

## IMPORTANT NEWS

### Smallest Flowering Plant on Earth: Potential Food and Oxygen Source for Astronauts

#### Inside Story of the News:

**Scientists at Mahidol University in Thailand** have been investigating the potential of **watermeal, the tiniest flowering plant on Earth**, as a source **of nutrition and oxygen for astronauts**.

- Watermeal, which is even smaller than its relative duckweed, is a rootless, stemless plant.
- It **drifts on the surfaces of bodies of water**, particularly in regions **like Thailand and other parts of Asia**.
- This research was carried out in partnership with the **European Space Agency's (ESA) ESTEC technical center in the Netherlands**.
- The research involved subjecting watermeal to hyper gravity conditions on ESA's Large Diameter Centrifuge (LDC), which can simulate gravity levels up to 20 times that of Earth for extended periods.
- The objective was **to comprehend how watermeal reacts to changing gravity levels**, a crucial aspect of future space-based agriculture.
- Watermeal, being even smaller than its relative duckweed and lacking roots, stems, or leaves, simply floats on water bodies.
- Due to its simplicity and rapid growth rate, watermeal is an excellent choice for investigating the impacts of gravitational variations on plant development.
- Watermeal is a **prolific producer of oxygen through photosynthesis and is rich in protein**.
- It has been a part of the local diet in Thailand and other Asian countries, consumed in various forms like soups and salads.
- Watermeal's **high nutritional value** and the fact that the **entire plant is edible make it a promising option for space-based agriculture**.
- Watermeal samples were placed in containers equipped with LEDs that replicate natural sunlight.
  - These samples were then exposed to hyper gravity **conditions by spinning at 20 times Earth's gravity (20 g) in the centrifuge**.
  - The growth and development of watermeal under these conditions were observed over a two-week period.

- After the experiment, the researchers conducted a comprehensive chemical analysis on solid pellet extracts from the watermeal samples to understand their response to hyper gravity.
- The study is anticipated to offer valuable insights into how plants adapt to varying gravity environments, which is essential for sustainable space agriculture.

## Iron Dome: Israel's Missile Defense System

### Inside Story of the News:

The Iron Dome, Israel's anti-missile system, recently **intercepted more than 5,000 rockets fired from Gaza, a narrow strip of land housing 2.3 million Palestinians.**

- This air missile defense system is Israel's shield against short-range rockets, capable of intercepting them in mid-air within the country's borders.
- It possesses the ability to effectively engage multiple rockets simultaneously.
- Developed by Rafael Advanced Defense Systems and Israel Aerospace Industries, the system became operational in March 2011.

### Understanding the Operation of Israel's Iron Dome Defense System

- The Iron Dome is constructed from a **mobile air defense system consisting of 10 batteries**, with each battery containing three to four adaptable missile launchers.
- The Iron Dome functions by detecting, predicting, analyzing, and intercepting various types of targets.
  - **Detect:**
    - The radar identifies an incoming rocket at distances ranging from 2.5 to 43 miles (4 to 70 kilometers) from the battery.
    - It then relays information about the rocket's trajectory to the command-and-control center.
  - **Predict:**
    - The control center calculates the rocket's projected impact location and assesses whether it poses a threat to populated areas.
  - **Assess:**
    - When facing multiple simultaneous threats, the system prioritizes rockets that pose the most significant danger to urban areas and critical infrastructure.
    - It simultaneously disregards those likely to land in unpopulated regions or the sea.
  - **Intercept:**
    - If the control system determines that an interception is necessary, it coordinates with a launcher to fire a missile and neutralize the incoming rocket.
- The Iron Dome is **specifically engineered to shoot down incoming projectiles.**

- It is equipped with radar for rocket detection.
- It also employs a command-and-control system that swiftly assesses whether an incoming projectile presents a danger or is likely to impact unpopulated regions.

