

# **The Hindu**

## **States**

### **Saving Chenkurinji from climate change (Page no. 5)**

#### **(GS Paper 3, Environment)**

The Shendurney Wildlife Sanctuary derives its name from *Gluta travancorica*, a species endemic to the Agasthyamala Biosphere Reserve known as 'Chenkurinji' in local parlance.

Belonging to the Anacardiaceae family, the tree was once abundant in the hills on the southern parts of Aryankavu Pass but its presence has been fast receding from the area over the years.

*Gluta travancorica* is very susceptible to climate change and the present condition of the species is quite bad with low regeneration performance.

Though there are seemingly enough number of the trees, most are not productive, generating a negative trend in its population.

Majority of the trees are old with poor flowering and fruiting rates. What we require now is an emergency restocking at the sanctuary since the present population is in a degrading state.

At present, we have a few young generation trees, and if we plant some now, we will have flowering trees within the next 25 years.

Though the flowering of *Gluta travancorica* usually happens in January, of late, the species has reported a tendency to extend the process due to climate change. It's an adaptation strategy to increase the chances of germination and maintain a minimum viable population.

Though the tree is also seen inside the shola forests near Ponmudi, effective pollination hardly takes place in the habitat.

The population in the habitat is facing inbreeding depression and we had earlier collected albino seedlings, an indication of endangerment.

## **News**

### **10% quota for Agniveers has to fit current rules (Page no. 6)**

#### **(GS Paper 3, Defence)**

In a bid to diffuse the violent protest that emanated after the Agnipath scheme was announced, the Ministry of Home Affairs (MHA) said that 10% of all vacancies in the Central Armed Police Forces (CAPFs) or the paramilitary will be reserved for the recruits under the scheme.

However, the new reservation promise that will have to fit horizontally alongside the existing caste-based quota and physical eligibility requirements in the CAPFs is proving to be a challenge for the Ministry.

While the minimum height requirement across all armed forces under the Agnipath scheme is 152.5 cm, the minimum height required for a general duty constable in a combat role in all CAPFs is 165 cm.

The armed forces do not recruit according to caste-based formula but enrolment in the CAPFs is done as per the existing reservation system and cannot exceed the 50% cap as fixed by the Supreme Court.

According to a government order, there shall be a reservation of 15% for the members of the Scheduled Castes (SC), 7.5 % for the Scheduled Tribes (ST) and 27% for the Other Backward Classes (OBC) "in the matter of appointment by direct recruitment to civil posts and civil services on all-India basis by open competition."

If new battalions in CAPFs are not raised, the recruitment can be done only against the existing vacancies arising out of retirement, death or any miscellaneous reason.

If a Scheduled Caste Constable in CAPF has retired, the slot can be only filled by an SC Agniveer, else it might upset the overall quota.

How it pans out in the future remains to be seen, if all the SC or ST seats are not filled in absence of such candidates, they might get converted to general category posts.

### **'Judiciary answerable to 'Constitution (Page no. 6)**

#### **(GS Paper 2, Indian Constitution)**

In India, a party in power believes that every governmental action is entitled to judicial endorsement and the Opposition parties expect the judiciary to advance their political positions and causes, but the "judiciary is answerable to the Constitution and Constitution alone," Chief Justice of India N.V. Ramana said.

He also expressed disappointment that even after 75 years of Independence people have not understood the roles and responsibilities assigned by the Constitution to each Institution.

As we celebrate 75th year of Independence this year and as our Republic turned 72, with some sense of regret I must add here that we still haven't learnt to appreciate wholly the roles and responsibilities assigned by the Constitution to each of the Institutions.

He added that this flawed thinking of all hues flourishes in the absence of proper understanding among people about the Constitution and the functioning of the democratic institutions.

It is the vigorously promoted ignorance among the general public which is coming to the aid of such forces whose only aim is to run down the only independent organ i.e., the judiciary. Let me make it clear. We are answerable to the Constitution and Constitution alone", he said.

CJI Ramana said that to enforce checks and balances envisioned in the Constitution, "we need to promote Constitutional culture in India.

We need to spread awareness about the roles and responsibilities of individuals and institutions. Democracy is all about participation.

He quoted Abraham Lincoln and said, under the Constitution of India, it is the people who are entrusted with the task of passing judgment on the rulers, once every five years.

