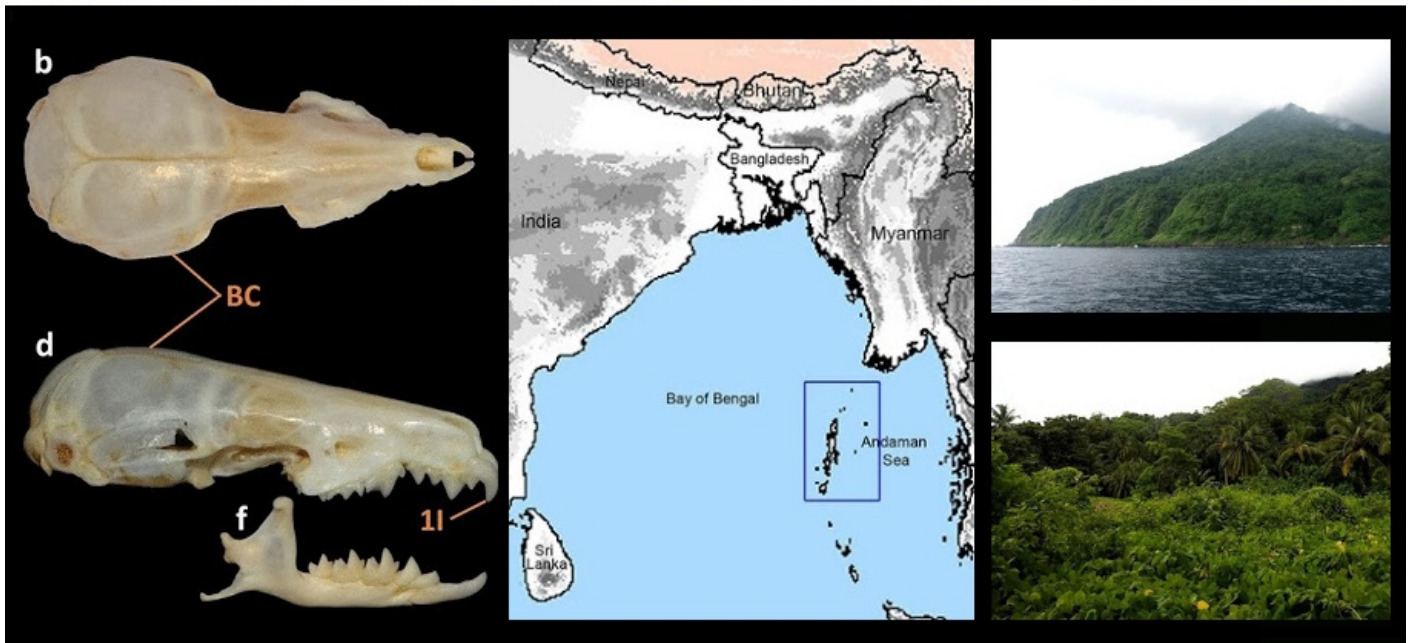


## India adds 540 species to faunal database

(GS Paper 3, Environment)

### Why in news?

- Recently, the Zoological Survey of India ((ZSI) observed its 107th foundation day on July 1.
- The ZSI had contributed to 68% of the animal discoveries in 2021.



### Details:

- 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.

#### **New mammal species:**

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

#### **New reptile:**

- 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.

#### **Faunal diversity:**

- 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.

#### **Biological diversity:**

- 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.

#### **Way Forward:**

- 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.
- The geo-spatial data of the ZSI would be of great importance in developing adaptive spatial planning of conservation areas.

## **Agenda for the GST regime** **(GS Paper 3, Indian Economy)**

#### **Why in news?**

- Recently, the Goods and Services Tax (GST) Council, chaired by Union Finance Minister met for the first time in 2022.
- The Council has **okayed three ministerial groups' reports**, one of which will lead to changes in the tax rates applicable on several items.

#### **What are the goods and services whose rates have been increased?**

- 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.
- Last but not the least, the GST levied on cut and polished diamonds has been raised from 0.25% to 1.5%.



