalapalle.

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STEPS TAKEN BY GOVERNMENT TO PROTECT WILDLIFE AND ITS HABITATS

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

No species from India has been declared as extinct in the recent past as per the information available in the Ministry,

The Government has taken several steps to protect wildlife and its habitats. Important steps taken in this regard include:

This information was given by the Minister of State for Environment, Forest & Climate Change, Shri Ashwini Kumar Choubey in a written reply in Rajya Sabha today.

HS/PD/IG

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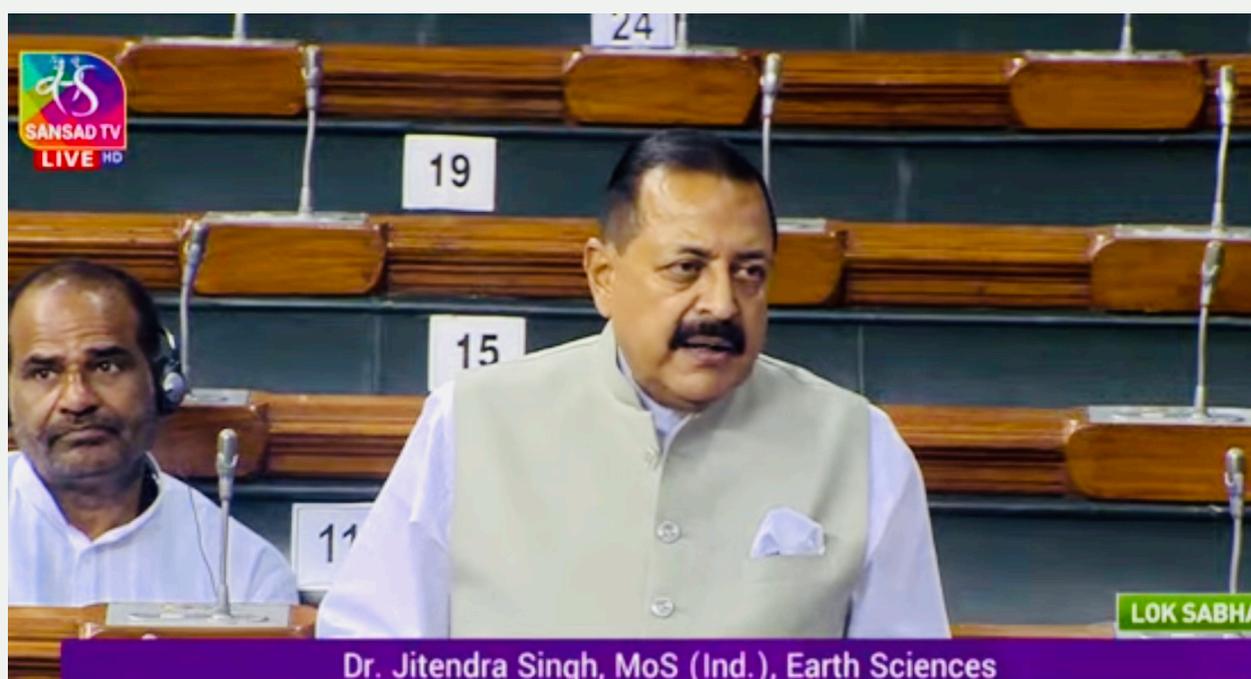
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LOK SABHA PASSES THE INDIAN ANTARCTIC BILL, 2022 AIMED AT HAVING INDIA'S OWN NATIONAL MEASURES FOR PROTECTING THE ANTARCTIC ENVIRONMENT AND DEPENDENT AND ASSOCIATED ECOSYSTEM

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Lok Sabha today passed the Indian Antarctic Bill, 2022 moved by Minister of Earth Sciences Dr Jitendra Singh. The Bill aims at having India's own national measures for protecting the Antarctic environment as also the dependent and associated ecosystem.

Speaking about the Bill, Union Minister of State (Independent Charge) Science & Technology; Minister of State (Independent Charge) Earth Sciences; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr Jitendra Singh said, the main aim is to ensure de-militarization of the region along with getting it rid of mining or illegal activities. It also aims that there should not be any nuclear test / explosion in the region.



The bill is in pursuant to India's accession to Antarctic Treaty, the Protocol on Environment Protection (Madrid Protocol) to the Antarctic Treaty and to the Convention on the Conservation of Antarctic Marine Living Resources.

Dr Jitendra Singh pointed out that the Bill provides a harmonious policy and regulatory framework for India's Antarctic activities through well-established legal mechanisms and will help in efficient and elective operations of Indian Antarctic Programme. It will also facilitate India's interest and pro-active involvement in the management of growing Antarctic tourism and sustainable development of fisheries resources in Antarctic waters. It will also help in increased international visibility, credibility of India in Polar governance leading to international

collaboration and cooperation in scientific and logistics fields.



Dr Jitendra Singh also elaborated that the continuing and growing presence of Indian scientists in Antarctica in the research stations with concurrent commitment to Antarctic studies and protection of fragile Antarctic ecosystem warrants adoption of domestic legislation on Antarctica consistent with its obligations as a member of Antarctic Treaty System. The enforcement of such laws will confer Jurisdiction on the courts of India to deal with any dispute or crimes committed in parts of Antarctica. Legislation of such a kind will bind the citizens to the policies of the Antarctic treaty system. This will also be useful in building credibility and enhance the status of the Country globally.



