DAILY CURRENT AFFAIRS 05-11-2024

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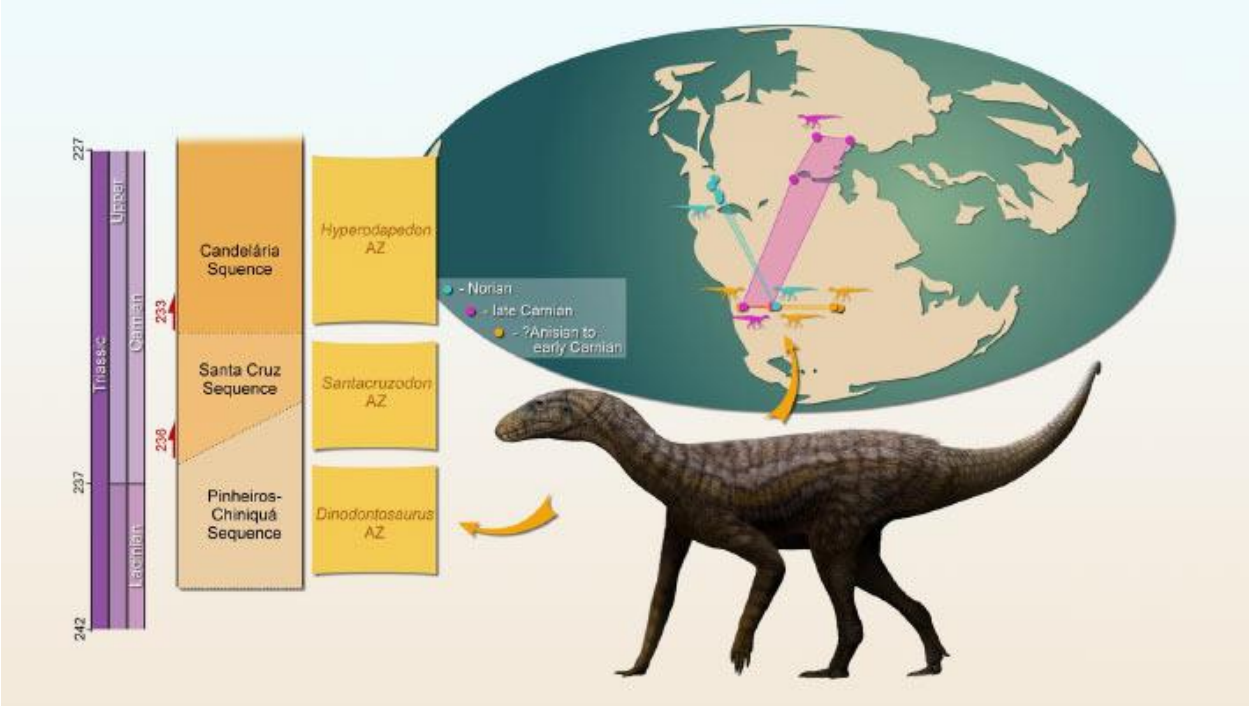
Gondwanax paraisensis

Syllabus: GS-1; Geography- Biodiversity and Evolution

Context

- Scientists in Brazil recently announced the discovery of one of the world's oldest reptile remains.
- They say the bones – dating back to around 237 million years ago – may help explain the rise of the dinosaurs.



About

- **Gondwanax paraisensis** is a significant fossil discovery that sheds light on ancient mammalian life on the supercontinent Gondwana.

Overview

- **Species Name**: Gondwanax paraisensis
- **Type**: Mammal (early mammalian species)
- **Era**: Lived approximately 66 million years ago during the Late Cretaceous period.

- **Location of Discovery**: Fossils were found in Brazil, specifically in the Marília Formation, Paraíso Basin, marking one of the few records of early mammals in South America from that era.

Significance

- **Link to Gondwana**: Named after Gondwana, the ancient supercontinent, highlighting its geographic and evolutionary context.
- **Evolutionary Insights**: This discovery offers clues into the diversity of mammals on Gondwana and contributes to understanding the evolutionary pathways of early mammals before the continents separated.
- **Unique Characteristics**: Gondwanax paraisensis provides insight into the anatomy and lifestyle of early mammals, which were generally small and adapted to specific ecological niches.

