DAILY CURRENT AFFAIRS 29-10-2025

GS-2

1. **Public Trust Doctrine**

GS-3

2. **Mission Drishti**
3. **Maitri II Station**
4. **Military Combat Parachute System (MCPS)**
5. **Silent Valley National Park**

Public Trust Doctrine

Syllabus: GS-2: Indian Polity - Laws and Policies.

Context:

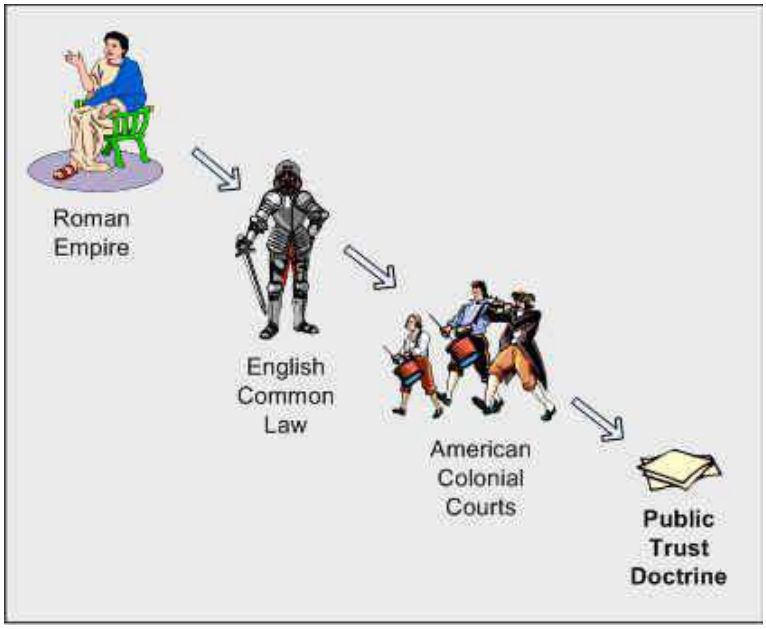
- The **Supreme Court of India** recently ruled that the **Public Trust Doctrine (PTD)** applies not only to **natural water bodies** (like rivers, lakes, wetlands) but also to **man-made or artificial water bodies** that serve **ecological or environmental functions**.
- This expands the doctrine's scope to include **artificial reservoirs, tanks, and ponds** that contribute to groundwater recharge, biodiversity, or local ecology.

About the Public Trust Doctrine (PTD)

A legal principle stating that **certain natural and cultural resources are preserved for public use**, and the **State is the trustee** of these resources for the benefit of the people.

Origin and Evolution

- **Roman Law:** "*Res communis*" — certain things (like air, sea, running water) belong to everyone and cannot be privately owned.
- **English Common Law:** Expanded to protect public access to coastal and navigable waters.
- **India:** Adopted through **judicial interpretation**, especially under **Article 21 (Right to Life)** and **Article 48A & 51A(g)** (environmental protection).



Key Features

- The **State is the trustee**, not the owner, of natural resources.
- **Public ownership** of essential resources like air, water, forests, and ecosystems.
- **Private ownership or commercial exploitation** cannot override **public and ecological interests**.
- The doctrine imposes a **fiduciary duty** on the government to **preserve and protect** these resources for **public welfare and future generations**.

Supreme Court Interpretations

- **M.C. Mehta v. Kamal Nath (1997):**
  - Introduced PTD in Indian jurisprudence.
  - The Court held that the **State cannot abdicate natural resources** to private entities for commercial gain.
- **Intellectuals Forum v. State of A.P. (2006):**
  - Applied PTD to protect **urban lakes** and wetlands.
- **Fomento Resorts v. Minguel Martins (2009):**
  - Reinforced that **beaches and coastal areas** are held in trust for the public.
- **Current (2025) Case:**
  - Extended PTD to **artificial/man-made water bodies**, recognizing their **ecological and environmental value**, not just natural origin.

Constitutional and Legal Basis

- **Article 21:** Right to life includes the right to a healthy environment.
- **Article 48A:** State's duty to protect and improve the environment.
- **Article 51A(g):** Citizen's duty to protect natural environment.
- **Environment (Protection) Act, 1986:** Gives statutory backing to protect ecological resources.