The Bill also proposed to set-up Indian Antarctic Authority (IAA) under the Ministry of Earth Sciences, which shall be the apex decision making authority and shall facilitate programmes and

activities permitted under the Bill. It shall provide a stable, transparent and accountable process for the sponsorship and supervision of Antarctic research and expeditions; ensure the protection and preservation of the Antarctic environment; and shall ensure compliance by Indian citizens engaged in the Antarctic programs and activities with relevant rules and internationally agreed standards. Secretary, Ministry of Earth Sciences will be the Chairperson of the IAA and the IAA will have official members from the concerned India Ministries and decisions will be by consensus.

India today has two operational research stations in Antarctica named Maitri (Commissioned in 1989) and Bharati (Commissioned in 2012). India has successfully launched 40 annual scientific expeditions to Antarctica till date. With Himadri station in Ny-Alesund, Svalbard, Arctic, India now belongs to the elite group of nations that have multiple research stations within the Polar Regions.

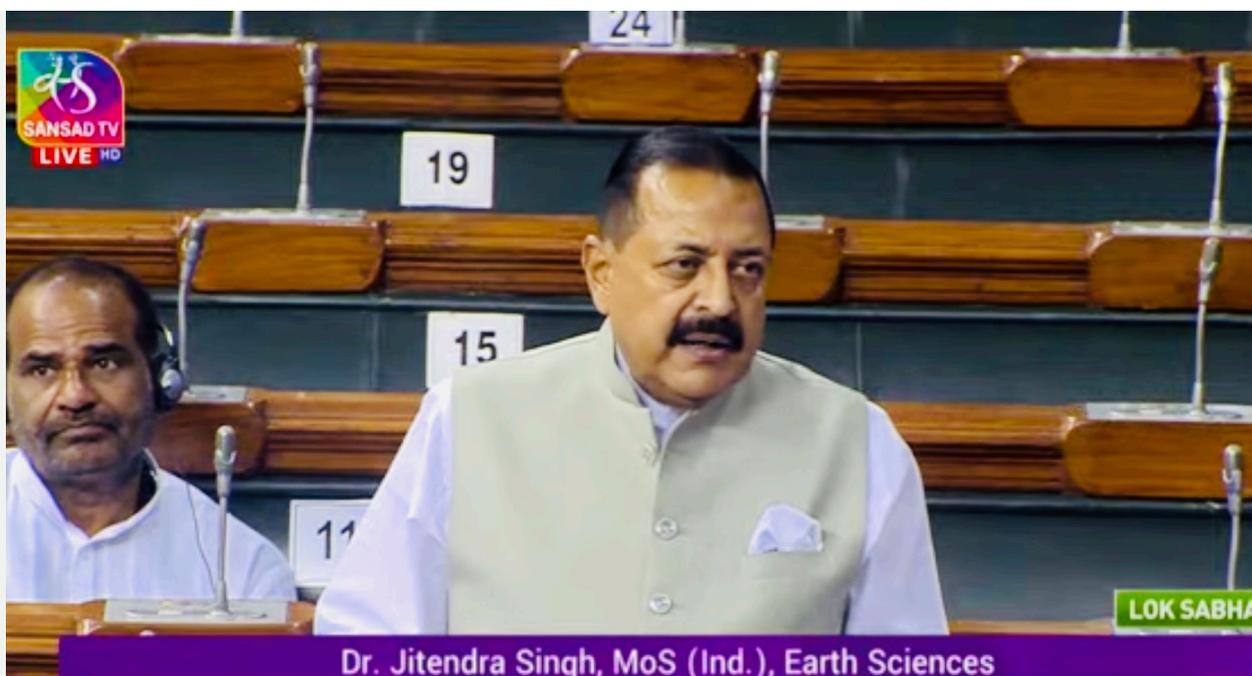
The Antarctic Treaty was signed at Washington D.C. on the 1st December, 1959 and was initially signed by 12 countries. Since then, 42 other countries have acceded to the Treaty. A total of fifty-four State Parties to the Treaty, twenty-nine countries have the status of Consultative Party with a right to vote in the Antarctic Consultative Meetings and twenty-five countries are Non-Consultative Parties having no right to vote. India signed the Antarctic Treaty on the 19th August, 1983 and received the consultative status on the 12th September, 1983.

The Convention on the Conservation of Antarctic Marine Living Resources was signed at Canberra on the 20th day of May, 1980, inter alia, for the protection and preservation of the Antarctic environment and, in particular, for the preservation and conservation of marine living resources in Antarctica. India ratified the Convention on 17th June, 1985 and is a member of the Commission for Conservation of Antarctic Marine Living Resources under that Convention. The Protocol on Environmental Protection to the Antarctic Treaty was signed at Madrid on 4th October, 1991, inter alia, to strengthen the Antarctic Treaty system and for the development of a comprehensive regime for the protection of the Antarctic environment and dependent and associated ecosystems. India signed the Protocol on Environmental Protection to the Antarctic Treaty on 14th January, 1998. Antarctica lies south of 60 ° South Latitude, which is a natural reserve, devoted to peace and science and should not become the scene or object of any international discord.

SNC / RR

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EVACUATION ALERT AFTER VOLCANO ERUPTS IN JAPAN

Relevant for: Environment | Topic: Disaster and disaster management

Dozens of people were urged to evacuate their homes after a fiery volcanic eruption in southern Japan on Sunday as the national weather agency issued its top-level alert for the mountain.

Television footage showed red-hot rocks and dark plumes exploding from Sakurajima volcano in Kagoshima.

There were no immediate reports of damage, said deputy chief cabinet secretary Yoshihiko Isozaki.

Prime Minister Fumio Kishida has instructed the government "to work closely with the local municipality to ensure damage prevention, such as through evacuations," Isozaki told reporters.

The volcano frequently spits out smoke and ash, and is a major tourist attraction.

