1. Short News

Gecko Cyrtodactylus Jayadityai

Context – A team of researchers has discovered a new species of bent-toed gecko Cyrtodactylus jayadityai, from Tripura.

1. Named After Mentor - The researchers named the new species, Cyrtodactylus jayadityai, after their Assam-based herpetologist mentor Jayaditya Purkayastha.
2. Publication - The study describing the new species has been published in the latest edition of the European Journal of Taxonomy, a peer-reviewed international scientific publication.
3. Collaboration - Organizations involved are from Guwahati, Agartala, Mizoram University, and institutions in Meghalaya.
4. Approach - The species was identified through morphological, statistical, and molecular analyses.

About Gecko Cyrtodactylus jayadityai

1. Genetically Distinct - *C. jayadityai* is genetically distinct, showing a divergence of about 4.7-5.2% from its closest relative, *Cyrtodactylus tripuraensis*, based on mitochondrial DNA data.
2. Nocturnal - It is primarily nocturnal, emerging at night to forage and retreating into burrows and crevices during the day.
3. Habitat - It inhabits lowland forest patches
4. Phylogeny - It belongs to *Cyrtodactylus khasiensis* group.
5. Vulnerability Assessment - The researchers categorised the gecko as 'data deficient' due to limited data on its distribution and exposure to habitat disturbance, although it may qualify as threatened upon further assessment.

Significance

1. Driver of Speciation - It highlights the complex biogeography of the Indo-Burmese region, where habitat diversity and geographical isolation continue to drive speciation.
2. Enhancing Biodiversity - The discovery of *C. jayadityai* has increased the number of *Cyrtodactylus* species in the northeast to 31, underscoring the importance of the region as a hotspot for herpetofaunal research and conservation.

About Speciation

1. It is the evolutionary process by which new species are formed from existing ones.
2. Driven by factors like -
    1. Geographical isolation (e.g., mountains, rivers)
    2. Genetic mutations
    3. Natural selection
    4. Environmental differences

State of India's Bats 2024-25

Context – India's first national bat assessment highlights rising threats, data gaps, and urgent need for conservation of ecologically vital bat species across diverse habitats.

About State of India's Bats 2024-25

1. Prepared By - Bat Conservation International (BCI) and the Nature Conservation Foundation (NCF).
2. First National Assessment - A comprehensive study by multiple institutions provides baseline data on ~135 bat species, highlighting conservation priorities.

Key Findings

1. Data Deficiency Concern - Around 35 species remain unassessed or data-deficient, indicating major research gaps.
2. Endemism & Threat Status - Out of ~135 species, 16 are endemic and 7 are IUCN threatened, including critically endangered species.
3. Regional Imbalance in Research - Most studies are concentrated in the Western Ghats, while Northeast, Himalayas, and islands remain understudied.

4. Policy & Research Recommendations - Calls for expanded research, inter-agency coordination, and improved surveillance of zoonotic diseases.
5. Awareness & Perception Shift - Emphasizes correcting stigma post-COVID-19 and recognising bats' ecological importance.

About Bats

Bats are the only flying mammals, playing a crucial role in maintaining ecological balance.

Key Features

1. Physical Traits - Wings formed by skin membranes stretched over elongated fingers.
2. Diet Diversity - Includes fruits, insects, nectar, and small vertebrates.
3. Habitat - Roost in caves, trees, and man-made structures like buildings and monuments.
4. Echolocation - Many species use sound waves for navigation and hunting.
5. Nocturnal Nature - Active mainly during night.

Examples of Indian Bats (IUCN Status)

6. Kolar Leaf-nosed Bat - Hipposideros hypophyllus (Critically Endangered)
7. Salim Ali's Fruit Bat - Latidens salimalii (Endangered)
8. Nicobar Leaf-nosed Bat - Hipposideros nicobarulae (Endangered)
9. Indian Flying Fox - Pteropus giganteus (Least Concern)

Threats to Bat Population

10. Habitat Loss - Urbanisation, deforestation, and land-use changes destroy roosting and feeding grounds.
11. Climate Change & Pollution - Alters ecosystems and affects food availability and survival.
12. Human Persecution - Stigma of disease transmission leads to hunting and extermination.
13. Infrastructure Impact - Renewable energy projects and quarrying disturb habitats.