Restrictions Imposed by the Doctrine

- The property must be **used for a public purpose** and **accessible to all**.
- The property **cannot be sold or transferred**, even for monetary gain.

- It must be **maintained for specific ecological or environmental uses**.

Significance

- Prevents **arbitrary privatization or destruction** of ecological assets.
- Promotes **sustainable development** and **intergenerational equity**.
- Strengthens **environmental governance** and accountability.
- Expands environmental jurisprudence to include **climate and ecosystem services**.

Criticism and Challenges

- **Implementation gaps** – despite strong judicial backing, encroachments continue.
- **Conflicts with development projects** – balancing ecological protection with infrastructure needs.
- **Lack of statutory clarity** – PTD largely rests on judicial interpretation.

Conclusion

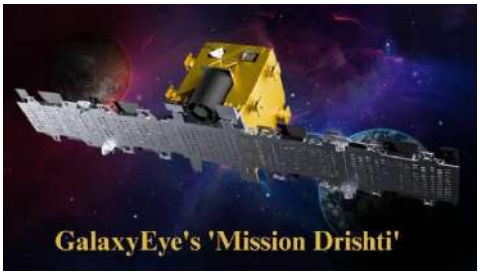
The **2025 Supreme Court judgment** reaffirms India's commitment to **ecological justice** by expanding the Public Trust Doctrine to **artificial water bodies**. It strengthens the **State's responsibility as an environmental trustee**, ensuring that **public and ecological interests prevail** over private or industrial exploitation.

Mission Drishti

Syllabus: GS-3; Science & Technology

Context

- Space-tech startup **GalaxEye** is set to launch the world's first multi-sensor Earth observation (EO) satellite, **Mission Drishti**, in the first quarter of 2026.
- It will be **India's largest privately built satellite** and the **highest-resolution satellite developed in the country**.



Key Features of Mission Drishti

- **Dual-Sensor Integration:** Combines **synthetic aperture radar (SAR)** for all-weather, day-and-night imaging with **high-resolution optical sensors** for detailed visual data.
- **Resolution:** Offers imagery with **1.5-meter resolution**, enabling high-precision Earth observation.
- **Weight:** The satellite weighs **160 kg**.
- **Structural Tests:** Successfully passed stringent structural tests at ISRO's **U R Rao Satellite Centre**, proving resilience to space conditions.
- **Launch Vehicle:** Will be launched aboard a **SpaceX rocket**.
- **Constellation Plans:** First satellite in a planned **8–12 satellite constellation by 2029**, aiming for near real-time Earth observation.

Range of Applications

- **Border Surveillance:** Continuous monitoring to enhance national security.
- **Disaster Management:** Provides real-time data for effective disaster response and recovery.
- **Defense:** Supports strategic defense operations with timely intelligence.
- **Infrastructure Monitoring:** Assesses and manages critical infrastructure.
- **Agriculture:** Monitors crop health and land use.
- **Finance & Insurance:** Helps assess environmental and structural risks for better decision-making.

Technological Innovation

- **SyncFusion Technology:** Proprietary technology that enables **real-time fusion of SAR and optical data**, ensuring uninterrupted, all-weather visibility.
- **Advantage:** Overcomes limitations of traditional Earth observation systems, delivering consistent and actionable insights across critical sectors.

Maitri II Station

Syllabus: GS-3; Science & Technology

Context

- The **Finance Ministry** has granted approval for **Maitri II**, India's **newest Antarctic research station**, to be established in **eastern Antarctica**.

About Maitri II Station

- **Purpose:** India's upcoming and **largest Antarctic research base**, designed as a **green research station**.
- **Location:** Proposed in **Eastern Antarctica**, expanding India's scientific presence in the region.
- **Sustainability Features:**
  - Use of **solar energy** during summer and **wind energy** harnessing Antarctic winds.
  - Aims for **net-zero energy operations** through renewable sources.
- **Technological Features:**
  - Equipped with **automated instruments** capable of **continuous data collection and transmission** to mainland India, even when **unmanned**.
- **Timeline:** Construction expected to be **completed by January 2029**.
- **Nodal Agency:**
  - **National Centre for Polar and Ocean Research (NCPOR)** under the **Ministry of Earth Sciences (MoES)** will oversee operations and logistics.

Key Facts about Maitri (Existing Station)

- **Established:** 1989
- **Location: Schirmacher Oasis**, East Antarctica — a **20 km-long ice-free landmass**.