Sunday's blast propelled large cinders about 2.5 km from the crater, the Japan Meteorological Agency (JMA) said, while the smoke reached around 300 m and merged with the clouds.

The agency raised its alert for Sakurajima to level five, the top level, which urges evacuations.

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THOUSANDS ORDERED TO FLEE CALIFORNIA WILDFIRE

Relevant for: Environment | Topic: Disaster and disaster management

A fast-moving brush fire near Yosemite National Park exploded in size on Saturday into one of California's largest wildfires of the year, prompting evacuation orders for thousands of people and shutting off power to more than 2,000 homes and businesses.

Evacuation orders were put in effect on Saturday for over 6,000 people living across a several-mile span in the sparsely populated, rural area, said Daniel Patterson, a spokesman for the Sierra National Forest.

"Explosive fire behaviour is challenging firefighters," Cal Fire said in a statement.

By Saturday morning, the fire had destroyed 10 residential and commercial structures, damaged five others and was threatening 2,000 more structures, Cal Fire said. The blaze prompted numerous road closures.

More than 400 firefighters, along with helicopters, battled the blaze, said Daniel Patterson, a spokesman for the Sierra National Forest. Hot weather, low humidity and bone dry vegetation caused by the worst drought in decades was fueling the blaze and challenging fire crews, he added.

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POLITICS OVER POLAVARAM

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

The Polavaram irrigation project. | Photo Credit: BY SPECIAL ARRANGEMENT

The [inundation of Bhadrachalam town](#) due to recent floods in the Godavari has thrust the Polavaram project into the limelight again. The issue has led to a war of words between the two Telugu States with Telangana Minister Puvvada Ajay Kumar claiming that the Andhra Pradesh government's move to increase the height of the project by three metres led to the floods and posed a grave threat to areas upstream in Telangana and A.P. Minister Ambati Rambabu asserting that the project had been cleared by the Central Water Commission (CWC) and was being constructed by the Central government with the A.P. government only implementing it.

The Polavaram project has been a bone of contention between the two States since the formation of Telangana. The then A.P. government succeeded in getting seven mandals of old Khammam district merged with A.P. with the Centre enacting the Andhra Pradesh Reorganisation (Amendment) Bill in 2014, because these mandals were in the submergence area of the project and the government could take relief and rehabilitation measures when necessary. Telangana alleged that the project works were expedited after it was declared a national project in line with the Act and that serious concerns of the riparian States were ignored.

The Telangana government has insisted on taking up new studies relating to the impact of the backwaters as well as the environmental impact the project would have on areas upstream. The government's demand is not inappropriate. The environmental assessment of the Central government in 2005 had considered 36 lakh cusecs as the probable maximum flood. This was then changed to 50 lakh cusecs, and the CWC asked the A.P. government to design spillways accordingly.

The change in the design of spillways to discharge 50 lakh cusecs has compounded the problem. The Telangana government contended that the fundamental principles and assumptions forming the basis of the agreement between Madhya Pradesh, Odisha and then united A.P. on the design and flood operation schedule of Polavaram had been replaced by new parameters and this was a cause of concern. "The studies are conducted for 36 lakh cusecs and not for 50 lakh cusecs which can cause heavy submergence and disaster upstream," the State said in a presentation made to the Parliamentary Standing Committee. It said no studies had been carried out for successive floods in Godavari. The extent of submergence due to design flood and the backwater effect along the Kinnerasani, Sabari and the Sileru limbs (flowing through Chhattisgarh and Odisha) had not been considered by the CWC by estimating flood contributions from the two tributaries separately in conjunction with simultaneous floods likely to occur in Godavari. "If any inflow more than 20 lakh cusecs occurs before the recession of the earlier flood, it will have more impact on the backwater level compared to normal flood condition," the State said to the Standing Committee.

Telangana has therefore said it is imperative for central agencies to study the backwater levels with revised probable maximum flood and corresponding backwater levels. It contended that the environment clearance given by the Union Ministry of Environment on October 25, 2005 was valid and operative only up to October 24, 2010 and so, a fresh assessment was required.

As the issue has the potential to snowball into a major controversy between the two Telugu States where governments are focusing on development after overcoming the initial bifurcation hassles, it is time for the Central government to constitute a team of experts to examine the

concerns of the riparian States and allay apprehensions.

rajeev.madabhushi@thehindu.co.in

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STUDY SHEDS LIGHT ON PREY-PREDATOR RELATIONSHIP IN HIMACHAL

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

The elusive and charismatic snow leopard feeds on hoofed animals (ungulates) including the Siberian ibex, blue sheep, urial and argali in the Himalayas. File photo: Special Arrangement

A recent study by the Zoological Survey of India (ZSI) on snow leopard (*Panthera uncia*) has thrown up interesting insights on the elusive mountain cat and its prey species. The study under National Mission on Himalayan Studies revealed a strong link between habitat use by Snow Leopard and its prey species Siberian ibex and blue sheep.

Scientists used camera traps and sign surveys to evaluate the co-occurrence patterns of snow leopards and its prey species (Siberian ibex and blue sheep) in Spiti valley of Himachal Pradesh. Details of the study have been recently published in a paper titled *Landscape use and co-occurrence pattern of snow leopard (Panthera uncia) and its prey species in the fragile ecosystem of Spiti Valley, Himachal Pradesh* published in the journal Plos One.

“Furthermore, we found that the snow leopard detection probability was high if the site was used by its prey species, i.e., ibex and blue sheep. Whereas, in the case of the prey species, the probability of detection was low when the predator (snow leopard) was present and detected. Besides this, our results suggested that both species were less likely to detect together than expected ...,” the publication states.