Importance for Paleontology and Evolutionary Studies

- **Filling Gaps**: It fills gaps in the fossil record, particularly in Gondwanan landmasses, which have fewer mammalian fossils compared to the Laurasian continents (northern supercontinent).
- **Continental Drift Evidence**: Fossils like Gondwanax support theories of continental drift by showing distinct lineages and species developments on separated landmasses.

What is the Collegium System?

Syllabus: GS-2; Judiciary

Context

- Chief Justice of India D.Y. Chandrachud, who begins his last working week, headed a Supreme Court Collegium which faithfully soldiered on to fill up judicial vacancies while leaving a rash of obvious misses.
- Though the Chandrachud Collegium's resolutions backed online free speech and dignity based on sexual orientation and integrity in judicial appointments in its two years, it did not recommend even a single woman to the top court Bench. This was despite Chief Justice Chandrachud's proclamation that one of the missions of the Collegium was to ensure a diverse court.

About

- The collegium system in India is a unique mechanism used for the appointment and transfer of judges in the Supreme Court and High Courts. It was established through judicial interpretation rather than through legislation or constitutional provision.

What is the Collegium System?

- The collegium system is a judicial mechanism where a group of senior judges, led by the Chief Justice of India (CJI), selects and recommends appointments and transfers of judges in the higher judiciary (Supreme Court and High Courts).
- It aims to maintain judicial independence by reducing executive influence in the appointment process.

Constitutional Basis

- The collegium system has no direct mention in the Constitution of India. It evolved through interpretations of the Constitution by the Supreme Court in various landmark cases.

Evolution through Landmark Judgments

- **First Judges Case (1981)**: The Supreme Court held that the "consultation" with the CJI in judicial appointments does not mean "concurrence." This gave the executive more power in appointments.
- **Second Judges Case (1993)**: The Supreme Court reversed its earlier judgment, establishing that "consultation" indeed meant "concurrence." It introduced the concept of the collegium, giving the judiciary primacy in appointments.
- **Third Judges Case (1998)**: Clarified the collegium structure to include the CJI and the four senior-most judges of the Supreme Court for Supreme Court appointments, and the CJI and two senior-most judges for High Court appointments.

Structure of the Collegium

- For **Supreme Court** appointments: The collegium consists of the Chief Justice of India and the four senior-most Supreme Court judges.
- For **High Court** appointments and transfers: The collegium includes the Chief Justice of India and two senior-most Supreme Court judges.

Functions of the Collegium System

- **Appointment of Judges**: The collegium recommends names for the appointment of judges in the Supreme Court and High Courts.
- **Transfer of Judges**: The collegium is also responsible for transferring High Court judges to other High Courts.
- The recommendations of the collegium are sent to the government, which can either approve or send back the recommendations for reconsideration. If the collegium reiterates its recommendation, the government is obliged to appoint.

Criticisms of the Collegium System

- **Lack of Transparency**: The collegium's decisions are often opaque, with no official criteria or recorded reasons provided.
- **Limited Accountability**: Since it operates behind closed doors, there is minimal public scrutiny.
- **Internal Biases and Nepotism**: Some argue that the collegium system favors certain families and senior judges' preferences, which can undermine merit-based selection.
- **Judicial Overreach**: The collegium system has been criticized as an example of judicial overreach, with the judiciary assuming powers that were not originally intended.

Attempts to Reform the System

- **National Judicial Appointments Commission (NJAC)**: The 99th Constitutional Amendment Act (2014) sought to replace the collegium with the NJAC, a body comprising members from the judiciary, executive, and civil society.
- However, the Supreme Court struck down the NJAC in 2015, ruling it unconstitutional and a violation of judicial independence.

Way Forward

- **Improved Transparency**: Calls for increased transparency in the decision-making process, including recorded reasons for selections and transfers.
- **Balanced Involvement of the Executive**: Suggestions to create a balanced structure where the executive plays a limited but significant role, ensuring both judicial independence and accountability.
- **Merit-Based Selection Process**: Advocates for criteria-based, merit-oriented selection processes to reduce biases.