- **Facilities:** Main building, summer camp, fuel farm, water pump house, and containerised research modules.
- **Capacity:** Accommodates **25–40 scientists**, varying by mission and season.

India's Antarctic Research Stations

1. **Dakshin Gangotri (1983–1990s):** First Indian base, now used as a **supply base**.
2. **Maitri (1989–Present):** Second and still operational.
3. **Bharati (2012–Present):** Third station, operational on **Larsemann Hills**, East Antarctica.
4. **Maitri II (Approved, to be operational by 2029):** Fourth and largest, **eco-friendly** and **AI-enabled**.

Significance

- Strengthens India's **polar research capabilities** under the **Antarctic Treaty System**.
- Reinforces India's commitment to **sustainable polar science** and **climate change research**.
- Enhances monitoring of **Antarctic ice dynamics, atmosphere, and ecosystems** through long-term data automation.

Military Combat Parachute System (MCPS)

Syllabus: GS-3; Defence Technology

Context

- DRDO successfully tested the MCPS at an altitude of **32,000 feet**.
- **Significance:** Marks a major advancement in India's defense technology, enabling high-altitude operations.

About MCPS

- **Developer:** Defence Research and Development Organisation (DRDO)
- **Design & Development:**
  - **Aerial Delivery Research and Development Establishment (ADRDE), Agra**
  - **Defence Bioengineering and Electromedical Laboratory (DEBEL), Bengaluru**

Key Features

- **High-Altitude Capability:** Combat freefall jumps up to **32,000 feet**.
- **Operational Uniqueness:** Only Indian Armed Forces parachute system usable above **25,000 feet**.
- **Tactical Advantages:**
  - Lower rate of descent
  - Superior steering capabilities
  - Navigation enabled via **NavIC** (Navigation with Indian Constellation)

Significance

- **Enhanced Safety:** Paratroopers can exit aircraft safely, deploy parachutes at precise altitudes, navigate accurately, and land in designated zones.
- **Strategic Autonomy:** Resistant to external interference, allowing operation against any adversary.
- **Indigenous Capability:** Opens doors for induction of Indian-made parachute systems.
- **Reduced Dependency:** Minimizes reliance on foreign suppliers for serviceability during conflicts.

Silent Valley National Park

Syllabus: GS-3; Biodiversity

Context

- Six new species of dragonflies and damselflies were recorded during a recent odonate survey in the park.

About Silent Valley National Park

- **Location:** Southwest corner of the Nilgiris, Kerala, South India.
- **Significance:** One of the last undisturbed tropical rainforests in India; part of the Nilgiri Biosphere Reserve.
- **UNESCO Status:** Designated as a World Heritage Site in 2012.
- **Area & Altitude:** Covers approximately 237.52 sq.km; altitude ranges from 658 to 2383 meters.
- **Water Source:** Nourished by the Kunthipuzha River.
- **Origin of Name:** Called "Silent" due to the absence of cicadas, which produce loud buzzing sounds in many forests.

Vegetation

- Four main types:
  - West Coast tropical evergreen forest
  - Southern sub-tropical broad-leaved hill forest
  - Montane wet temperate forest
  - Grasslands