Lalit Kumar Sharma, lead author of the publication, said that snow leopards use rugged mountainous areas or non-forested areas covering an altitude between 3200m-5200m. Dr. Sharma, who heads the GIS & Wildlife Section of ZSI, said that the study suggested that habitat covariates, such as barren area, grassland, aspect, slope and distance to water were important drivers of habitat use for the snow leopard as well as its prey species. He added that Spiti Valley possessed a good habitat in and outside the protected areas which could support a viable population of both threatened snow leopard and its prey species.

Classified as ‘Vulnerable’ by the International Union for Conservation of Nature (IUCN) Red list and listed in Schedule-I species of the [Indian Wildlife \(Protection\) Act, 1972](#), snow leopards are elusive mountain cats whose survival depends on depends primarily on wild ungulates.

Amira Sharief, biologist at ZSI and also an author of the paper, said that the study aimed at examining how the predator used habitat in presence or absence of its prey species and vice-versa, “We also tested how the environmental variables are influencing the distribution of the species in presence or absence of the other species,” the biologist said. According to Ms. Sharief higher up in the mountains, predators such as snow leopards regulated the populations of herbivores such as the blue sheep and Siberian ibex, thereby safeguarding the health of grasslands and a long-term absence of snow leopards could cause trophic cascades as ungulate populations would likely increase, leading to depletion of vegetation cover.

Snow leopards have a vast but fragmented distribution across the mountainous landscape of central Asia, which covers different parts of the Himalayas such as Ladakh, Himachal Pradesh, Uttarakhand, and Sikkim.. This charismatic species is largely threatened because of the loss of natural prey species, retaliatory killing due to conflict with humans and illegal trade of its fur and bones.

Dhriti Banerjee, Director, ZSI, said that protecting snow leopards may result in a cascade of benefits to the ecosystem as a whole. “The knowledge about the relationships among the species will be useful for developing better conservation and management strategies for the long-term viability of snow leopard and its prey species in the landscape of Spiti Valley. Maintenance of areas having potential habitat for top predators in and outside the protected areas can serve as a useful tool for conservation and management planning,” Dr Banerjee added.

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THE WEST IS BACKSLIDING ON CLIMATE ACTION

Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

The Mehrum coal-fired power station in Mehrum, Germany | Photo Credit: AP

Countries in Europe led by Germany, Austria and the Netherlands are cranking up their coal plants again. Coal exports to Europe are surging. Fossil fuels are making a comeback and countries are rejecting the European Union (EU)'s plan to reduce natural gas consumption by 15%. Dutch, Polish and other European farmers are protesting against emission cuts from agriculture. Renewables are nowhere near meeting the rising power demand in summer or winter, with record high temperatures now. Hasty and ill-conceived EU climate policies are coming home to roost. While the current problems are being blamed on the Ukraine conflict, and more specifically Russia, they actually started when power prices began surging well before anything happened in Ukraine. Europe is staring at a recession and its appetite for climate action is waning.

In the U.S. too, the Senate and the Supreme Court have struck blows to climate action. And in the U.S. too, prices of fuel started increasing last year, not just this year. This is causing inflation. Energy security is nowhere near. Fossil fuels are making a quiet comeback, since the strength of the U.S. is its oil and gas industry. That is why we have just witnessed a 're-calibration' of U.S. policy towards the Gulf. The U.S.'s choice is between concentrating on its economy and getting it on track for its people or fighting hard against climate change and facing an irate electorate in November. The choice is clear.

So, coal, oil and gas are not going anywhere in the developed world; they are, in fact, making a comeback. It was foolish to think that the world would miraculously transition, and especially during the COVID-19 pandemic, to renewables. The West had rushed to draw down on fossil fuels even before technology for renewables were in place. Many developing countries are also facing unrest due to skyrocketing energy prices, which are threatening their governments. The United Nations, unsurprisingly, continues to pillory coal. In this scenario, we may do well to remember that it was Prime Minister Narendra Modi who made ambitious pledges on climate change last year in Glasgow at the Conference of the Parties (COP). Further, when India fought to make the COP language closer to our current energy-mix reality by calling for a 'phase down' of coal rather than a 'phase out', the COP President supposedly 'struggled to hold back tears'.

With countries of the developed world almost sure to renege on their 2030 Paris Agreement commitments, countries of the developing world must do everything to hold the countries of the developed world to their commitments and not get unwittingly drawn into their game. In fact, the EU Commissioner of Climate Action and Energy, Miguel Arias Cañete, helpfully signalled that the U.S. can downgrade its pledge under the Paris deal. G-7 leaders met to only backtrack on their pledges. If they all start downgrading pledges, which seems almost inevitable, who do they expect will compensate? The Global South, of course.

And so, the game is on. The Western nations have already started reinterpreting the Paris Agreement and look to downgrade their commitments. If they pull back, what will happen to the Paris deal aim of limiting global warming to below the 2°C limit (leave alone 1.5°C)? More importantly, what can the developing countries do to stop this backsliding by the developed world?

To begin with, we need to understand how the concept of net zero is being cleverly misinterpreted. To bring this to the attention of the Global South, India, China and eight other

countries from Africa, Asia and Latin America made a cross-regional statement on 'global net zero' on June 7 at the UN on World Environment Day. I take the liberty of referring to it at some length.

Article 4 of the Paris Agreement defines 'Global Peaking' thus: "In order to achieve the long-term temperature goal set out in Article 2, Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties." The cross-regional statement by the 10 countries says, "We believe that the word 'global peaking' is a conscious and considered insertion in the Paris Agreement text with full recognition of the fact that peaking will take longer for developing countries. The developed countries, given their historical emissions, will have to peak first. That's why the reference is to 'global peaking' and not 'individual peaking'. From this, it logically follows that when developing country parties peak later than developed countries, they will also achieve net zero later than developed countries. Consequently, it is the logical conclusion of the Article 4 of the Paris Agreement that when we consider net zero, we should only consider 'global net zero' and not 'individual net zero' for 2050. Any other interpretation will be contrary to Article 4..."