## Threat to Dolphins in the Ganga-Ghagra Basin Canals

### Inside Story of the News:

In a recent report published by scientists and researchers, it was revealed that **19 Gangetic River dolphins** were rescued from the irrigation canals in the **Ganga-Ghagra basin in Uttar Pradesh between 2013 and 2020**.

- The Gangetic Dolphin is an endangered aquatic mammal.
- It is known scientifically as **Platanista gangetica**, has been sighted in the **Charikadiya River in Dhakuakhana, Lakhimpur district, Assam**.
- This species is commonly known by various names, including **Blind dolphin, Ganges dolphin, Ganges susu, hihu, and side-swimming dolphin**.
- According to the report, the construction of dams and barrages has significantly impacted the natural habitat of these dolphins.
- This has compelled them to seek refuge in irrigation canals, where they are exposed to risks such as rapidly receding waters, heat stroke, and human interference.
- The Gangetic Dolphin, which is also designated as the national aquatic animal, holds the status of being "endangered" on the IUCN Red List.
- The species faces several significant threats, including accidental entanglement in fishing gear and poaching for dolphin oil, which is used as a fish attractant and for medicinal purposes.
- Additionally, their habitat is being **destroyed due to development projects** like water extraction and the construction of barrages, high dams, and embankments, while pollution further compounds these challenges.

## IAF Ensign Unveiled After 72 Years by the Indian Air Force (IAF)

### Inside Story of the News:

The **new ensign for the Indian Air Force (IAF)** was recently unveiled by the IAF Chief, Air Chief Marshal Vivek Ram Chaudhari, during the Air Force Day parade held at Air Force Station-Bamrauli in Prayagraj.

- Positioned on a mobile mini stage, four air warriors presented the ensign to the Air Chief.
- The latest IAF ensign now includes the Air Force Crest in the top right corner on the fly side.

- The IAF Crest features the **national symbol, the Ashoka lion, at the top**, along with the words **"Satyamev Jayate" in Devanagari script** just below it.
- Beneath the Ashoka lion, there is a **Himalayan eagle with outstretched wings**, symbolizing the IAF's combat capabilities.
- A light blue ring encircles the Himalayan eagle, accompanied by the words **"Bhartiya Vayu Sena."**
- The IAF motto, **"Nabhah Spr̥sam Deeptam,"** is inscribed below the Himalayan Eagle in golden Devanagari.
- The IAF motto is derived from **verse 24, Chapter 11 of the Bhagavad Gita, and translates to "Radiant Thou Touched Heaven," or more simply, "Touching the sky with glory."**

## Participation of Over 1.36 Crore School Students in Veer Gatha Project 3.0 Nationwide

### Inside Story of the News:

In the 3<sup>rd</sup> edition of the **Veer Gatha Project**, over **1.36 crore school students from all 36 States and Union Territories wholeheartedly participated**. They contributed poems, paintings, essays, videos, and more to pay tribute to the acts of bravery and sacrifice exhibited by the officers and personnel of the Armed Forces.

- The Veer Gatha Project was established under the Gallantry Awards Portal (GAP) in 2021 with the primary goal of disseminating information about the courageous deeds of Gallantry Awardees.
- This project expanded on its noble objective **by providing a platform for school students to engage in creative projects and activities centered around gallantry award recipients**.
- Its overarching mission is **to impart the details of the brave actions of Gallantry Awardees and share the life stories of these heroes with students**.
- This, in turn, aims to foster patriotism and instill civic values among them.
- As part of this initiative, students conceived diverse projects through various media, including art, poetry, essays, and multimedia presentations about these gallantry award recipients.
- The **Ministry of Defence and the Ministry of Education** recognized and awarded the best projects at the national level.
- Under the Veer Gatha Project 3.0, the following activities were carried out:
  - **Activities at the School Level:** Schools organized various projects and activities, selecting, and uploading the top four entries from each school on the MyGov portal.
  - Simultaneously, to raise awareness among school students about the Gallantry Award Winners of India, the Ministry of Defence collaborated with its field organizations and the Army/Navy/Airforce.