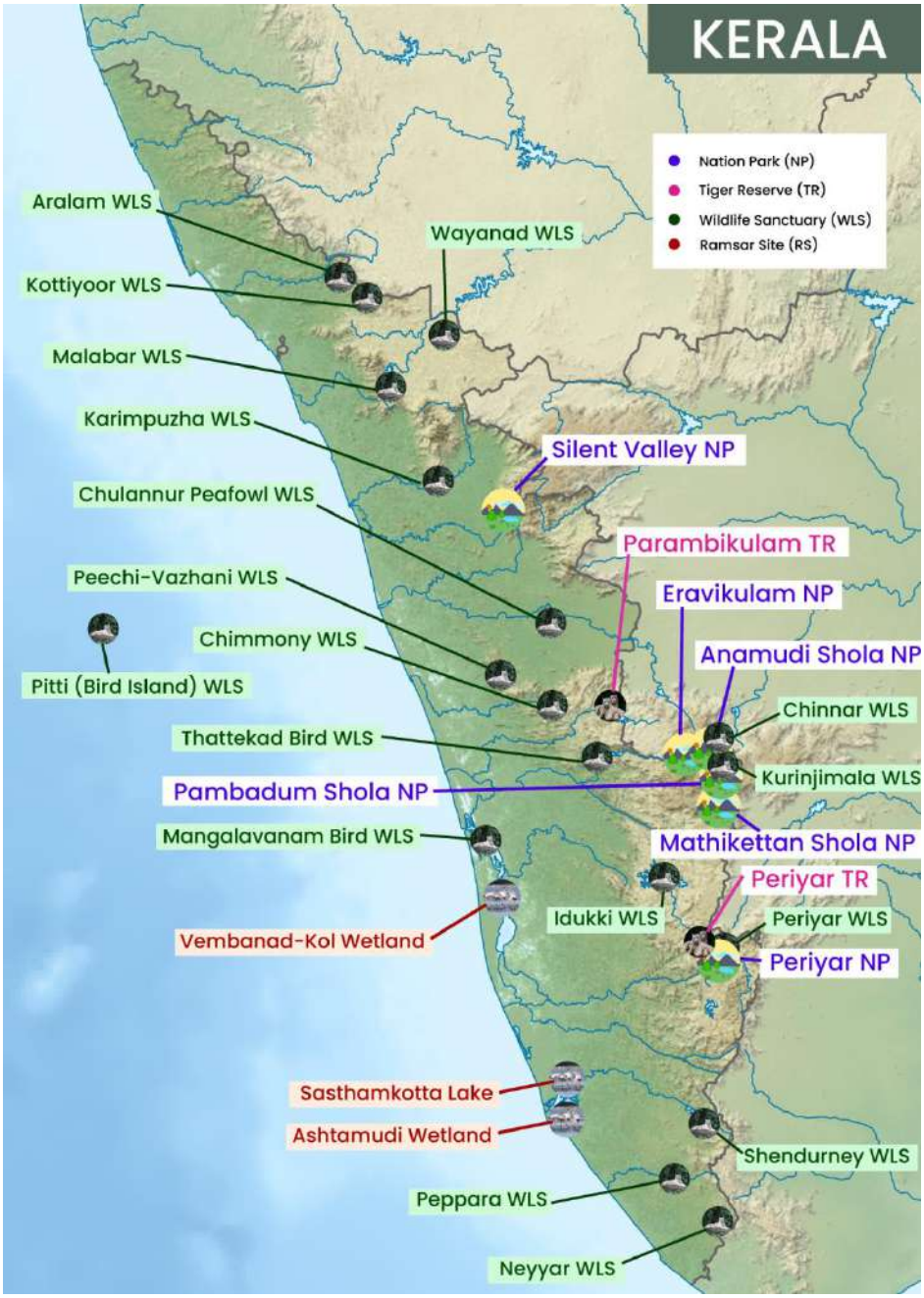
Flora

- **Diversity:**
  - ~1000 species of flowering plants
  - 107 species of orchids
  - 100 ferns and fern allies
  - 200 liverworts
  - 75 lichens
  - ~200 algae
- **Special Features:** Plants with medicinal value and towering Culinea trees.

Fauna

- **Primates:** Lion-tailed macaques (endangered), Nilgiri langur.
- **Other Mammals:** Malabar giant squirrel, Indian elephant, tiger, leopard, gaur (Indian bison).
- **Birds:** Over 200 species including the great Indian hornbill, Nilgiri wood pigeon, and several eagles and owls.

Know more


KERALA
Nation Park (NP)
Tiger Reserve (TR)
Wildlife Sanctuary (WLS)
Ramsar Site (RS)
Aralam WLS
Wayanad WLS
Kottiyoor WLS
Malabar WLS
Karimpuzha WLS
Silent Valley NP
Chulannur Peafowl WLS
Parambikulam TR
Peechi-Vazhani WLS
Eravikulam NP
Chimmony WLS
Anamudi Shola NP
Pitti (Bird Island) WLS
Chinnar WLS
Thattekad Bird WLS
Kurinjimala WLS
Pambadum Shola NP
Mangalavanam Bird WLS
Mathikettan Shola NP
Periyar TR
Idukki WLS
Periyar WLS
Vembanad-Kol Wetland
Periyar NP
Sasthamkotta Lake
Ashtamudi Wetland
Shendurney WLS
Peppara WLS
Neyyar WLS