The statement further says, "It becomes clear that a global net zero, where developing countries take longer to reach net zero, can only be achieved if developed countries reach net zero earlier than 2050. Therefore, developed countries must reach net zero well before 2050 in order to achieve overall global net-zero target by around mid-century..." The statement, therefore, calls on developed countries to "do a net negative" on mitigation by 2050 rather than just "net zero", if they are serious about fighting climate change. In effect, the West needs to do a net minus and not just net zero. To claim that by achieving net zero in 2050, they will keep the temperature within the 2°C limit is a chimera.

Thanks to the efforts of India, the phrase used in the 2021 summit-level declarations at both G-20 and Quad is 'global net zero'. We need to build on this understanding.

But the back-sliding has begun. One of the prime ministerial candidates in the U.K. said recently that the net zero plan "musn't clobber people". This is another way of saying, let's forget about it for the present, shall we? We can't forget about the present or the future. The "global stocktake" of the Paris Agreement will be done in 2023 to assess the world's collective progress towards achieving the long-term goals (Article 14). In the current scenario, this stocktake may well provide the developed countries the right forum to shift the burden of their mitigation commitments on developing countries, knowing well that they will not be able to meet theirs by 2030.

And what is happening to the plan of developed countries mobilising \$100 billion per year by 2020 for climate action in developing countries? Can the Global South transition to renewables without genuine transfer of credible technology? India stands as beacon of hope in renewables. It is time for all developing countries, especially the small island developing states, to make sure that the developed world doesn't backslide on its commitments on mitigation yet again. COP 27 in Egypt gives us that opportunity to hold their feet to the fire. It is time for the developed world to make net minus pledges. If we don't collectively push for it, we will be collectively pushed back.

T. S. Tirumurti is the former Permanent Representative/ Ambassador of India to the United Nations in New York

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WATER UPTAKE FEATURE OF MANGROVES HELPS FIGHT CLIMATE CHANGE: STUDY

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

A team of researchers installing a live monitoring device on a mangrove tree at Shakthikulangara in Kollam district to assess foliar water uptake | Photo Credit: by special arrangement

A team of scientists led by Sreejith Kalpuzha, principal scientist, department of forest ecology, Kerala Forest Research Institute, and Kathy Steppe of department of plant ecology, Ghent University, Belgium, has found that mangrove plants are heavily equipped to fight climate change.

The six-member team found that mangrove plants have a special phenomenon called foliar water uptake (FWU), which is a mechanism that enables plants to acquire water from the atmosphere through their leaves. The study was published in the recent edition of the journal *Forests*.

The study was envisaged to assess the FWU capacity of six different mangrove species belonging to four genera using a series of submersion experiments in which the leaf mass increase was measured and expressed per unit leaf area, said Mr. Kalpuzha. As mangroves live in a saline sediment water environment, the mechanism of FWU might be of vital importance to acquiring fresh water and growth, he said.

The amazing ability of mangrove plants to take up water from the rain and atmospheric water makes them a good candidate to answer climate change, said Ms. Steppe. Mr Sreejith said the team had already completed studies on the abilities of mangrove plants in fighting different threats posed by the changing climate.

The KFRI was keenly observing and studying the effect of climate change on mangrove ecosystems from various perspectives, said the institute's director Syam Viswanath. The findings were promising and underlined the fact that mangroves are one of the answers to climate change threats across the globe, he added. Researchers Abdulla Naseef, Katrien Schaepdryver and Willem Goosens were the other members of the team.

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INDIA ADDS FIVE MORE RAMSAR SITES

Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

Vital wetlands: A view of the Pallikaranai Marshland in Chennai. K. PICHUMANI PICHUMANI K

India has added five more Ramsar sites, or wetlands of international importance, bringing the number of such sites in the country to 54, Environment Minister Bhupendra Yadav said on Tuesday.

“Delighted to inform that 5 more Indian wetlands have got Ramsar recognition as wetlands of international importance,” Mr. Yadav tweeted.

These are the Karikili Bird Sanctuary, Pallikaranai Marsh Reserve Forest and Pichavaram Mangrove in Tamil Nadu, the Sakhya Sagar in Madhya Pradesh and the Pala Wetlands in Mizoram.

India’s Ramsar wetlands are spread over 11,000 sq.km — around 10% of the total wetland area in the country — across 18 States. No other South Asian country has as many sites, though this has much to do with India’s geographical breadth and tropical diversity. The U.K. (175) and Mexico (142) — smaller countries than India — have the most Ramsar sites, whereas Bolivia spans the largest area with 1,48,000 sq.km under the Convention protection.

Being designated a Ramsar site does not necessarily invite extra international funds, but the States — and the Centre — must ensure that these tracts of land are conserved and spared from encroachment. Acquiring this label also helps with a locale’s tourism potential and its international visibility. Until 1981, India had 41 Ramsar sites, though the past decade has seen the sharpest rise — 13 — in designating new sites.

Wetlands, according to the Environment Ministry, are an “area of marsh, fen, peatland or water; whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres, but does not include river channels, paddy fields, human-made water bodies/ tanks specifically constructed for drinking water purposes and structures specifically constructed for aquaculture, salt production, recreation and irrigation purposes.”