Challenges in Bat Conservation

14. Research Gaps - Limited scientific data and slow research permissions hinder conservation.
15. Policy Neglect - Bats receive less attention compared to other wildlife species.
16. Public Misconceptions - Negative perception (associated with disease spread) reduces support for conservation efforts.

Bats and Association with Disease

1. Bats evolved around 50 million years ago, with long-term host-virus co-evolution contributing to their ability to harbour viruses without severe illness.
2. Unique traits such as migration, large colonies, mixed-species roosting, long lifespan, and transplacental transmission facilitate viral persistence and spread.

Example -

1. Nipah Virus - Transmitted via contaminated fruits or date palm sap; fruit bats (genus Pteropus) are primary reservoirs.
2. Marburg Virus - Spread by fruit bats (Rousettus); causes severe haemorrhagic fever.
3. Coronaviruses - Found in bats (especially horseshoe bats); cause respiratory diseases and can spill over to humans.

Significance of the Survey

1. Policy Guidance - Provides evidence base for targeted conservation strategies.
2. Ecosystem Importance Recognition - Highlights bats' role in pollination, pest control, and seed dispersal.
3. Preventing Future Risks - Supports better understanding of zoonotic diseases and ecological balance.

AI Governance and Economic Group (AIGEG)

Context - The government has constituted the AI Governance and Economic Group (AIGEG) to provide a coordinated, whole-of-government approach for regulating and promoting Artificial Intelligence in India.

About AI Governance and Economic Group (AIGEG)

1. AIGEG is a high-level inter-ministerial body established as the central institutional mechanism to guide AI governance, policy coordination, and strategic direction in India.
2. Nodal Ministry - It has been constituted by the Ministry of Electronics and Information Technology to operationalise recommendations from AI Governance Guidelines and the Economic Survey.
3. Objective - To ensure a whole-of-government approach by aligning policies across ministries, promoting responsible AI innovation, and addressing labour market disruptions and social stability concerns arising from AI deployment.

Composition -

1. Chaired by the Minister of Electronics and Information Technology, Railways and Information & Broadcasting (Shri Ashwini Vaishnaw)
2. Vice Chairperson - Minister of State, Electronics & IT and Commerce & Industry (Shri Jitin Prasada)
3. Other Members - Principal Scientific Adviser, Chief Economic Adviser, and NITI Aayog representatives, covering domains of science, economy, and security.
4. Operation - It will operate as the apex inter-ministerial body within India's AI governance institutional framework.
1. It is supported by a Technology and Policy Expert Committee (TPEC) for technical and regulatory guidance.

Key Terms of Reference

2. Policy & Governance Framework - Develops a coherent national AI strategy and ensures coordination across ministries, regulators, and institutions through a whole-of-government approach.
3. Ethical & Responsible AI - Promotes safe, transparent, accountable, and inclusive AI systems while addressing risks such as bias, privacy concerns, and misuse.
4. Economic & Regulatory Alignment - Assesses AI's impact on jobs and skilling, and recommends regulatory standards and institutional mechanisms for effective governance.
5. Innovation & Global Engagement - Encourages AI innovation and startups, while tracking global trends, emerging risks, and best practices in AI governance.

Significance

AIGEG strengthens India's AI governance architecture by institutionalising coordination, ensuring ethical and inclusive AI development, and aligning technological advancement with economic and labour realities.

Lanjia Saora Tribe

Context - The Lanjia Saora tribe in Odisha reflects a transition where traditional cultural practices are adapting to modern influences while striving to preserve identity.

About Lanjia Saora Community

1. The Lanjia Saora are a Particularly Vulnerable Tribal Group (PVTG) known for their deep cultural traditions and nature-centric lifestyle.
2. Habitat - They primarily inhabit the forested and hilly regions of Odisha, especially in Rayagada and Gajapati districts of Odisha in the Eastern Ghats.