### **Northeast needs international routes (Page no. 8)**

#### **(GS Paper 3, Infrastructure)**

Prolonged disruption of surface communication across major part of the northeast due to floods and landslides has renewed the demand for fast-tracking the railway and road connectivity with India's "mainland" through Bangladesh.

Southern Assam's Barak Valley, the southern half of Manipur, Mizoram and Tripura are dependent on the arterial Lumding-Badarpur railway line for transport essentials from other parts of the country.

A national highway through Meghalaya shares some of the passenger and cargo load, while another through Assam's Dima Hasao has not quite been serviceable.

The 185-km railway line connecting Lumding in central Assam's Hojai district and Badarpur in southern Assam's Karimganj district, much of it through the hill district of Dima Hasao, has been prone to landslides since the metre gauge track of 1899 vintage was realigned and converted to broad gauge in 2015.

Badarpur is the junction from where the tracks branch out to Silchar (30 km away), Jiribam in Manipur, Bairabi in Mizoram and Agartala in Tripura.

The two highways have a similar problem, particularly during the four monsoon months, June to September. On May 14, rain-induced landslides and flash floods damaged the railway line in Dima Hasao at 56 locations.

The highways either caved in or were blocked in many places, affecting road transport for days. These cut off Barak Valley, parts of Manipur, Mizoram and Tripura for weeks.

### **India adds 540 species to faunal database (Page no. 8)**

#### **(GS Paper 3, Environment)**

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 107 th 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.

## **World**

### **China's Foreign Minister visits Myanmar for talks on Mekong (Page no. 9) (GS Paper 2, International Relation)**

China's top diplomat arrived on his first visit to Myanmar since the military seized power last year to attend a regional meeting that the government said was a recognition of its legitimacy and opponents protested as a violation of peace efforts.

Chinese Foreign Minister Wang Yi will join counterparts from Myanmar, Laos, Thailand, Cambodia, and Vietnam in a meeting of the Lancang-Mekong Cooperation group in the central city of Bagan, a UNESCO World Heritage site.

The grouping is a Chinese-led initiative that includes the countries of the Mekong Delta, a potential source of regional tensions due to an increasing number of hydroelectric projects that are altering the flow and raising concerns of ecological damage. China has built 10 dams along the upper stretch of the Mekong, the part it calls the Langcang.

Military government spokesman Maj. Gen. Zaw Min Tun told a news conference in the capital Naypyitaw on Friday that the attendance of the foreign ministers at the meeting was a recognition of Myanmar's sovereignty and its government.

He said the ministers will sign memorandums of understanding and contracts. He did not elaborate. It's unclear whether Wang would meet Senior Gen. Min Aung Hlaing, the head of the military government.

Myanmar's military seized power from the elected government of Aung San Suu Kyi on Feb. 1, 2021. It was quickly met by nonviolent nationwide demonstrations and triggered armed resistance that some U.N. experts now characterize as civil war.

## **Science and Technology**

### **New pathway to regulate nitrate absorption in plants (Page no. 10) (GS Paper 3, Science and Technology)**

Researchers led by those from the National Centre of Biological Sciences, Tata Institute of Fundamental Research, Bengaluru (NCBS-TIFR), have found a new pathway that regulates nitrate absorption in plants.

The gene MADS27, which regulates nitrate absorption, root development and stress tolerance, is activated by the micro-RNA, miR444, therefore offers a way to control these properties of the plant.

The researchers studied this mechanism in both rice (monocot) and tobacco (dicot) plants. The research is published in Journal of Experimental Botany.

Nitrogen is one of the most important macronutrients needed for development of a plant. It is a part of chlorophyll, amino acids and nucleic acids, among others. It is mostly sourced from the soil where it is mainly absorbed in the form of nitrates and ammonium by the roots.

Nitrates also play a role in controlling genome-wide gene expression that in turn regulates root system architecture, flowering time, leaf development, etc.

Thus, while a lot of action takes place in the roots to absorb and convert nitrogen into useful nitrates, the absorbed nitrates in turn regulate plant development apart from being useful as a macronutrient.

So, the presence of nitrates is important for the plant development and also for grain production. However, the overuse of nitrates in fertilizers, for instance, can lead to the dumping of nitrates in the soil which leads to accumulation of nitrates in water and soil. This accumulation adds to soil and water pollution and increased contribution to greenhouse gases.

To avoid this, there should be optimal use of nitrates. Also, since the whole process of nitrate absorption takes place in the roots, a well-developed root system is needed for this to take place optimally.