To be Ramsar site, however, it must meet at least one of nine criteria as defined by the Ramsar Convention of 1961, such as supporting vulnerable, endangered, or critically endangered species or threatened ecological communities or, if it regularly supports 20,000 or more waterbirds or, is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks are dependent upon.

The National Wetland Inventory and Assessment compiled by the ISRO estimates India’s wetlands to span around 1,52,600 square kilometres.

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AGAINST RITUAL ANIMAL KILLING; FOR SNAKE WORSHIP

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

The Lok Sabha on Tuesday saw two interventions by two members which pertained to the treatment of animals.

Raising the issue when matters under Rule 377 were allowed in the Lok Sabha, Sunil Kumar Soni, BJP MP for Raipur in Chhattisgarh, said that there was a need to rescind Section 28 of the Prevention of Cruelty to Animals Act, 1960, which allowed killing of animals as part of religious observances. He raised objections to the killing of animals such as goats, buffaloes and camels to mark religious observances, by untrained people and in “extreme cruel manner”.

Dhairyasheel Sambhaji Rao Mane of the Shiv Sena, representing the Hatkanangale constituency, demanded that the worship of live snakes in Shirola village under his constituency on Nag Panchami, which had been going on for centuries, be permitted as it was now not so under the Wildlife Protection Act, 1972.

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Relevant for: Environment | Topic: Environmental Conservation, Sustainable Development, and EIA

'Overshoot day' on Earth marks a tipping point when people have used up all that ecosystems can regenerate in one year

Mankind marks a dubious milestone Thursday, the day by which humanity has consumed all earth can sustainably produce for this year, with NGOS warning the rest of 2022 will be lived in resource deficit.

The date -- dubbed "Earth Overshoot Day" -- marks a tipping point when people have used up "all that ecosystems can regenerate in one year", according to the Global Footprint Network and WWF.

"From January 1 to July 28, humanity has used as much from nature as the planet can renew in the entire year. That's why July 28 is [Earth](#) Overshoot Day," said Mathis Wackernagel, president of the Global Footprint Network.

He added: "The Earth has a lot of stock, so we can deplete Earth for some time but we cannot overuse it for ever. It's like with money; we can spend more than we earn for some time until we're broke."

It would take 1.75 Earths to provide for the world's population in a sustainable way, according to the measure, which was created by researchers in the early 1990s.

Global Footprint Network said Earth Overshoot Day has fallen ever sooner over the last 50 years.

- Uneven burden -

In 2020, the date moved back three weeks due to the [Covid-19](#) pandemic, before returning to pre-pandemic levels.

The burden is not evenly spread. If everyone lived like an American, the date would have fallen even earlier, on March 13, Wackernagel said.

The two NGOs point the finger at the food production system and its "considerable" ecological footprint.

"In total, more than half of the planet's biocapacity (55 percent) is used to feed humanity," the two NGOs said.

"A large part of the food and raw materials are used to feed animals and animals that are consumed afterwards", said Pierre Cannet of WWF France.

In the EU, "63 percent of arable land... is directly associated with animal production", he said.

"Agriculture contributes to deforestation, [climate change](#) by emitting greenhouse gases, loss of biodiversity and degradation of ecosystems, while using a significant share of fresh water," the NGOs said.

Based on scientific advice, they advocate reducing meat consumption in rich countries.

"If we could cut meat consumption by half, we could move the date of the overshoot by 17 days," said Laetitia Mailhes of the Global Footprint Network.

"Limiting food waste would push the date back by 13 days, that's not insignificant," she added, while one-third of the world's food is wasted.

This story has been published from a wire agency feed without modifications to the text. Only the headline has been changed.

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Relevant for: Environment | Topic: Environmental Degradation - GHGs, Ozone Depletion and Climate Change

NASDAQ-listed [ReNew Power](#) has signed a memorandum of understanding (MoU) with Egyptian government agencies and a sovereign fund to set up a [green hydrogen](#) manufacturing facility at the Suez Canal Economic Zone in Egypt.

The facility will entail a total investment of up to \$8 billion, said the Egyptian embassy in India in a Facebook post.

According to the MoU, ReNew will set up a plant with a capacity to produce 20,000 tonne green hydrogen a year, which will later be raised to 220,000 tonne, by relying on renewable energy sources.

Signatories to the MoU included ReNew, General Authority for the Economic Zone of the Suez Canal, the Egyptian Electricity Transmission Company, and the Sovereign Fund of Egypt.

The project is scheduled to be implemented in phases, the first of which will be a pilot to produce 20,000 tonne green hydrogen, through a 150 MW electrolyzer equipped with 570 MW of renewable energy to produce 100,000 tons of green ammonia annually.

Yahya Zaki, head of the Suez Canal Economic Zone General Authority, said that the Suez Canal Economic Zone seeks to cooperate with ReNew in the field of green hydrogen.

Ayman Soliman, CEO of the Sovereign Fund of Egypt, said, "We are pleased to partner with one of the largest renewable energy producers in India and in the world, Renew Power Private Limited, as this partnership reflects the interest of global developers specialized in investing in such projects by choosing Egypt as a destination for investment in this field, due to its strategic location and renewable energy resources that enable it to transform into a regional center for green energy."

On 26 July, Mint had reported that ReNew Power is looking at setting up green hydrogen projects in Egypt, Oman and Morocco.

All the three countries have major plans for green hydrogen production in their efforts for decarbonization. Egypt's pipeline for green hydrogen projects stands at over 11 gigawatts (GW), equivalent to over 1.57 million tonne of green hydrogen. The government of Egypt plans to release a \$40-billion hydrogen plan.

In April, along with state-run Indian Oil Corp. (IOC) engineering and construction major Larsen & Toubro (L&T), ReNew Power had announced forming a joint venture (JV) company to produce green hydrogen in the country with equal equity investment.

