DAILY CURRENT AFFAIRS 25-04-2025

GS-2

1. **Parens Patriae Doctrine**

GS-3

2. **Sunrise Industry**
3. **Dark Matter**
4. **Labeo uru and Labeo chekida**

Parens Patriae Doctrine

Syllabus: GS-2; Polity

Context

- The **Bombay High Court** recently invoked the **Parens Patriae** doctrine to appoint a daughter as the legal guardian of her **78-year-old mother suffering from severe dementia**.
- The court emphasized the state's duty to protect vulnerable individuals who cannot make decisions for themselves.

Key Aspects of Parens Patriae in India

1. **Constitutional Basis**:
   - Rooted in **Article 41 (Right to Work & Public Assistance)** and **Article 46 (Protection of Weaker Sections)** of the Indian Constitution.
   - Reinforced by **judicial activism** under **Article 32 & 226** (enforcement of fundamental rights).

2. **Judicial Applications**:
   - **Juvenile Justice**: Courts act as guardians for minors in conflict with the law.
   - **Mental Health**: Appointing guardians for individuals with mental illnesses (e.g., **Mental Healthcare Act, 2017**).
   - **Consumer & Environmental Protection**: PILs (Public Interest Litigations) filed under this doctrine (e.g., **M.C. Mehta cases**).
   - **Medical Cases**: Deciding on life support for terminally ill patients.

3. **Recent Trends**:
   - Courts are increasingly using **Parens Patriae** in **elderly care, disability rights, and surrogate decision-making**.
   - The **2023 Maintenance and Welfare of Parents and Senior Citizens (Amendment) Bill** aligns with this doctrine.

Global Significance

- Used in **child custody, human rights, and environmental litigation** worldwide.
- In the **US**, states invoke it in **education, healthcare, and child welfare** cases.

Sunrise Industry

Syllabus: GS-3; Economy

Context

Finance Minister Nirmala Sitharaman recently announced India's plan to boost the **manufacturing sector's contribution to GDP from 12% to 23% over the next two decades**, with **sunrise industries** playing a key role in this growth.

What Are Sunrise Industries?

A **sunrise industry** refers to a **new and fast-growing sector** characterized by:

- **High innovation** (e.g., AI, renewable energy, blockchain)
- **Rapid expansion** with increasing investments and start-ups
- **Potential to disrupt traditional (sunset) industries**

Examples of Sunrise Industries

- **Renewable Energy** (Solar, Wind, Green Hydrogen)
- **Electric Vehicles (EVs) & Battery Tech**
- **Semiconductors & Electronics Manufacturing**
- **Artificial Intelligence (AI) & Robotics**
- **Space Technology & Satellite Communications**
- **Biotechnology & Pharma Innovations**
- **5G & Advanced Telecommunications**

Sunrise vs. Sunset Industries

Aspect	Sunrise Industry	Sunset Industry
Growth	Rapid expansion	Declining demand
Innovation	High-tech solutions	Outdated technology

Aspect	Sunrise Industry	Sunset Industry
Investment	Rising funding	Reduced capital
Example	Electric Vehicles	Fossil Fuel Cars

Lifecycle of a Sunrise Industry

- **Emergence** (Innovation phase – e.g., AI in the 2010s)
- **Growth** (High investment & adoption – e.g., EVs today)
- **Maturity** (Market saturation – e.g., smartphones)
- **Decline (Sunset)** (Replaced by new tech – e.g., CDs replaced by streaming)

India's Focus on Sunrise Sectors

- **Production-Linked Incentive (PLI) Schemes** for electronics, EVs, and semiconductors.
- **Push for Green Energy** (500 GW renewable capacity by 2030).
- **Startup India Initiative** fostering innovation in AI, drones, and biotech.

Future Outlook

- With government support and private investments, **India aims to become a global hub for sunrise industries**, driving job creation and economic growth.