At one level, it is known that the hormone auxin is responsible for well-developed roots across all plants. A number of genes are known to help with auxin production, improved nitrate transport and assimilation in plants.

### **India's patent law safeguards under fire (Page no. 10) (GS Paper 3, Science and Technology)**

The price-lowering effect of competition and domestic manufacturing of medicines can transform how diseases get treated in resource-poor settings.

Decisions made by Indian patent offices can negatively impact generic competition and supply worldwide, relying on the availability of affordable medicines made in India.

Monopolies granted by patent offices on medical products keep prices high and block local manufacturers from supplying low-cost generic drugs.

In 2005, lawmakers from all political parties amended Indian patent law to ensure that the Indian patent office did not grant monopolies on old science or for compounds already in the public domain.

The new law now prevents drug corporations from indulging in “evergreening”, a common abusive patenting practice aimed at obtaining separate patent monopolies relating to the same medicine.

And to bring this to the notice of the patent examiners, the amended patent law allowed any person to file a pre-grant opposition ‘anytime’ before the patent office decides to grant or reject a patent application.

Since the Indian Patent Offices receive an average of 50,000 patent applications a year, examiners often miss critical information about the patent application under consideration.

A recent study on pharmaceutical patent grants in India revealed that 7 out of 10 patents are granted in error by the Indian Patent Office.

A robust pre-grant opposition system provides an additional administrative layer of scrutiny that prevents the grant of frivolous patents through third parties’ participation in the review process.

### **Why India should support antibiotics development (Page no. 10)**

#### **(GS Paper 3, Science and Technology)**

Antimicrobial resistance (AMR) is a looming public health crisis impacting every country globally with a disproportionate impact on lives and livelihood in low and middle-income countries.

A recent report from the Global Research on AntiMicrobial resistance (GRAM) project found that in 2019, an estimated 4.95 million people suffered from at least one drug-resistant infection and AMR directly caused 1.27 million deaths.

AMR is one of India’s major public health problems, directly contributing to about 30% of deaths due to neonatal sepsis across India.

These are due to multidrug-resistant (MDR) hospital-acquired infections in many cases. Over 30% of the COVID-19 deaths in India could be attributed to our failure to treat the secondary bacterial infections caused by MDR pathogens with the appropriate antibiotics.

Irrational antibiotic use by the medical community, the general public and the farmers generate drug-resistant superbugs. Inadequate infection control measures in the hospitals and the sanitation issues in the community result in the dissemination of these superbugs.

Currently, there is no reliable and rapid point of care diagnostics that can guide the clinician with the right choice of antibiotic to be used. and spare indiscriminate use when not required.

To tackle the AMR crisis, we need robust investment in research and development of new antibiotics, rapid and affordable diagnostics, strengthening infection control and prevention practices, formulating and implementing antibiotic stewardship programmes across the country and ensuring equitable access to life-saving antibiotics.

In addition, curbing the increasing trends in antimicrobial use across various sectors requires an integrated One Health approach that focuses on the four spheres: humans, animals, food, and the environment.

One such immediate intervention is a welcome move by the Government of India to pass legislation banning the use of streptomycin and tetracycline in agriculture and the growth promotional use of colistin in poultry farming.

### **2°C temp. rise can damage Earth’s species (Page no. 10)**

#### **(GS Paper 3, Climate Change)**

Global emissions are expected to cause the planet to continue heating rapidly over the next few decades, prompting the global average temperature to overshoot the Paris agreement’s target, which aimed to limit warming to between 1.5°C and 2°C. A period of higher temperatures will occur in the middle of this century as a result.

Until now, scientists were unsure what temporarily overshooting (and then boomeranging back below) the Paris agreement’s temperature target would entail for nature.

So, for the first time, they studied the consequences of allowing Earth’s temperature to exceed these precautionary limits, then fall below them again, for marine and land-based life.

In other words, they looked at how damaging the journey of overshooting the 2°C temperature target would be, and not just the destination itself.

The results suggest that a temporary overshoot would cause waves of irreversible extinctions and lasting damage to tens of thousands of species.

This is what the world can expect if humanity fails to make deep emission cuts this decade, and relies instead on future technologies to remove emissions later.

## **FAQ**

### **How will G-7’s development plan impact India? (Page no. 11)**

## **(GS Paper 2, International Relation)**

On June 26, the G-7 grouping of the world's "most industrialised nations" — Canada, France, Germany, Italy, Japan, the U.K. and the U.S. along with the European Union — launched a U.S.-led \$600 billion Partnership for Global Infrastructure and Investment (PGII) at their summit in Germany's Schloss Elmau, where India was among five special invitees.

