

NEWS TODAY

Armoured Sailfin Catfish (ASC) has spread to 60% of water bodies of Eastern Ghats: CCMB scientists Study

ASC (Rakashi or devil fish) was introduced in India for its unique appearance and its ability to clean algal growth in tanks and aquaria, however, now they have grown exponentially.

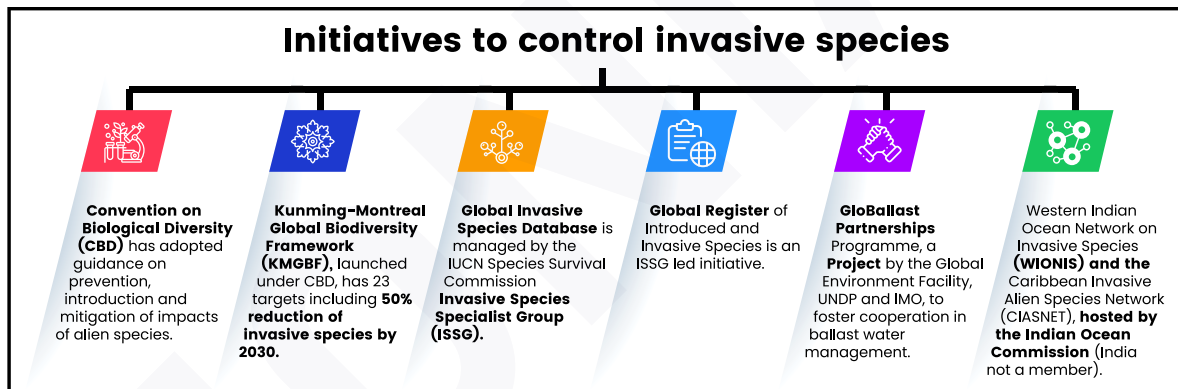
- It is native to South America, and belongs to the largest catfish family.
- Scientists used the Environmental DNA (eDNA) approach for mapping spread of the invasive species.
 - ⊕ eDNA is organismal DNA that is released in the environment from cellular material shed by organisms (via skin, excrement, etc.) into aquatic or terrestrial environments.
 - ⊕ Unlike conventional methods, eDNA approach is reliable, and accurate, can be done at a low cost.

About Invasive species (IS)

➤ **Definition:** As per the Wildlife Protection Act, 1972 (amended in 2022), IS are non-native species whose introduction or spread poses a threat to wildlife or its habitat.

➤ Threats

- ⊕ Their presence can lead to changes in food chains, disturbances in ecological balances, and competition with native species for resources.
- ⊕ Put human health, food security and livelihoods at risk.
- ⊕ 1 in 10 species on the IUCN Red List species are threatened by IS (IUCN).
- ⊕ Resulted in loss of at least USD 1.288 trillion from 1970 to 2017 (IUCN).



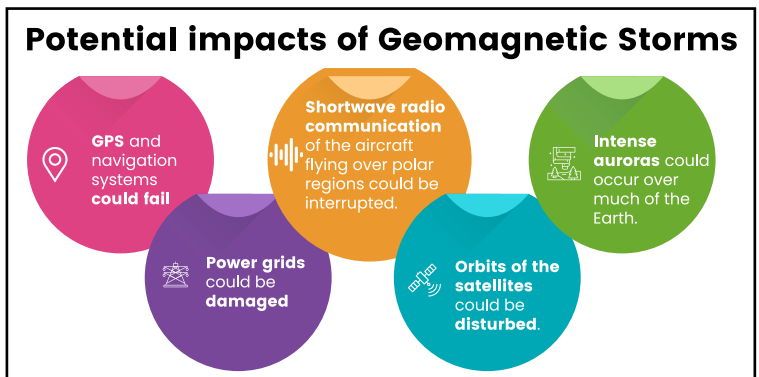
After two decades, Earth is struck by the G-5 Level Geomagnetic Storm

A G-5 level geomagnetic storm, the first since the Halloween Storms of 2003, has struck Earth.

- This storm was triggered by multiple Coronal Mass Ejections (CMEs) directed towards Earth.

