

## NEWSPAPER HIGHLIGHT

The United Nations (UN) has announced that a pivotal summit to finalise a new global agreement on protecting the environment will go ahead in December this year, after a two-year delay due to COVID-19 pandemic. The 15th Conference of the Parties to the United Nations Convention on Biological Diversity, will move from Kunming in China to Montreal, Canada.

Recognised as the “bird village” following community driven conservation efforts, Menar in Udaipur district is set to be notified as Rajasthan's new wetland. This will pave the way for getting the Ramsar site status for this rural heartland of the Mewar region. The two lakes in the village – the Brahma and Dhandh – play host to a large number of migratory birds in the winter season.

Scientists at the Defense Advanced Research Projects Agency in the United States are working to replace whale-harming sonar with the ambient sounds made by aquatic creatures. The low-frequency booms of giant goliath groupers (*Epinephelus itajara*) and the super-loud snaps of pistol shrimp are among the sounds being considered.

The International Diabetes Foundation estimates that 537 million people across the world are afflicted with diabetes. The site in the United States points out that over 37 million people (about 10%) in the United States are diabetic. There are two types of diabetes — Type 1 and Type 2. Type 1 is generally genetic in origin, and is easier handled by taking the molecule insulin. Injection of insulin helps your body use the sugar in your blood for the energy it needs, and then store the rest in the liver and other organs for future use. Type 2 diabetes, which does not need insulin injection, is largely lifestyle based, and is seen more among people in the urban areas than in rural populations.

The Black Death, the biggest pandemic of our history, was caused by the bacterium *Yersinia pestis* and lasted in Europe between the years 1346 and 1353. Despite the pandemic's immense demographic and societal impacts, its origins have long been elusive. Researchers have now obtained and studied ancient *Y. pestis* genomes that trace the pandemic's origins to Central

## FIREFLY-LIKE ROBOTS

1. Inspired by fireflies, researchers from MIT have created insect-scale robots that show electroluminescence. These firefly-like robots weigh barely more than a paper clip, and they can be tracked using the light they emit and three smartphone cameras.

2. **The robots' wings are controlled by soft actuators or artificial muscles, which are fabricated from electroluminescent elastomer actuators.** Using zinc sulphate particles, these actuators emit colored light during the flight.

3. As the zinc particles only light up in the presence of a very strong and high-frequency electric field, a strong electric field is created in the soft actuator using high voltage. Then, the robot is driven at a high frequency, which excites the electrons in the zinc particles. Now, they emit photons - subatomic light particles.

4. **Communication** - Like the fireflies, these robots are said to communicate with each other through the light-emitting feature (electroluminescence). **Tracking** - These robots can be flown in outdoor environments where we don't have a well-tuned, state-of-the-art motion tracking system.

5. Each actuator could be tracked using cameras that can detect each light color. Then, a computer program tracks the position of the robots to within 2 mm of the infrared motion capture systems. Currently, these robots cannot turn on and off their light during flight.

## VL-SRSAM

1. The Vertical Launch Short Range Surface to Air Missile was successfully flight-tested by the Defence Research and Development Organisation (DRDO) & Indian Navy. The Vertical Launch Short Range Surface to Air Missile (VL-SRSAM) is an indigenously developed ship-borne weapon system. The VL-SRSAM was developed by the Defence Research and Development Organisation (DRDO).

2. It has been designed to strike at the high-speed airborne targets at the range of 40 km to 50 km and at an altitude of around 15 km. **Design** - The VL-SRSAM is an indigenous upgrade to the 2-decade-old Israeli Barak 1 surface-to-air missile system on board Indian warships. Its design is based on Astra missile which is a Beyond Visual Range Air-to-Air missile.

3. **Features** - Two key features of the VL-SRSAM are Cruciform wings and Thrust vectoring. VL-SRSAM is a canisterised system, which means it is stored and operated from specially designed compartments. In the canister, the inside environment is controlled, thus making its transport and storage easier and improving the shelf life of weapons.

4. **Flight** - During mid-course flight, the VL-SRSAM missile uses a fibre-optic, gyroscope-based, inertial guidance mechanism. With-lock-on-before-launch (LOBL) and lock on after launch (LOAL) capability; the missile receives mid-course update via datalink. Then, in the terminal phase, the missile switches to active radar homing.