Distinct Culture

1. Nature-Centric Belief System - Their worldview is closely tied to nature, with rituals reflecting harmony with forests and natural forces.
2. Music and Dance Traditions - Music, drumming, and dance are integral to daily life, rituals, and festivals.
3. Unique Body Adornments - They traditionally wear large metal earrings fixed into stretched earlobes, symbolising identity and endurance.

4. Tattoo Practices - Permanent tattoos with geometric and natural motifs serve spiritual and protective purposes, though younger generations prefer temporary designs.

Threats to the Tribe

5. Cultural Erosion - Modernisation is leading to dilution and modification of traditional practices.
6. Economic Vulnerability - Dependence on shifting cultivation and foraging limits economic security.
7. Habitat Pressure - Deforestation and developmental activities threaten their natural ecosystem.

About Particularly Vulnerable Tribal Groups (PVTGs)

1. PVTGs are the most marginalised section among Scheduled Tribes, identified for their extreme vulnerability and socio-economic backwardness.
2. Criteria for Identification - The government uses the following criteria, established in the 1970s (Dhebar Commission), to define a PVTG -
    1. Pre-agricultural level of technology (e.g., shifting cultivation, hunting/gathering).
    2. Stagnant or declining population growth.
    3. Extremely low literacy rates.
    4. Subsistence-level economy
3. Total PVTGs in India - India has 75 identified PVTG communities across various states and Union Territories.
    1. Odisha has the highest number of PVTGs in India, with 13 communities, including the Lanjia Saora.

Chip Fabrication Plant at SEZ Dholera

Context - India's first semiconductor fabrication plant was established at Dholera SEZ, Gujarat, marking a major step toward domestic chip manufacturing and technological self-reliance.

About Chip Fabrication Plant at SEZ Dholera

1. India's first semiconductor fabrication (fab) facility is being established at the Dholera Special Investment Region as a sector-specific SEZ focused on electronics, IT/ITES, and chip manufacturing.
2. Budget Allocation & Developer - The project is being developed by Tata Semiconductor Manufacturing Private Limited with an estimated investment of ₹91,000 crore, supported by SEZ policy reforms.

Key Features

1. Integrated High-Tech Infrastructure - The SEZ spans over 66 hectares with advanced infrastructure for semiconductor fabrication, electronics manufacturing, and IT-enabled services.
2. Employment & Industrial Scale - The project is expected to generate around 21,000 jobs, boosting high-skilled employment and industrial capacity.
3. Policy Support & Reforms - Enabled by SEZ rule changes such as reduced land requirements, flexible norms, and allowance for domestic sales, making investment more attractive.

Significance

4. Strategic Self-Reliance - Reduces dependence on semiconductor imports and enhances India's position in global supply chains.
5. Economic & Technological Growth - Promotes innovation, strengthens domestic value chains, and supports India's emergence as a global electronics manufacturing hub.
6. Geopolitical Importance - Builds resilience against global disruptions and aligns with India's push for technological sovereignty.

About Semiconductor Fab Unit (Fabrication Plant)

A semiconductor fab is a highly advanced manufacturing facility that produces integrated circuits (chips) and silicon wafers, which are essential components in electronic devices.

Key Features

1. Complex & Time-Intensive Manufacturing - Chip production is a multi-stage process (deposition, photolithography, etching, testing, packaging) that takes over three months and requires nanoscale precision.

2. Clean Room Environment - Fabs operate in ultra-controlled "clean rooms" where dust, temperature, humidity, and vibration are strictly regulated, as even microscopic particles can damage chips.
3. High Capital & Technology Intensive - Setting up a fab requires massive investment ($3–20 billion) with expensive equipment like lasers, robotics, and precision optics, forming the bulk of costs.
4. Wafer-Based Production System - Chips are produced on silicon wafers (100mm–300mm); larger wafers yield more chips, reducing per-unit cost but requiring higher investment and advanced infrastructure.