#### Why does it matter?

- The **Reserve Bank of India expects India's inflation rate**, which hit an eight-year high of 7.8% in April and remained over 7% in May, **to average 6.7% in 2022-23**.
- With all these rate changes slated to kick in from July 18, any impact can only be gauged when August consumer inflation numbers are released in the second week of September. Even then, with prices of several commodities, including crude oil, remaining elevated, distilling the effect of new GST rates on price rise may not be simple.
- Moreover, the **panel led by Mr. Bommai has been granted three more months to delve into its other mandate** that could have a wider impact on consumers and businesses, rationalising the multiple GST rate slabs such as 5%, 12%, 18% and 28% and raising levies to bolster revenues that have fallen short of expectations.
- **Part of the reason for dipping revenues**, apart from a slowing economy in recent years, was the **repeated reduction in several items' GST rates ahead of critical elections**. However, inflation worries do not make this an opportune time for carrying out broader rate hikes.

#### What lies ahead?

- The Council will **meet again in August to finalise the GST rates for online gaming, horse racing and casinos**. It may also kick off the **process to form an appellate tribunal** for resolving GST disputes, envisaged since its launch in July 2017.
- With over a dozen States urging the Centre to continue the GST compensation paid to them for the first five years of the GST regime as revenue flows have been hit by the pandemic, it is hoped that clarity comes through on this issue by the August meeting.
- Any extension of assured revenues to States could, however, translate into further pain for consumers and industry, who already have to fork out the GST Compensation Cess levied on products such as cars and soft drinks, till March 2026, instead of the June 2022 sunset promised earlier.



## NATO after Ukraine invasion (GS Paper 2, International Relation)

### Why in news?

- Recently, the Leaders of the North Atlantic Treaty Organization (NATO), met in Madrid, Spain, even as Russia's war in Ukraine is still 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.**

### How strong was NATO before the war?

- 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 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 confronting 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.



### What are the recent developments that have strengthened NATO?

- Firstly, NATO allies other than the U.S. remained firmly committed to financing the organisation's military needs. Their combined defence investments have jumped by \$130 billion from 2014-19, in part driven by Russia's annexation of Crimea.
- Now, given the prolonged conflict in Ukraine, NATO has announced that it will **increase its forces at "high readiness" from 40,000 to over 3,00,000 troops by mid-2023.**

### Joining of Finland & Sweden:

- Second, after decades of maintaining a position of neutrality, **Finland and Sweden are set to join NATO possibly within a year**, in a large part driven by the strategic insecurity they face as neighbours of Russia, and the precedent that it has set with his invasion of and alleged human rights violations and war crimes in Ukraine.
- While most NATO members are keen for Finland and Sweden to join the organisation, Turkey was the final holdout citing concerns over the two countries allegedly providing safe haven to a group that Istanbul considers a terrorist organisation.
- Nevertheless, after joint security negotiations in recent days, Turkey has also lent its support to Finland and Sweden joining NATO.
- The main point of such an expansion would be to **tap into the military support that the two countries would provide to the alliance**, the fact that Finland has a 1,340 km border with Russia and that both countries will, as required by NATO, spend 2% of their GDP on defence.