- They conducted virtual and face-to-face awareness programs and sessions for schools nationwide.

### Gallantry Awards: Recognizing Acts of Bravery and Sacrifice:

- These awards were established by the Government of India to recognize and honor the courageous acts of the officers, personnel of the Armed Forces, other legally constituted Forces, and civilians.
- On January 26, 1950, the Government of India instituted three gallantry awards:
  - Param Vir Chakra,
  - Maha Vir Chakra, and
  - Vir Chakra.
- Subsequently, in 1952, the government introduced three more gallantry awards:
  - Ashoka Chakra Class-I, Ashoka Chakra Class-II, and Ashoka Chakra Class-III.
  - These awards were later renamed Ashoka Chakra, Kirti Chakra, and Shaurya Chakra, respectively, in 1967.
- These gallantry awards are announced **twice a year, first on Republic Day** and then on **Independence Day**.

## Nobel Prize in Economics: Recognizing Excellence in Economic Sciences

### Inside Story of the News:

Claudia Goldin, a US labor economist, was recently honored with the 2023 Nobel Prize in Economic Sciences for her significant contributions to the understanding of women's labor market outcomes.

- Goldin holds the distinction of being only **the third woman** to receive this prestigious award.
- In 2009, Elinor Ostrom shared the prize with Oliver E Williamson, and in 2019, Esther Duflo was jointly awarded it with Abhijit Banerjee and Michael Kremer.
- Notably, Goldin's research represented **one of the early instances in the field of economics to acknowledge and explore the role of women's work**.
- Her research has provided **valuable insights into the reasons behind changes in women's labor market participation** and the primary factors contributing to the enduring gender gap.
- Goldin's groundbreaking work has illuminated two key aspects:
  - The historical evolution of women's involvement in the labor market over the past two centuries, and
  - The persistent gender pay gap, even in high-income countries where many women tend to have higher levels of education compared to men.
- While her research primarily focused on the United States, the implications of her findings extend to numerous other countries.

- The Nobel committee recognized her work as "**the inaugural comprehensive account of women's earnings and labor market engagement across different eras.**"

#### The U-shaped Curve, Significance of Expectations, and the Parenthood Effect:

- Claudia Goldin's analysis of data spanning two centuries revealed a **U-shaped curve**.
- This curve indicates that female labor force participation initially declined during the 19<sup>th</sup> century but then began to rise again in the 20<sup>th</sup> century.
- Goldin's research highlighted **that female participation in the labor market did not exhibit a continuous upward trend but instead formed a U-shaped curve.**
- Goldin pointed out that legislation referred to as "**marriage bars**" frequently hindered married **women** from continuing their employment in roles such as teachers or office workers.
- Women's expectations regarding their future careers played a pivotal role in the gender pay gap.
- The availability of easily accessible contraceptive pills by the end of the 1960s empowered women to exert greater control over family planning and make decisions about their careers and motherhood.
- Despite advances in education and employment opportunities for women, a notable gender-based pay gap continued to persist.
- Jakob Svensson, Chair of the Committee for the Prize in Economic Sciences, emphasized **the significance of comprehending women's roles in the labor market for society.**
- He remarked, "Thanks to Claudia Goldin's pioneering research, we now have a deeper understanding of the underlying factors and the barriers that may need to be addressed in the future."

## What Is White Phosphorus, and Allegations of Its Use by Israel in Gaza

### Inside Story of the News:

While Israel continued its airstrikes on Gaza in response to a large-scale assault by the Palestinian group Hamas, there were social media videos suggesting that the Israel Defense Force (IDF) may have **employed prohibited white phosphorus bombs in the densely populated area.**

- White phosphorus is a waxy, yellowish-to-clear chemical with a strong, garlic-like odor.
- It is an extremely flammable substance that burns rapidly and intensely upon exposure to air.
- Militaries worldwide, including the United States, use it in incendiary weapons for various purposes, such as illuminating targets at night or causing harm to adversaries.
- When ignited, this chemical reaction generates intense heat (approximately 815 degrees Celsius), bright light, and thick white smoke, which is utilized by armed forces to create smokescreens in sensitive areas.