Geomagnetic Storms

- **Definition:** Geomagnetic or Solar storms are disturbances in Earth's magnetosphere (Earth's magnetic field).
- **Classification:** Depending on the intensity, they are classified from G1 (Minor) to G5 (extreme).
- **Caused by:** These disturbances arise from the interaction of charged particles from Sun with Earth's magnetic fields, which is triggered by following solar explosions:
 - ⊕ **CMEs:** Primary drivers of the most severe geomagnetic storms.
 - ◆ They are large expulsions of plasma and magnetic fields from the Sun's corona (the outermost part of the Sun's atmosphere).
 - ◆ They usually take place around sunspot groups, which are cooler, highly magnetized areas on the Sun's surface.
 - ◆ They typically take 1 to 3 days to reach Earth.
 - ⊕ **Solar Flares:** An intense burst of radiation coming from the release of magnetic energy associated with sunspots.
 - ◆ Largest explosive events in our Solar system that can last from minutes to hours.
 - ◆ They travel at the speed of light, which takes approximately 8 minutes to reach Earth.



ISRO successfully conducts hot testing of 3D printed rocket engine

ISRO successfully conducts hot testing of liquid rocket engine – **PS4 engine (fourth stage of PSLV)** – manufactured through **Additive Manufacturing (AM) technology**.

- It was developed by the Liquid Propulsion Systems Centre (LPSC), ISRO.
- It resulted in saving of **raw material usage and production time**.

AM / 3D Printing

- It is defined as the technology that constructs a **three-dimensional object** from a digital 3D model by **adding material layer by layer**.
- It is the **opposite of subtractive (traditional) manufacturing**, in which an object is created by cutting away at a solid block of material.
- AM materials** include thermoplastics, metal and metal alloys, ceramics and biomaterials such as bioinks.

Key Applications of AM technology:

- Healthcare** – Custom implants, tumour models, surgical instruments etc.
- Aerospace and defence** – Components like airframes, landing gears, drones etc.
- Electronics** – Wearable devices, robots, RFID devices etc.
- Others** – Construction, consumer goods including clothing, furniture, automotive etc.

Advantages of AM technology: Lower inventory, reduced time, creating complex and custom designs, little wastage, create objects with functionally-graded materials etc.

Challenges:

- Expensive:** Initial investment in equipment is substantial.
- Technical Challenges:** Slow production speed, quality concerns, and lack of international standards.
- Other Challenges:** Workforce shortage, lack of material availability, design integration etc.

Steps taken by Government:

- Ministry of Electronics and Information Technology (MeitY)** released “**National Strategy for Additive Manufacturing**” in 2022.
- National Institute of Electronics & Information Technology, Aurangabad**, has established a **3D printing lab**.
- In 2023, **National Centre for Additive Manufacturing** was set up by MeitY in collaboration with the **Government of Telangana**.

Ultra-processed food (UPF) Consumption linked to risk of early death

A **30-year-long U.S. study** found that **consuming UPF** is associated with a **higher risk of early death**.

- The risk was **especially** associated with products like **ready-to-eat meats, sugary drinks, dairy desserts, and processed breakfast foods**.
- However, researchers also clarified that **not all UPF should be universally restricted**, but findings support limiting certain types for long-term health.
- Researchers used the **Alternative Healthy Eating Index-2010 (AHEI) score** to assess overall dietary quality.
 - AHEI, developed by Harvard School of Public Health, **assigns ratings to foods and nutrients predictive of chronic disease**.

About UPF

- UPFs are a **category of food products** that have **undergone extensive processing** and contain **significant amounts of additives** (like preservatives, artificial flavours, emulsifiers).
- They are often **High in fat, Sugar and Salt (HFSS)** and low in Vitamins, protein, and fibre. For example, snacks, sodas, etc.
- Their increased consumptions may lead to various health issues including **hypertension, renal failure, obesity, fatty liver disease, metabolic syndrome, cardiovascular diseases, etc.**
- UPF food sector in India witnessed a compounded annual growth rate of **13.4% between 2011 and 2021 and is expected to grow further (WHO)**.

Challenges in curbing UPF consumption in India

- Changing lifestyle** and dietary pattern.
- Absence of a clear definition** and coverage of HFSS food.
- Lack of comprehensive advertisement** and marketing regulations.

Indian Initiatives to Curb UPF Consumption

- Revised (2024) dietary Guidelines for Indians** by Indian Council of Medical Research.
- Eat Right India Campaign** by Food Safety and Standards Authority of India (FSSAI) to ensure safe and wholesome food.
- FSSAI **limits trans fatty acids (TFA)** in food products to 2% by mass of the total oils and fats.
- Aerated beverages in India** are taxed at **28% GST and additional 12% compensation cess**.
- High-fat sugar Salt (HFSS) foods** in India are taxed at a 12% Goods and Services Tax (GST) rate.
- Kerala** had also introduced a ‘**fat tax**’ in 2016.