The initiative was billed as a "values-driven, high-impact, and transparent infrastructure partnership to meet the enormous infrastructure needs of low- and middle-income countries and support the U.S. and its allies' economic and national security interests."

Officials also made it clear that the PGII would offer a counter to China's Belt and Road Initiative (BRI) for projects worldwide that was formally launched five years ago.

A day after U.S. President Joseph Biden made his PGII announcement, Foreign Secretary Vinay Kwatra said. "I think the [PGII]...is a separate G-7 initiative and to my recollection, unless there is some other input, I think it is not a G-7 outreach initiative," adding, "We will have to see the details of that for us to be able to speak specifically on its elements." To begin with, Mr. Kwatra's response indicates that India was not privy to PGII consultations, nor was the infrastructure plan part of the documents that were signed by India, Indonesia, South Africa, Senegal and Argentina, who were part of the "G-7 outreach" invitees to the summit. (The EU has participated in the G-7 since 1981 as a "nonenumerated" member).

The distinction is interesting because just a month ago, at the Quad Summit in Tokyo, Prime Minister Narendra Modi had attended the launch of the U.S. led "Indo-Pacific Economic Initiative" (IPEF) with similarly sudden plans, and India had joined as an "initial" or founding partner country.

It also came as a surprise that India hadn't endorsed the PGII plan given that the U.S. billed it as a rival to China's BRI, with much more sensitivity to sustainable debt burdens and environmental concerns. India has actively opposed the BRI because it had ignored these reasons and for its "violation of territorial integrity".

## **Measuring quakes (Page no. 11)**

### **(GS Paper 1, Geography)**

Recently a powerful earthquake of magnitude 5.9 on the Richter scale struck a remote town in Afghanistan, killing over a thousand and injuring many more.

According to the U.S. Federal Emergency Management Agency, a 5.9 on the Richter scale is roughly equivalent to 37 times the energy released by the atomic bomb dropped on Hiroshima. Experts are still trying to figure out the best early warning system to mitigate the damage caused by earthquakes.

According to the theory of plate tectonics, the Earth's crust and upper mantle are made of large rigid plates that can move relative to one another. Slip on faults near the plate boundaries can result in earthquakes.

The point inside the Earth where the earthquake rupture starts is called the focus or hypocentre. The point directly above it on the surface of the Earth is the epicentre.

Any elastic material when subjected to stress, stretches in a proportional way, until the elastic limit is reached. When the elastic limit is crossed, it breaks. Similarly, the Earth also has an elastic limit and when the stress is higher than this limit, it breaks.

Then there is a generation of heat, and energy is released. Since the material is elastic, the energy is released in the form of elastic waves. These propagate to a distance determined by the extent of the impact. These are known as seismic waves.

## **What are the next steps for the GST regime? (Page no. 11)**

### **(GS Paper 3, Indian Economy)**

The Goods and Services Tax (GST) Council, chaired by Union Finance Minister Nirmala Sitharaman, met for the first time in 2022 for a marathon two-day meet this week, just ahead of GST's fifth birthday on July 1.

The Council has okayed three ministerial groups' reports, one of which will lead to changes in the tax rates applicable on several items.

Based on recommendations made by a Group of Ministers (GoM) led by Karnataka Chief Minister Basavaraj Bommai, the GST Council has scrapped exemptions on several goods and services, done away with concessional rates granted for a few products, and altered tax rates up or down in other cases.

Health care devices such as orthopaedic splints, intraocular lens, ostomy appliances, will now be taxed at 5% instead of 12%.

The use of in-vitro fertilisation (IVF) services have been exempted, truck rentals for goods will be taxed at 12% (down from 18%) and the GST on ropeways has been lowered from 18% to 5%.

However, stem cell preservation services will no longer be tax-free. Hospital room rents over ₹5,000 a day, excluding patients in intensive care units or ICUs, shall now be taxed at 5%.

Tetra Pak, used for an increasing number of goods as an alternative to plastic packaging, will now be taxed at 18%, from 12% — which could nudge up costs of several consumer goods.

The same 18% rate will apply to tar of all varieties so expect road building costs to rise as well. The Council also hiked rates on over 17 goods and services, where the final products had a lower tax rate than their inputs and led to an anomaly referred to as inverted duty structures.