### Consequences of White Phosphorus Usage:

- White phosphorus has the capability to initiate rapidly spreading fires on the ground.
- Once ignited, this substance proves extremely challenging to extinguish, as it adheres to various surfaces, including skin and clothing.
- Its extreme danger to civilians lies in its ability to cause severe burns that penetrate deep into tissues and bones, with the potential to reignite even after medical treatment.

### Deployment of White Phosphorus in Warfare:

- The British army employed **white phosphorus in both World Wars**.
- U.S. forces used this chemical weapon against insurgents in the city of Fallujah after the invasion of Iraq.
- Israel acknowledged its use of phosphorus shells during the conflict with Hezbollah in the 2006 Lebanon War.

## Discovery of a New Toad Species in Mizoram's Dampa Tiger Reserve

### Inside Story of the News:

A team of scientists from India and the United Kingdom has identified a previously unknown **species of toads, Bufoides bhupathyi**, within the **Dampa tiger reserve in Mizoram**.

- This toad species belongs to the **Bufoides genus** and is the third of its kind, exclusively located in the **narrow region of northeastern India**.
- The discovery of *Bufoides bhupathyi*, the new species, was documented in the **latest edition of Biodiversitas**, a journal published in Indonesia.
- The two previously recognized species within the **Bufoides genus**, namely **Bufoides meghalayanus** and **Bufoides kempi**, were found in Meghalaya.
- The new species from Mizoram distinguishes itself from similar species in terms of **interdigital webbing, coloration, skin tuberculation, and the presence of ovoid, tuberculated, and depressed parotid glands**.
- The scientific community has chosen to name **this newly discovered species after S. Bhupathy**, a renowned herpetologist who held the position of principal scientist at the **Salim Ali Centre for Ornithology and Natural History in Coimbatore**.

## India's Rank of 111 in the Global Hunger Index Report

### Inside Story of the News:

In the **Global Hunger Index report** released on October 12, 2023, India has been ranked 111<sup>th</sup> out of 125 countries, marking a slip of four positions from the previous year.

- The Global Hunger Index serves as a comprehensive tool for measuring and monitoring hunger on a global, regional, and national scale.
- This index is jointly compiled by **the Irish aid agency concern Worldwide and the German organization Welt Hunger Hilfe.**
- India's ranking places it below only a few countries, including Timor-Leste, Mozambique, Afghanistan, Haiti, Guinea-Bissau, Liberia, Sierra Leone, Chad, Niger, Lesotho, Democratic Republic of Congo, Yemen, Madagascar, Central African Republic, South Sudan, Burundi, and Somalia.
- According to the latest report, **India's overall Global Hunger Index score is 28.7**, calculated on a 100-point scale, where higher scores indicate poorer performance.
- The GHI score considers four key factors:
  - Undernourishment (affecting the entire population, including both children and adults),
  - Child stunting (the proportion of children with low height for their age),
  - Child under-5 mortality, and
  - Child wasting (children with low weight for their height).
- All of these indicators are aligned with the universally agreed UN Sustainable Development Goals (SDGs).

#### India's Performance Evaluated on Four Key Parameters:

- India holds the highest child 'wasting' rate globally at 18.7%, indicating severe undernutrition.
- 'Wasting' is considered the most severe form and indicator of child undernutrition.
- The report designates a 'very high' level of concern for countries where more than 15% of children are 'wasted,' and India is the sole country placed in this category.
- Over 35% of children in India are categorized as 'stunted,' although some African and East-Asian nations perform worse in this regard.
- India's level of undernourishment, affecting about 16.6% of the overall population, is classified as a 'medium' risk.
- The prevalence of anaemia among women aged 15-24 is a significant concern in the country.
- More than 50% of women and adolescents in India experience anaemia, which is one of the highest rates globally.