ReNew currently has a portfolio of 4.23 GW of wind energy assets and 5.82 GW of solar power assets across India. Last month, ReNew had signed definitive agreements to acquire 527.9 MW in operating wind and solar assets.

The company has also announced investing 1 trillion in total in both Maharashtra and Karnataka in renewable energy projects, including battery storage. In May, the Goldman Sachs-backed company said it was planning to develop renewable energy projects in Maharashtra across wind, solar, hybrid power, battery storage and green hydrogen at an investment of 50,000 crore.

It plans to spend another 50,000 crore in Karnataka for developing green energy projects.

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WILDLIFE AMENDMENTS TO 'SAVE ENTREPRENEURS FROM HARASSMENT'

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

The Centre's proposed amendments to decriminalise certain provisions of the Environment Protection Act (EPA), were to "save law abiding citizens/entrepreneurs from undue harassment in case of minor non-compliances," Minister of State (Environment), Ashwini Choubey, informed Rajya Sabha, on Thursday, in response to a question.

In the absence of such a provision, several court cases are filed, that "increase the burden on the judicial system," he noted.

Replacing a clause

Earlier this month, the Environment Ministry issued a notification proposing amendments to the Environment Protection Act (EPA), by replacing a clause that provides for imprisoning violators with one that only requires them to pay a fine. This however, did not apply to violations that caused grave injury or loss of life. The proposed fines, in lieu of imprisonment, are also up to 500 times greater than those currently levied.

Punishment for violators

Currently, the Act says that violators could be punished with five years imprisonment or a fine of up to Rs. 1 lakh, or with both. Were violations to continue, an additional fine of up to Rs. 5,000 would be levied every day. There is also a provision for jail terms to extend to seven years. Historically, however, no corporate offender has actually been imprisoned under the provisions of the Act.

The Environment Ministry said that it had received "suggestions" to decriminalise existing provisions of the EPA to weed out "fear of imprisonment for simple violations."

An analysis by the Centre for Science and Environment found that Indian courts took between nine to 33 years to clear a backlog of cases for environmental violations.

Beginning 2018, close to 45,000 cases were pending for trial, and another 35,000 cases were added in that year.

More than 90 per cent cases were pending for trial in five of the seven environment laws.

"The provisions are proposed to be decriminalised with heavier penalties in order to encourage self-regulation in law abiding citizens and entrepreneurs on the one hand, and imposition of heavier penalties, coupled with provisions of IPC, 1860, to act as deterrent for violators on the other hand," Mr. Choubey noted.

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MANAS HAS 2.4 TIGRESSES FOR EVERY TIGER

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

Cat trail: The Manas Tiger Reserve in Assam. File photo

The Manas Tiger Reserve in Assam has 2.4 tigresses for every tiger, the annual wildlife monitoring results of the trans-boundary wildlife preserve has revealed.

According to the latest camera trapping assessment stipulated by the National Tiger Conservation Authority (NTCA), the 2,837.31 sq. km reserve with a critical tiger habitat area of 536.22 sq. km has 52 adult tigers along with eight cubs.

This is an increase of eight adults and four cubs over 2021, the results released by Pramod Boro, the Chief Executive Member of the Bodoland Territorial Region on Global Tiger Day showed.

The assessment said 29 tigers were “repeated” from 2021 while 23 new tigers were reported. The gender of 27 tigers could be properly ascertained – eight of them males and 19 females, giving a sex ratio of 1:2.4, which is “positively skewed towards females from the ecological point of view”, a statement from NTCA said.

Camera trap stations

The Manas Tiger Reserve authorities had set up 381 camera trap stations with support from conservation partners World Wide Fund for Nature-India, Wildlife Trust of India and Aaranyak.

Mr. Boro also released the results of the population estimate of all other major species found in the reserve, claimed to have been done for the first time in a holistic manner by the tiger reserve’s frontline staff through distance sampling.

Forest guards and foresters deployed in different anti-poaching camps in Manas collected data on line transects from the backs of elephants using an Android-based digital platform.

The information collected was analysed at the Field Directorate of Manas and validated by the NTCA’s Tiger Cell in Dehradun’s Wildlife Institute of India, officials said.

This analysis, which will form a baseline for all future assessments, showed Manas has an estimated 3,220 hog deer, 2,613 elephants, 1,656 wild buffaloes, 1,174 gaurs or Indian bison and 804 sambhars.

The Manas Tiger Reserve is contiguous with the 1,000 sq. km Royal Manas National Park in Bhutan.

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BOON FOR LEAF PLATES, BOWL MAKERS IN HIMACHAL AFTER BAN OF SINGLE-USE PLASTIC

Relevant for: Environment | Topic: Environmental Pollution - Air, Water, Soil & E-waste

Going green: Members of a self-help group involved in making leaf plates and bowls at Beindhar village.

The nationwide ban on single-use plastic has come as a boon for local folks, especially women in villages of the hill State of Himachal Pradesh, who are involved in making traditional leaf plates and bowls as the demand for these eco-friendly products is currently on the rise and fetching them improved returns.

To aid the makers of leaf plates and bowls, the Himachal Pradesh Forest Department, in collaboration with Japan International Cooperation Agency (JICA), is motivating community groups to prepare leaf plates and bowls using machines instead of doing it manually in order to meet the increasing demand for leaf plates. The ban of single use plastic items has been in place since July 1.

Under a project titled 'Improvement of Himachal Pradesh Forest Ecosystems Management and Livelihoods', the department is also ensuring that there's no shortfall in the supply of quality leaves, by planting specific species such as '*Bauhinia vahlii*' in the forest adjoining the villages of trained community groups.