Of these, as many as 10 items' GST rate has been raised to 18% from 5% or 12% prevalent till now, such as writing, drawing and printing ink, knives, forks, spoons, pencil sharpeners, machines for grading farm products as well as eggs and dairy items, LED lamps, solar water heaters and works contracts for building roads, railways, metro projects, and crematoria. Last but not the least, the GST levied on cut and polished diamonds has been raised from 0.25% to 1.5%.

### **Is NATO stronger after Ukraine invasion? (Page no. 11)**

#### **(GS Paper 2, International Relation)**

Leaders of the North Atlantic Treaty Organization (NATO), a 30-country regional security coalition that emerged from the crucible of Cold War rivalry, met on June 29-30 in Madrid, Spain, even as Russia's war in Ukraine grinds on, with knock-on effects across the world in terms of supply chain disruptions, commodity price surges and broader inflationary pressures mounting fast.

More than four months into the invasion of Ukrainian territory, which Russian President Vladimir Putin has called a "special military operation," at least two nations in the region, Sweden and Finland, are seeking rapid integration into NATO.

NATO appeared to be weakened during the administration of former U.S. President Donald Trump, who frequently threatened to exclude from the U.S.'s protective umbrella any member states that did not pay enough for that privilege. A further blow, and brickbats for botched management, came when U.S. President Joe Biden pulled his country's troops out of Afghanistan, a NATO military mission, more or less unilaterally.

Meanwhile, Russia had steadily been upping the ante against NATO publicly, since the late 2000s, railing against NATO expansion, and since its annexation of Crimea in 2014, threatening further territorial expansion into Ukrainian territory.

## **Profiles**

### **Battle for the Black Sea (Page no. 12)**

#### **(GS Paper 2, International Relation)**

On June 29, 1788, imperial Russian troops laid siege to Ozi, an Ottoman fortress on the northern Black Sea coast. On the same day, a Russian naval squadron, commanded by Admiral M.I. Voinovich, left Sevastopol in Crimea for Ozi.

Their mission was to prevent any Turkish attack on the Crimean shores and also to offer support to the Russian ground troops at Ozi. But in the Black Sea waters, the Russians were encountered by a far superior Turkish squadron.

After days of manoeuvring in the open sea, on July 14, near a small island in the north-west of the Black Sea, fighting broke out. After hours-long battle, the Russians inflicted deadly damage on the Turkish fleet and forced them to retreat. The Battle of Fidonisi, named after the island which was called Fidonisi by the Greeks, was the first naval battle of the 1787-1792 Russo-Turkish War.

While the Russian victory in the waters near Fidonisi did not have an immediate impact on the war, the defeat of the superior Ottoman Navy was a morale booster for the Russian troops.

The Russians had taken Crimea a few years earlier, ending Ottoman Sultan's dominance in the Black Sea. Its fleet was relatively new and weaker compared to the Ottoman Navy.

Still, they managed to force the Ottoman ships to retreat. Five months later, Russian troops stormed Ozi, captured the town and renamed it as Ochakov, which is now home to Ukraine Navy's operational control centre.

## **Business**

### **India-EU to hold next round of FTA talks at Brussels in Sept. (Page no. 13)**

#### **(GS Paper 2, International Relation)**

India and the European Union concluded the first round of talks for the proposed free trade agreement (FTA) and the next round of talks is scheduled at Brussels in September, the Commerce Ministry said.

India and the 27-nation bloc resumed negotiations on June 17, after a gap of more than eight years, on the proposed agreements on trade, investments and geographical indications (GI). The first round of talks, which began on June 27, concluded on July 1.

India's FTA negotiations were led by chief negotiator Nidhi Mani Tripathi, Joint Secretary in the Department of Commerce and the EU was represented by its chief negotiator Christophe Kiener, the Ministry said in a statement.

The week-long negotiations were held in a hybrid fashion – with some of the teams meeting in Delhi and the majority of officials joining virtually.

During the first round, 52 technical sessions covering 18 policy areas of FTA and seven sessions on investment protection and GIs were held, it added.

India's bilateral trade with the EU amounted to \$116.36 billion in 2021-22. Currently, the EU is India's second-largest trading partner after the U.S., and the second-largest destination for Indian exports.

The trade agreement with the EU would help India further expand and diversify its exports of goods and services, including securing the value chains.

Both sides are aiming for the trade negotiations to be broad-based, balanced, and comprehensive, based on the principles of fairness and reciprocity.