

8. Short News

1. Frequency Comb

Definition- A specialized laser system that acts like a "ruler" for light, emitting thousands of evenly spaced, discrete light frequencies (like the teeth of a comb).

Nobel Recognition- Its invention earned the 2005 Nobel Prize in Physics.

How it Works- Generated using mode-locked lasers that create ultra-short pulses with extreme stability.

Key Applications

1. Atomic Clocks- Calibrates clocks for ultra-accurate timekeeping.
2. Astronomy- Used to detect exoplanets by measuring tiny wobbles in stars.
3. Physics- Helps measure effects of gravity and motion with high precision.

2. Mount Etna

Status- Europe's most active stratovolcano (steep, conical volcano made of ash and lava layers).

Recent Event- Erupted in December 2025, causing aviation alerts.

Location- East coast of Sicily, Italy, overlooking the Ionian Sea.

Geography- Highest mountain on a Mediterranean island; features craters, lava flows, and the *Valle de Bove*.

Significance- Hosts diverse ecological zones (fertile slopes to barren lava fields). Inscribed on the UNESCO World Heritage List (2013).

3. Gujarat as a 'Tiger State'

Milestone- Regained "Tiger State" status after 33 years following official confirmation by the National Tiger Conservation Authority (NTCA).

Evidence- A tiger was captured on camera traps in Ratanmahal Wildlife Sanctuary (Central Gujarat).

Requirements for Status- Scientific proof of presence (camera traps/pugmarks). Inclusion in the national Tiger Census. Viable habitat (prey base, water, protection).

Unique Feature- Gujarat is now the only state to host three big cats simultaneously- Lion, Tiger, and Leopard.

Future Plan- Developing Ratanmahal into a dedicated Tiger Reserve.

4. Ratanmahal Wildlife Sanctuary

Location- Dahod district, Central Gujarat (near MP border).

Terrain- Rugged hills forming the catchment area of the Panam River.

Vegetation- Dry teak forests, mixed deciduous trees, and bamboo brakes.

Key Wildlife

Sloth Bears- Highest population density in Gujarat.

Leopards- Substantial population present.

Recent Fame- Site of the confirmed tiger sighting that restored Gujarat's status.

5. Regional Level Pollution Response Exercise (RPREX-2025)

Organizer- Conducted by the Indian Coast Guard (ICG) off the Mumbai coast.

Objective- To test readiness for large-scale marine oil spills.

Participants- Multi-agency drill involving ONGC, Mumbai Port, State Forest Dept, and private agencies.

Methodology

Phase 1- Tabletop planning.

Phase 2- Live sea simulation of an oil tanker collision.

Significance- Validates the National Oil Spill Disaster Contingency Plan (NOSDCP). *Note-* The NOSDCP (promulgated in 1996) designates the ICG as the central authority for oil spill response.

6. INS Vaghsheer

Event- President Droupadi Murmu dived onboard, becoming the second President to sail on a submarine (after APJ Abdul Kalam in 2006).

Vessel Type- Scorpene-class submarine (Kalvari-class). It is the 6th and final submarine of the first batch under Project-75.

Commissioned- January 15, 2025.

Builder- Mazagon Dock Shipbuilders Ltd (MDL) with French technology transfer.

Key Features

1. **Stealth-** Extremely low noise and superior hydrodynamics.
2. **Capabilities-** Anti-surface/submarine warfare, intelligence gathering, and mine-laying.
3. **Endurance-** Up to 50 days; diving depth over 350m.

Name Origin- Named after the "Sandfish," a deadly deep-sea predator.