5. **Significance** - **The first line of defence is provided by the Indo-Israeli Medium Range Surface to Air Missiles (MRSAMs), which are capable of shooting down hostile aerial threats at ranges out to 70 km. If the MRSAM fails to destroy the incoming threat at long ranges,** the warship launches its VL-SRSAMs at shorter ranges of 25-30 km.

## ENDEMIC FAUNA OF EASTERN GHATS

1. The Elvira Conservation Initiative (ECI) is organizing puppetry of fauna that are endemic to the Eastern Ghats, including and. The puppetry is used as a medium to create awareness about the fauna that are endemic to the Eastern Ghats, including The Indian Gaur, The Madras Hedgehog, The Elvira Rat, The endangered ornamental tarantula (*Poecilotheria formosa*) found in Salem; and The endemic Shevaroy Hills earth snake (*Uropeltis shorttii*).

2. Other endemic species are the pangolins, the leopard cat,

**Asia. The origins of the Second Plague Pandemic have long been debated. One of the most popular theories has supported its source in East Asia, specifically in China. To the contrary, the only sofar available archaeological findings come from Central Asia, close to Lake Issyk Kul, in what is now Kyrgyzstan.**

**The bacteria causing typhoid fever is becoming increasingly resistant to some of the most important antibiotics for human health, according to a study published in The Lancet Microbe journal. The largest genome analysis of Salmonella Typhi (S. Typhi) also shows that resistant strains — almost all originating in South Asia — have spread to other countries nearly 200 times since 1990. The researchers noted that typhoid fever is a global public health concern, causing 11 million infections and more than 1,00,000 deaths per year.**

**An isolated population of 27 polar bears has been discovered in southeast Greenland, which is free of sea ice for most part of the year. Polar bears typically need sea ice to survive, so the discovery is raising hopes that some polar bears might survive in the absence of ice. They have adapted to hunting on glacial mélange.**

**The deoxyribonucleic acid (DNA) of more than 1,200 species of invertebrates were found on samples of tea and dried herbs. The traces of environmental DNA, which organisms shed as they walked across, chewed on or otherwise interacted with the leaves, can help understand how insect populations have changed.**

**5G movement will be enabled by a hybrid network, enhanced in coverage through hyperscale collaboration. In the consumer space, we will see a shift from business to consumer (B2C) to business to business to consumer (B2B2C), with the home becoming the focal point for innovation.**

**President Joe Biden on Saturday signed the most sweeping gun violence Bill in decades, a bipartisan compromise that seemed unimaginable until a recent series of mass shootings, including the massacre of 19 students and two teachers at a Texas elementary school. The legislation will toughen background checks for the youngest gun buyers, keep firearms from more domestic violence offenders and help States put in place “red flag” laws that make it easier for authorities to take weapons from people adjudged to be dangerous.**

shrew, mongoose, fox, etc., Very little is known about many of the Eastern Ghats species as compared to the endemic species of the Western Ghats.

**3.**There simply isn't enough data to develop comprehensive conservation plans for species inhabiting the Shevaroy Hills and the Eastern Ghats.

### **MADRAS HEDGEHOG**

**1.**Bare-bellied hedgehog or Madras hedgehog (*Paraechinus nudiventris*) is an elusive animal found in Tamil Nadu. It is also known as mul eli (mul meaning thorn, and eli meaning rat) or irmal eli aka cough rat. Habitat - These insectivorous mammals have been on this land since before human evolution. It is endemic to this land. They are nocturnal, and have unique habitats that have only been seen in selected patches.

**2.**They often dwell in urban landscapes, in backyards of homes in semi-arid areas of low elevation. Their home range is long - they keep moving and only stay in one place for long during breeding season Hedgehogs in the UK hibernate in winter, but the ones in South India aestivate in summer instead. **3.Threats - Its population has declined drastically mainly due to habitat changes, development, illegal collection for meat, and its capture for domestication or sale.** It is threatened by poaching, since its quills are used in traditional medicinal practices, or in household remedies for coughs, rheumatism and the like.