First science result from Aditya-L1 mission is out

Syllabus: GS-3; Space Technology

Context

- The first science result from the Aditya-L1 mission, India's first scientific mission dedicated to studying the Sun, is out.

Aditya-L1 Mission: India's First Dedicated Solar Study

- India's Aditya-L1 mission, launched by ISRO on September 2, 2023, marks the country's first scientific endeavor dedicated to studying the Sun. The spacecraft is designed to observe solar phenomena and provide critical data on solar activity, particularly coronal mass ejections (CMEs).

Key Payload: Visible Emission Line Coronagraph (VELC)

- **Primary Instrument**: The Visible Emission Line Coronagraph (VELC) is Aditya-L1's main instrument, developed by the Indian Institute of Astrophysics (IIAp), Bengaluru.
- **Unique Capability**: VELC allows scientists to observe CMEs close to the Sun's surface, providing early-stage data on these solar eruptions. Typically, CMEs are observed further away from the Sun's surface.

First Scientific Result: July 16 Coronal Mass Ejection

- **Event Observed**: On July 16, 2023, VELC precisely estimated the onset time of a CME on the Sun.
- **Significance**: CMEs are powerful solar eruptions that can disrupt satellite electronics and Earth-based radio communication systems. Observing them from their early stages provides insights into their origin and helps predict their potential impact.

Understanding Coronal Mass Ejections (CMEs)

- **What are CMEs?**: CMEs are large-scale solar eruptions that release plasma and magnetic fields into space, making them the most powerful explosions in our solar system.
- **Impacts**: CMEs can damage near-Earth satellites and communication networks, making it crucial to study them for space weather forecasting.

Contributions of the Study

- **Precise Observations**: VELC's unique spectroscopic capabilities allowed scientists to study CMEs near the Sun's surface, unlike traditional observations that capture CMEs after they propagate further from the Sun.
- **Key Data**: This study provides thermodynamic insights into the CMEs' source regions, enhancing our understanding of their plasma characteristics.

Research Team and Publication

- **Key Scientists**: The study was conducted by R. Ramesh, V. Muthupriyal, Jagdev Singh, K. Sasikumar Raja, P. Savarimuthu, and Priya Gavshinde.
- **Publication**: Findings from the research are set to be published in the *Astrophysical Journal Letters*.

Mission Context and Future Outlook

- **Solar Cycle Relevance**: With the Sun nearing the peak of its solar cycle 25, CMEs are expected to occur more frequently, amplifying the need for continuous monitoring.
- **Mission Duration**: Aditya-L1, stationed at the L1 Lagrange point between the Earth and the Sun, has a mission life of five years, offering sustained observation of solar phenomena.

Significance for Space Weather Monitoring

- **Space Weather Prediction**: By monitoring CMEs at their origin, VELC provides valuable data that can aid in predicting space weather events.
- **Technological Safeguards**: This research can help protect satellites, communication networks, and other technology from potential damage caused by solar eruptions.

This result from Aditya-L1 underscores India's growing role in solar and space research, enhancing our understanding of the Sun and its impacts on space and terrestrial systems.

Melanistic Tigers

Syllabus: GS-3; Biodiversity

Context

- Recently, A tigress from the Tadoba-Andhari Tiger Reserve, Maharashtra, was sent 800 km away to the Similipal Tiger Reserve so as to diversify the genetic pool of the tiger population in Odisha.

Definition and Appearance:

- Pseudo-melanistic tigers are a rare color variant of Bengal tigers, characterized by a coat that appears predominantly black with white and orange stripes. The stripes are more pronounced, resulting in a blotchy appearance that can look like an inverse of the typical tiger coat.

Historical Context:

- Until the 1700s, pseudo-melanistic tigers were thought to be mythical creatures. One of the earliest pieces of evidence for their existence was a watercolor painting by British artist James Forbes.
- Confirmed sightings and evidence remained scarce until a significant incident in 1970, when a tigress at the Oklahoma City Zoo gave birth to a cub with unusual patterns. This cub was unfortunately killed by its mother shortly after birth. The first concrete evidence came in the 1990s when a rare tiger pelt was confiscated from poachers in New Delhi.
- The most recent sighting of a pseudo-melanistic tiger was reported in 2017-2018 in the Similipal Tiger Reserve, Odisha.