Sudden Dust Storm envelops Delhi

Delhi witnessed a sudden dust storm with **strong winds and light rain**.

- It was the result of a combination of factors including a **western disturbance, easterly winds, and high temperatures** that led to the formation of **convective clouds and strong winds**.

About Dust Storms:

- Dust storms are created when **strong and turbulent winds lift up particles of dust/sand** to great height.
- A dust storm is associated with a **thunderstorm (characterized by rain and lightning)** and generally occurs in **arid and semi-arid regions**.
 - These are frequent in northern Africa, Middle East, Central Asia and North India.
 - Northwest India experiences **convective dust storms**, locally called "**aandhi**" with frequency being maximum over **Rajasthan** followed by **Haryana, Punjab and West Uttar Pradesh**.
- According to **Intergovernmental Panel on Climate Change**, the severity and frequency of **dust storms** will rise due to **rising global temperature**.

Impact of Dust Storms

- These can trigger **respiratory ailments** in humans.
- Dust particles act as a carrier for **infectious diseases**.
- These can **destroy crops, reduce visibility** and ground flights.
- These transport nutrients to the oceans and **affect marine biomass production**.

About Western Disturbances (WD)

- WD are **extratropical storms** which form in **Mediterranean region and travel eastward towards Indian subcontinent**.
- WD cause **non-monsoonal rain in the northwestern Indian subcontinent**.

About Easterlies (Trade winds)

- They are **constant winds** that blow from **east to west near the equator**.
- Trade winds begin as **warm, moist air from the equator rises** in the atmosphere and cooler air closer to the poles sinks.

Supreme Court passed judgement to strengthen Juvenile Justice Act, 2015

Supreme Court's judgement in "**Child in Conflict with Law (CCL) through his mother v. State of Karnataka**" case dealt with act's provision for **preliminary assessment of CCL** in heinous offences.

About Juvenile Justice (Care and Protection of Children) Act (JJ Act) 2015

- Scope:** It consolidates and amend the law relating to CCL and Child in need of Care and Protection (CCP).
 - CCL means **child below 18 years of age who is alleged/ found to have committed an offense**.
- Board:** It mandates setting up **Juvenile Justice Boards (JJBs) in every district** to deal with cases of CCL.
- Preliminary Assessment:** In case of **heinous offences** alleged to have been committed by a **child above 16 years of age**, JJB shall conduct a **preliminary assessment** to assess capacity of the child.
 - After preliminary assessment, the **Children's Court** may decide that **whether the child can be tried as adult**.

Key Highlights of Judgement

- An **appeal against the preliminary assessment order of the Juvenile Justice Board (JJB)** would be **filed before the Children's Court (not Sessions Court)** wherever available.
 - Also, court has prescribed **30 days time limit** for preferring such appeals.
- The time period of **3 months** prescribed for completion of **preliminary assessment is not mandatory** but merely directory in nature.

Also in News



Sahitya Akademi

Ruskin Bond was awarded the **Sahitya Akademi Fellowship**.

- Fellowship is the **highest honour** conferred by Akademi on a writer.
- It is reserved for **'the immortals of literature'**.
- Major literary of Ruskin Bond:** Vagrants in the Valley, Once Upon a Monsoon Time, Angry River, Strangers in the Night, All Roads Lead to Ganga, etc.

About Sahitya Akademi

- Genesis:** Formally inaugurated in **1954** and Registered under the **Societies Registration Act, 1860**.
- Ministry:** An autonomous body under **Ministry of Culture**.
- Role:** Undertakes **literary activities in 24 languages** (22 scheduled languages and **English and Rajasthani**).
- Its major awards:** Sahitya Akademi Award, Bhasha Samman



Kaziranga National Park (KNP)

KNP collected the highest revenue in its 50-year history.