**4.**Hedgehog oil is also prepared from them. Since it is tiny, they are crushed under vehicles. Another issue is that it isn't listed in the Wildlife (Protection) Act, 1972. So, there is less protection.

### **ELVIRA RAT**

**1.**Elvira rat (*Cremnomys elvira*) or the large rock rat is a rodent found only in the Yercaud hills. It is a nocturnal and fossorial (burrowing) species. Habitat - It inhabits highly specialised habitats in rocky outcrops. It lives in tropical dry deciduous scrub forest where it has been seen in rocky cliffs and areas.

**2.**Distribution - It is found only in the Eastern Ghats, Tamil Nadu. It is known from its type locality (the place it was originally found) in of Kurumbapatti, Salem District. It is not found in any protected areas. Threats - The main threat to this species is a decline in habitat due to the expansion of human settlements, mining in the foothills, uncontrolled grazing in the rocky areas, etc.

**3.**Other threats include conversion of forests, fuel wood collection, mining and dumping of debris in the foothills of small hillocks in the reserve forest, etc. Due to their extremely limited range, a single event such as disease, fire or other anthropogenic factors could wipe out the entire population in a very short span of time.

### **GIANT STINGRAY**

**1.**The world's largest recorded freshwater fish, a giant stingray, has been caught in the Mekong River in Cambodia. It was captured under “Wonders of the Mekong” project, which is a joint Cambodian-US research project Freshwater fish are defined as those that spend their entire lives in freshwater, as opposed to giant marine species such as bluefin tuna and marlin, or fish that migrate between fresh and saltwater like the huge beluga sturgeon.

**2.**Giant freshwater stingray (*Urogymnus polylepis*) is a species of stingray, belonging to Dasyatidae family. It is found throughout the large rivers and estuaries of Borneo and Southeast Asia. While this species of giant stingray has an extremely dangerous venomous barb that can reach nearly 1 foot in length, they are not usually a threat to humans. More often, they wind up in the market as a source of cheap protein. Its life history, its ecology, and its migration patterns are not known.

**3. Mekong River-The Mekong River is a trans-boundary river, flowing in East Asia and Southeast Asia. It is the longest river in Southeast Asia.** Originating in the Tibetan Plateau, it runs across China, Myanmar, Laos, Thailand, Cambodia, and Vietnam. It drains into the South China Sea south of Ho Chi Minh City (Saigon).

**4.**Vientiane (Viangchan), the capital of Laos, and Phnom Penh, the capital of Cambodia, both stand on its banks. The extreme seasonal variations in flow and the presence of rapids and waterfalls in the Mekong make navigation difficult. Mekong River is home to several species of giant freshwater fish but environmental pressures are rising.

**Bharat C. Raval, president of the Indian Salt Manufacturers' Association (ISMA), started his career as a salt inspector with the Gujarat government. After spending 19 months in the government, he was attracted towards the salt cooperatives initiated by Verghese Kurien, the Milkman of India. Kurien trained Mr. Raval at the Sabarmati Salt Farmers' Society where he joined in April 1988 as a procurement executive. Nearly 35 years later, Mr. Raval feels that the salt industry is facing huge challenges in meeting the demand and in tackling the realisation crisis faced by salt farmers.**

**The Government of India has congratulated Bangladesh on the completion of the Padma Multipurpose Bridge. "The Padma bridge will not just help the internal connectivity of Bangladesh, but will also improve trade and logistics between India and Bangladesh. This bridge will play an important role in improving bilateral India Bangladesh and subregional links," said the Indian mission in a congratulatory message.**

## **ACCREDITED INVESTORS**

**1.**The Securities and Exchange Board of India (SEBI) relaxed the regulatory framework for Alternative Investment Funds (AIFs) targeting 'accredited investors'. AIFs that are 'large value funds for accredited investors' have been exempted from filing their placement memorandum by the SEBI. But these accredited investors have to intimate the regulator about the launch of their scheme.

**2.**An 'accredited investor' is also called qualified investor or professional investor. They are a class of investors who have an understanding of various financial products and the risks-returns associated with them and so, are able to take informed decisions regarding their investments. They can be an individual or a business entity that is allowed to trade unregistered securities with financial authorities.