Genetic Basis:

- Pseudo-melanism results from a mutation in the **Taqpep** gene, specifically a missense mutation that changes the amino acid sequence. This genetic alteration causes the tiger's stripes to widen and become darker, leading to the characteristic appearance.
- A 2021 study by the National Centre for Biological Sciences (NCBS), Bengaluru, revealed that the mutation associated with this coloration is unusually prevalent in the Similipal Tiger population, with a high frequency (approximately 60%) of tigers born in this area carrying the mutation.

Population Distribution:

- Most of the pseudo-melanistic tigers are found in the Similipal Tiger Reserve, where at least 13 of the 27 adult tigers identified in the All Odisha Tiger Estimation (AOTE-2023-24) were found to exhibit pseudo-melanism.
- Outside Similipal, the mutation is extremely rare, with the only other known occurrences in captivity, specifically at Nandankanan Zoological Park and Arignar Anna Zoological Park.

Genetic Isolation and Drift:

- The concentration of pseudo-melanistic tigers in Similipal is attributed to genetic isolation, leading to inbreeding in a small founding population. This isolation has resulted in a higher chance of the mutated gene being passed down.
- Genetic drift, a process where allele frequencies in a population can fluctuate due to random sampling, has also contributed to the high prevalence of the Taqpep mutation in this isolated tiger population.

Euthanasia

Syllabus: GS-4; Ethics

Context

- Elon Musk joined thousands of internet users mourning over the euthanasia of Peanut, a popular squirrel seized by New Yorkauthorities, and criticized the Biden government, calling it a "mindless and heartless killing machine".

Definition

- **Euthanasia** refers to the practice of intentionally ending a person's life to relieve them from suffering, typically due to terminal illness or unbearable pain.

Types of Euthanasia

- **Active Euthanasia**: Involves taking direct action to cause a patient's death, such as administering a lethal injection.
- **Passive Euthanasia**: Involves withholding or withdrawing life-sustaining treatments, allowing the patient to die naturally.
- **Voluntary Euthanasia**: Conducted with the consent of the patient.
- **Involuntary Euthanasia**: Performed without the patient's consent, typically viewed as murder.
- **Non-voluntary Euthanasia**: The patient is unable to consent (e.g., in a coma), and a surrogate decision-maker makes the choice.

Legal Status

- The legality of euthanasia varies by country and jurisdiction:
  - **Countries where euthanasia is legal**: The Netherlands, Belgium, Luxembourg, Canada, and certain states in the USA (e.g., Oregon, Washington).
  - **Countries where euthanasia is illegal**: Most countries, including India, where it is categorized under homicide.

Euthanasia in India

- **Legal Status**:

- The Supreme Court of India, in 2018, recognized **'Passive Euthanasia'** as legal under certain conditions, allowing for 'Advance Directives' where a person can request not to be resuscitated in case of terminal illness.
- **Section 309 of IPC**: Previously criminalized attempted suicide, but the recognition of the right to die with dignity has led to debates about the legality of euthanasia.

- **Current Framework**:
  - The Supreme Court's ruling emphasizes the need for a process and safeguards to ensure the decision is voluntary and informed.
  - The **'Advance Medical Directive'** allows individuals to state their wishes regarding end-of-life treatment.

Ethical Considerations

- **Arguments in Favor**:
  - Right to die with dignity and autonomy.
  - Relief from unbearable suffering.
  - Compassionate response to terminal illness.
- **Arguments Against**:
  - Potential for abuse and pressure on vulnerable individuals.
  - Moral and ethical implications of ending life.
  - Slippery slope concerns regarding the criteria for euthanasia.

Key Cases and Debates

- The **Aruna Shanbaug case** (2011) highlighted the need for legal clarity on euthanasia in India.
- Ongoing debates in various forums about extending the rights to include active euthanasia and the ethical implications surrounding it.

Conclusion

- Euthanasia remains a complex issue involving legal, ethical, and moral dimensions.
- It requires careful consideration of individual rights, societal values, and potential implications on healthcare practices.
- The discussion around euthanasia continues to evolve, particularly in the context of human rights and patient autonomy.