### What happens next?

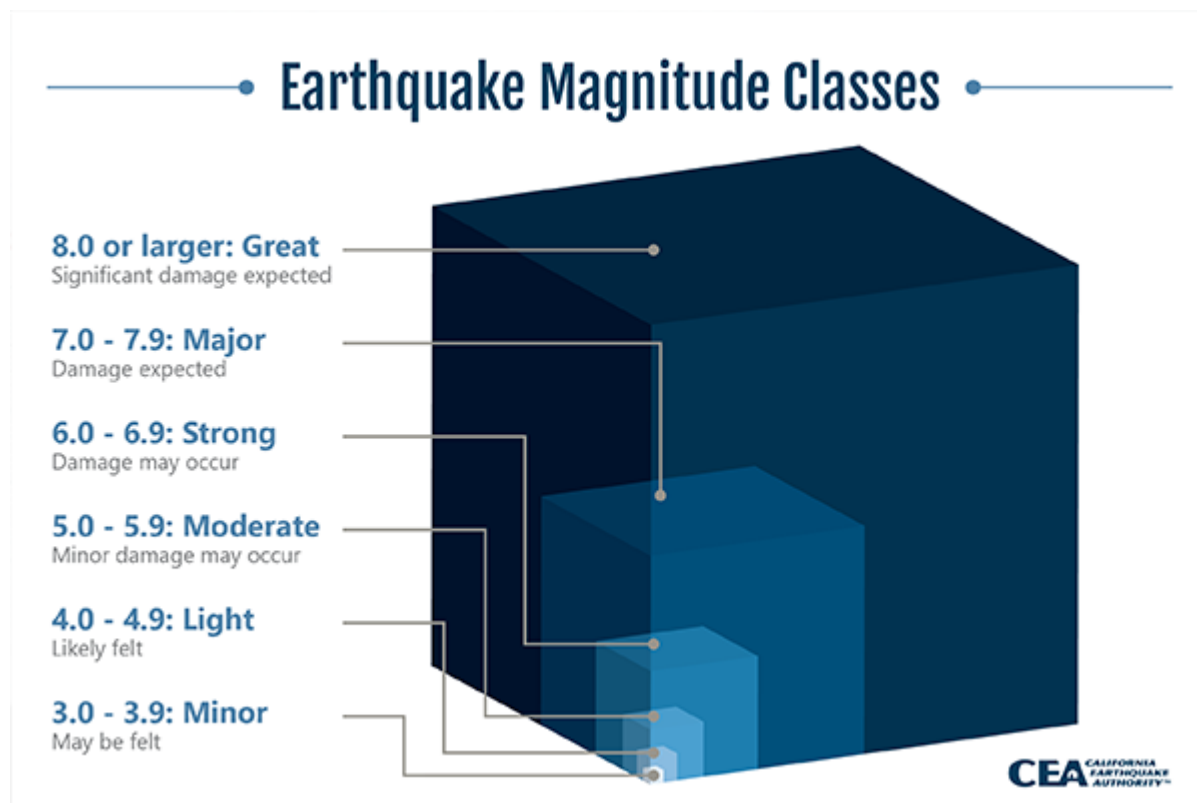
- While NATO appears fortified and ready to face the strategic gauntlet thrown down by Russia, there is a real risk that the people of its member-nations are getting increasingly frustrated.
- There's unending economic pain and the leaders have pledged to meet the burgeoning demand for weapons and other military support required by Ukraine to hold on to its territories in the east.

## Earthquakes measurement

(GS Paper1, Geography)

### Why in news?

- 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.



### How do earthquakes happen?

- 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**.

#### **What are seismic waves?**

- 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**.

#### **How are earthquakes measured?**

- Earthquakes are measured by seismographic networks, which are made of seismic stations, each of which measures the shaking of the ground beneath it. In India, the National Seismological Network does this work. Its sensors can now detect an earthquake within five to ten minutes.
- The wave parameters are measured, not the total energy released. There **is a relationship between the quantum of energy released and the wave amplitude**. The amplitude of the wave is a function of the time period of the wave.
- It is possible to convert the measured wave amplitude into the energy released for that earthquake. This is what seismologists call the magnitude of the earthquake.

#### **What is the Richter magnitude scale?**

- This is a measure of the magnitude of an earthquake and was first defined by Charles F. Richter of the California Institute of Technology, U.S., in 1935.
- The magnitude of an earthquake is the logarithm of the amplitude of the waves measured by the seismographs. Richter scale magnitudes are expressed as a whole number and a decimal part, for example 6.3 or 5.2.
- Since it is a logarithmic scale, an increase of the whole number by one unit signifies a tenfold increase in the amplitude of the wave and a 31-times increase of the energy released.

#### **How are zones designated?**

- Based on seismicity, intensity of earthquakes experienced, and geological and tectonic qualities of a region, countries are divided into several zones.
- In India, for example, there are four zones, designated Zone II-Zone V. Among these, **Zone V is the most hazardous and Zone II the least hazardous**.

#### **Early warning systems for earthquakes:**

- Since parameters of the earthquake are unknown, it is near impossible to predict an earthquake. The problem with earthquakes is that they are heavily dependent on the material property, which varies from place to place.
- The most successful early warning systems are in Japan. They have several hundreds of thousands recording devices. Responses are sent to a central point where they estimate whether it is large enough to form a tsunami or some other hazard, and precautionary steps are taken.