About KNP

- Location:** **Golaghat and Nagaon districts (Assam)** in the **Eastern Himalayan biodiversity hotspots**.
 - Situated between the **river Brahmaputra** in the North and the **Karbi Anglong hills** in the South.
- UNESCO recognition:** Declares as a **UNESCO World Heritage Site** in 1985.
- Major Vegetation:** **Wet alluvial grassland** interspersed with **deciduous to semi-evergreen woodlands**.
- Flora:** Elephant grass, Kumbhi, Indian gooseberry etc.
- Fauna:** One-horned rhinoceroses (the world's largest population), wild Asiatic water buffaloes, swamp deer, hog deer, Ganges Dolphin, etc.



Small Ribonucleic acid (sRNA)

Researchers found altered food habits in *C. elegans* worms after they ate a disease-causing bacteria (*P. vranovensis*) that produces sRNA.

About sRNA

- sRNA is a group of primarily non-coding RNA (ncRNA) and generally contains 20 to 200 nucleotides.
 - ⊖ ncRNA refers to RNA that does not encode a protein.
 - ⊕ Ribonucleic acid (RNA) is made up of 4 types of nucleotides adenine (A), uracil (U), cytosine (C) or guanine (G).
- They bind to other proteins and RNAs, and either enhance or reduce the expression of other genes.



Measles

Researchers from Ministry of Health and Family Welfare and Banaras Hindu University found that 12% of India's eligible children received no dose of measles vaccine.

Measles

- **About:** Measles is an acute viral respiratory illness.
- **Symptoms:** High fever, cough, coryza, and conjunctivitis (the three "C" s) and rash.
- **Pathogen:** Measles virus (a single-stranded, enveloped RNA virus).
- **Hosts:** Humans are the only natural hosts.
- **Vaccines:** Measles Rubella (MR) vaccine is part of India's Universal Immunization Programme since 2017.
 - ⊖ Rubella virus infection usually causes a mild fever and rash.



Flue Gas Desulphurisation (FGD) Technology

Ministry of Power held a meeting to review a study conducted by IIT-Delhi on the effect of installing Flue Gas Desulphurisation (FGD) technology on Sulphur Dioxide (SO₂) emissions.

- Ministry of Environment, Forest & Climate Change made it mandatory for all coal-based TPP to install FGD system.

About FGD Technology

- It is used to remove SO₂ from the flue gas emissions of coal-fired Thermal Power Plants (TPP).
 - ⊕ FGD systems can remove over 90% of SO₂.
- Majorly, three types of FGD systems – Dry Sorbent (Limestone) Injection, Wet Limestone Based, and Sea Water Based – are adopted worldwide.



Sea Anemone

Scientists have found mass sea anemone bleaching off Agatti island, Lakshadweep.

About Sea anemone:

- They are ocean-dwelling members of the phylum Cnidaria.
- Sea anemones are predatory animals and most species are found in coastal tropical waters.
- Like corals, sea anemones establish symbiotic relationships with green algae.
 - ⊖ Sea surface temperature rise disrupts this relationship, resulting in bleaching.
- They also have a symbiotic relation with clownfish.
 - ⊖ Clownfish are protected by the stinging tentacles of anemone and anemone gets food from Clownfish's meals.
- They play key biogeochemical roles in benthic ecosystems.



DigiLocker

10th and 12th standard students from CISCE board can now obtain verified marksheets through DigiLocker platform.

About DigiLocker Platform

- Launched in 2015, it is a flagship initiative of Ministry of Electronics and Information Technology under Digital India program.
- It is a secure cloud-based platform for issuance and verification of documents & certificates in digital way.
- These digital documents are legally valid documents under Indian Information Technology (IT) Act 2000.
 - ⊖ According to IT Rules, 2016, these are treated at par with original physical documents.
- **Benefits:** Reduced Administrative cost, Paperless Governance, Real Time Verification etc.



Exercise 'Shakti'

- 7th edition of Exercise 'Shakti', a joint military exercise between India and France, started in Meghalaya.

Personality in news



Asaf Ali (1888-1953)

- The birth anniversary of Asaf Ali celebrated.

About Asaf Ali

- Lawyer, freedom fighter, first Ambassador of independent India to the United States etc.

Key Contributions

- One of the founding members of Home Rule League at Delhi.
- Actively participated in the Non-Cooperation Movement, Civil Disobedience Movement, Individual Satyagraha and Quit India Movement etc.
- Defended Shaheed Bhagat Singh and Batukeshwar Dutt in central assembly bomb case 1929.
- Elected to Central Legislative Assembly in 1935 as a member of Muslim National Party.

Values

- Patriotism, Leadership, Rationality etc.