Dark Matter

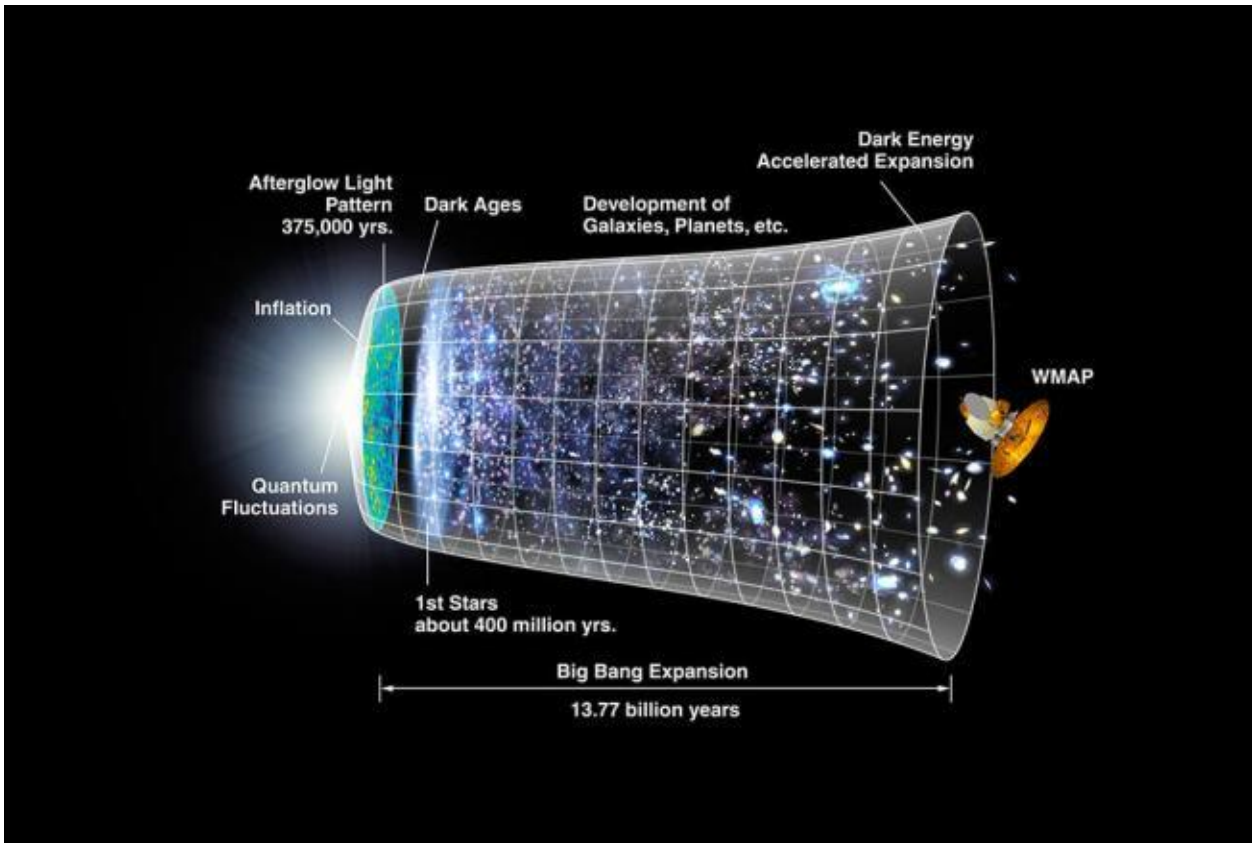
Syllabus: GS-3; Science & Technology

Context

- Latest Discovery: Galaxy NGC 1052-DF2 Challenges Dark Matter Theories

- **Study by Indian Institute of Astrophysics (IIA)**:

- The galaxy **NGC 1052-DF2** (an ultra-diffuse galaxy) appears to **lack dark matter**, defying conventional models where dark matter is crucial for galaxy formation.
  - Observations suggest its mass is almost entirely from **visible matter**, with minimal dark matter influence on stellar motions.



- **Possible Explanations**:
  - Tidal stripping by neighboring galaxies (e.g., NGC 1052) may have removed dark matter.
  - Alternative gravity theories (e.g., MOND) could be reconsidered, though they face other challenges.