"Under the project, each community group of average 15 people is being provided a capital cost of Rs. 1,29,000 for setting up the plate-making machine that makes 1,000 plates daily. Machine installation has reduced the drudgery of women in the manual making of these leaf items and improved their production capacity. So far, we have developed around 484 such self-help groups. In June this year, the community groups at Beindhar and Kangu villages in Mandi district prepared 8,000 leaf plates and 4,000 leaf bowls and earned Rs. 38,000 in one month in comparison to an average of Rs. 8,000, which is what a group of similar number of people used to earn monthly," Nagesh Guleria, Additional Principal Conservator of Forests cum Chief Project Director, JICA project, told *The Hindu*.

Twenty-nine-year-old Kusum Devi, from Beindhar village is upbeat as the number of orders for her leaf plates and bowls is gradually increasing. "Earlier we used to work independently and prepare the leaf plates manually. Five of our family members are engaged in making leaf plates. We used to earn around Rs. 3,500 monthly by selling the plates, but now we are working in the group and we are using machines to make plates-bowls. Our income has more than doubled now, though it keeps varying depending on the demand. This month, the demand is far better in comparison to previous months before the ban. The use of plastic plates has stopped and hence demand for our leaf plates is rising. It's good for our business," said Ms. Devi.

Pointing out that so far, the marketing team of JICA has received an advance booking for the supply of 2.5 lakh leaf plates from across the State, Mr. Guleria said all group members are enthusiastic about the ban on single-use plastic and are anticipating a high demand in the upcoming wedding and festival season.

In Himachal Pradesh, usually the leaves of Tor (*Bauhinia vahlii*) are used for making leaf plate and bowl. These plants are found in tropical climate, found in relatively lower areas of the State including Mandi, Bilaspur, Hamirpur and Kangra districts. All over the State, fresh leaf plates are

supplied mostly from manufacturers in the villages of Mandi district, and are used to serve food.

Market potential

Ramesh Chand Kang, the head of 'Jadi Buti' cell of the JICA project, points out that bio-degradable leaf plates possess a potential in national and international market, provided quality and standards are met. "Keeping this in view, we planned a holistic approach of setting up a mechanized facility to maintain standards in manufacturing, capacity building of the community groups, and planting of species like '*Bauhinia vahlii*' in the forest adjoining to villages of trained groups for regular supply of quality leaves. *Bauhinia vahlii* is a vigorous climbing shrub, able to grow onto the top of trees in the forest.

"With increasing demand of leaves after the ban on single use plastic plates, we have started production of 6,000 seedlings in nurseries at Kamand and Bhawana villages in Mandi district for the community plantations, in forests and private land," he said.

Asserting that the invasion of factory-made plastic plates and bowls due to their cheap price and long shelf-life harmed the manufacturers of leaf plates, Mr. Guleria said, "Several local leaf-bowl manufactures had to abandon their traditional businesses of leaf plate and related items with time. Families, without any other option, continued to do the business on order and survived this so-called plastic boom, which has become a serious environmental and health problem."

"With ban on single-use plastic, the situation is also expected to improve environment in Himachal Pradesh better than any other States, keeping in view the many traditional alternatives to replace volumes of plastic plates and bowls with leaf plates and bowls prepared by the village women groups trained under JICA projects and other department initiatives for rural women empowerment," he asserted.

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TIGERS IN ANDHRA PRADESH FOREST DOCUMENTED FOR THE FIRST TIME

Relevant for: Environment | Topic: Biodiversity, Ecology, and Wildlife Related Issues

A tiger shot on camera trap set up in Nagarjunasagar Srisailam Tiger Reserve. | Photo Credit: Anjani Singamaneni

For Anjani Singamaneni, it was an unforgettable experience being involved in the first-ever documentation of tigers of Andhra Pradesh forests in association with the Andhra Pradesh Forest Department.

Most of the images which are on display on a two-day exhibition to mark the International Tiger Day at the [Gallery 78](#), were camera traps that captured some of the rare moods of the tigers and some stunning frames of leopards too.

“I have been working on the project for close to one year, covering about 2700 sq km of the Nagarjunasagar Srisailam Tiger Reserve with 3600 camera days with 10 cameras deployed right through the year at any given point at different locations, making visits every 20 days to check the equipment and documented 16 to 18 tigers in the reserve,” says Anjani, who interestingly runs a musical instruments store in Banjara Hills.

For someone who got hooked to wildlife photography in 2016 after beginning like many with aim and shoot cameras before graduating to DSLR cameras, Anjani says he also happens to be the first individual, assisted by his trusted hand Vijay Kumar, to engage in a project of such magnitude.

“We have covered almost about 2500 square km. And the most challenging aspect is that unlike the tigers in many other reserves like Tadoba, Pench or Bandhavgarh, these tigers are real wild ones and get disturbed even by the slightest movement of human beings and any vehicles too,” Anjani said.

“The whole idea of holding this exhibition is to showcase the beauty of these tigers of our own State. And, unlike the tigers in the reserve forest which have a normal territory of about 30km, these in the Srisailam Reserve cover a distance of 200 km and the males often 250 km which also means mating is extremely difficult,” he explained.

“From our rough estimates, there should be at least about 80 tigers in the Srisailam Reserve though honestly we could get two tigers framed in different moods,” Anjani said.

“I was lucky to see the frequent movement of the leopards too which are normally more elusive than tigers even in the reserves. I also had the privilege of capturing a full family of porcupines in the camera,” he said.

“Sincere thanks to the AP Forest Department or else this would have remained a dream only,” he signed off.

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