Dark Matter Essentials

1. **What It Is**:
    - Invisible, non-luminous matter detectable only via **gravitational effects** (e.g., galaxy rotation curves, gravitational lensing).
    - Composes **~27% of the universe's mass-energy** (vs. 5% visible matter, 68% dark energy).
2. **Role in Cosmology**:
    - Acts as a **cosmic "glue"**, providing the gravitational scaffolding for galaxy formation.
    - Explains anomalies like:
        - Faster-than-expected **galaxy rotation speeds**.
        - **Bullet Cluster** collisions (where mass separates from visible matter).
3. **Leading Candidates**:
    - **WIMPs** (Weakly Interacting Massive Particles): Heavy particles interacting via gravity/weak force.
    - **Axions**: Ultralight hypothetical particles.
    - **MACHOs** (e.g., primordial black holes) – largely ruled out as primary dark matter source.

Dark Energy vs. Dark Matter

Feature	Dark Matter	Dark Energy

Feature	Dark Matter	Dark Energy
% of Universe	27%	68%
Function	Binds galaxies/clusters via gravity	Drives universe's **accelerated expansion**
Interaction	Only gravity (no EM force)	Evenly distributed repulsive "anti-gravity"

Recent Research & Mysteries

- **James Webb Telescope (JWST)**: Observing **early galaxies** that may challenge dark matter models.
- **LUX-ZEPLIN (LZ) Experiment**: Hunting for WIMPs with ultra-sensitive detectors.

- **Debates**:
  - Is dark matter a particle, or do we need modified gravity (e.g., MOND)?
  - Why does NGC 1052-DF2 lack dark matter? Is it an outlier or a clue to new physics?

Why It Matters

- Understanding dark matter is key to explaining **galaxy evolution**, the universe's structure, and its ultimate fate.
- Discoveries like NGC 1052-DF2 push scientists to refine—or rethink—cosmological models.

Ongoing Missions:

- **Euclid Space Telescope** (ESA): Mapping dark matter's distribution.
- **DESI Survey**: Measuring dark energy's influence over time.

Labeo uru and Labeo chekida

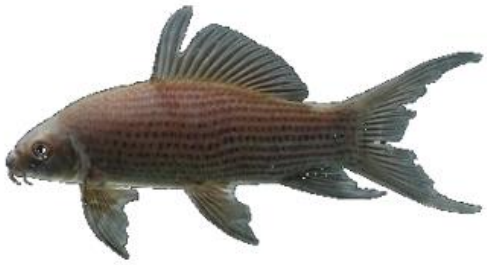
Syllabus: GS-3; Biodiversity

Context

- Scientists from **ICAR-National Bureau of Fish Genetic Resources (NBFGR)** identified the two new species in Kerala's river systems.

Labeo Uru (New species)

Labeo chekida (New species)



Labeo nigrescens (Species reconfirmation)

(Source: doi:10.21077/ijf.2025.72.1.146813-04)
ICAR–NBFGR | https://www.nbfgr.res.in

-

Key Highlights:

1. **Discovery**
    - Scientists from **ICAR-National Bureau of Fish Genetic Resources (NBFGR)** identified the two new species in Kerala's river systems.
    - **Labeo uru** was found in the **Chandragiri River** (Kasaragod district), named for its **sail-like dorsal fin** ("uru" means sail in Malayalam).

- **Labeo chekida** was discovered in the **Chalakkudy River** (Thrissur district), locally called *"kaka chekida"* due to its dark coloration.

2. **Taxonomic Significance**
   - The findings resolve a **150-year-old confusion** over the identity of **Labeo nigrescens** (described in 1870).
   - Genetic and morphological studies confirmed all three (**L. uru, L. chekida, L. nigrescens**) as distinct species.

3. **Unique Features**
   - **Labeo uru**: Larger size, sail-shaped dorsal fin, and unique jaw structure.
   - **Labeo chekida**: Smaller, dark-bodied, with distinct scale patterns.

4. **Ecological Importance**
   - Highlights the **Western Ghats' unexplored freshwater biodiversity** (a UNESCO World Heritage Site).
   - Both species are **endemic** and likely play crucial roles in their river ecosystems.

Conservation Status

- Further studies are needed to assess their population and threats (e.g., habitat loss, dams).
- The discovery underscores the need for **protecting riverine habitats** in the Western Ghats.