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History, Art and Culture

Ancient Tools Unearthed in Aravalli's Mangar Region

Archaeological discoveries in the Mangar area of the ancient Aravalli Range have brought to light prehistoric tools from the Lower Palaeolithic era.

- **Significance of the Finds -** These artifacts, including handaxes and cleavers belonging to the Acheulian cultural phase (200,000 to 500,000 years ago), offer crucial insights into the lives of early human inhabitants of this region.
- **The Aravalli Range: An Ancient Fold Mountain -** The Aravalli Range, one of the world's oldest fold mountain systems, stretches 670 km from Delhi through Haryana and Rajasthan to Gujarat, with its peak at Guru Shikhar.
- **River Origins and Geology -** Several important rivers originate here. Geologically, the range formed during the Proterozoic era and is rich in minerals.
- **Mangar Bani: A Biodiversity Hotspot -** Mangar Bani, near the Delhi-Haryana border, is a significant archaeological site and a sacred grove teeming with diverse flora and fauna.
- **Upper Palaeolithic Cave Paintings -** In addition to the tools, researchers have also discovered cave paintings, likely from the Upper Palaeolithic period, depicting animal and nature motifs, showcasing early human artistic expression.

Election Commission of India (ECI) Launches Unified Digital Platform: ECINET

ECI is set to launch ECINET, a single-point digital platform to streamline electoral services for all stakeholders.

- **ECINET Platform -** Is a user-friendly digital interface designed for electors, election officials, political parties, and civil society, consolidating over 40 existing ECI mobile and web applications.
- **Integration of Existing ECI Apps -** Will integrate and replace prominent ECI apps, including Voter Helpline, Voter Turnout, cVIGIL, Suvidha 2.0, ESMS, Saksham, and KYC App, simplifying access to electoral services.
- **Enhanced User Experience -** With an aesthetic UI and simplified UX, ECINET aims to provide a singular platform for all electoral activities, eliminating the need for multiple app downloads and logins.
- **Accurate and Authoritative Data -** Data on ECINET will be exclusively entered by authorized ECI officials, ensuring maximum accuracy. Statutory forms will remain the primary data source in case of discrepancies.
- **Wide-Reaching Beneficiaries -** ECINET is expected to benefit nearly 100 crore electors and the extensive electoral machinery across India, including BLOs, BLAs, polling officials, AEROs, EROs, and DEOs.

International Relations and Issues

Escalating Tensions and Missile Test

Following a recent terror attack in Pahalgam, tensions between India and Pakistan have risen. Pakistan recently conducted a successful training launch of its Abdali Weapon System.

- **Abdali Missile: Capabilities and Range -** The Abdali is a surface-to-surface ballistic missile with a range of 450 kilometres. The test aimed to evaluate its operational readiness and validate its navigation and manoeuvrability.
- **Ballistic Missile Basics -** Ballistic missiles use projectile motion, powered by a rocket during the initial boost phase. Their flight comprises boost, midcourse (ascent and descent), and terminal (target strike) phases.
- **Historical Naming Convention -** First tested in 2001-02, the Abdali missile is named after the 18th-century Afghan ruler Ahmed Shah Abdali. Pakistan often names its missiles after historical Muslim conquerors.
- **Details of the Recent Launch -** The missile test occurred at the Sonmiani Ranges as part of Exercise INDUS, the specifics of which are not public. It was likely an operational user trial by the Army Strategic Forces Command.
- **Strategic Implications -** The Army Strategic Forces Command, which manages Pakistan’s nuclear-capable missiles, oversaw the test, highlighting the strategic importance of the Abdali system in the current regional context.

Environment

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Leopard Census in Sanjay Gandhi National Park (SGNP) SGNP

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A recent census in has recorded at least 54 leopards, underscoring wildlife coexistence within urbanized Mumbai and the success of conservation efforts.

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SGNP- Located near Borivali, Mumbai, and partly in Thane district, this 103 sq.km. protected area is one of the largest parks globally within city limits.

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Formerly known - as Krishnagiri and Borivali National Park.

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Kanheri Caves - Within SGNP lie the ancient Kanheri caves, carved by Buddhist monks between the 1st and 10th centuries CE. These basalt rock-cut caves served as monasteries, temples, and educational centers, showcasing significant Buddhist art.

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Vital Water Sources - The park also houses two artificial lakes, Tulsi Lake and Vihar Lake.

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Rich Flora and Fauna - SGNP boasts diverse flora, including Teak, Kadamba, and Acacia species. Its fauna includes leopards, sambar deer, hyenas, various civets, porcupines, langurs, macaques, over 250 bird species, and numerous butterflies.

Security

India Boosts Air Defence with Igla-S Missiles

India is recently strengthening its air defence capabilities with the recent acquisition of Russian-origin Igla-S missiles, portable shoulder-fired systems designed to counter low-flying aircraft, drones, and helicopters.

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Emergency Procurement Amidst Threats -The Indian Army received these Very Short Range Air Defence Systems (VSHORADS).

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Igla-S Missile Technology - is a man-portable surface-to-air missile that utilizes infrared homing to track and engage aerial targets by locking onto their engine heat. It is effective against fast, small threats like drones.

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Missile Range and Capabilities - Can engage targets up to 6 km away and at altitudes of 3.5 km. It features improved resistance to enemy countermeasures compared to earlier models.

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Enhancing Operational Readiness - Are vital for the Indian Army's forward deployments, bolstering their ability to counter threats from enemy aircraft and drones. Further procurement of launchers and missiles is also underway.

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Addressing Emerging Drone Threats - The increasing use of drones for reconnaissance and attacks, including those operated by the Pakistan Army, has prompted the Indian Army to implement the Integrated Drone Detection and Interdiction System (IDD&IS) capable of detecting and neutralizing drones at a distance of over 8 km.

Operation Sindoor: Retaliatory Strikes

The Indian Military initiated 'OPERATION SINDOOR' on May 7, 2025, targeting terrorist infrastructure in Pakistan and Pakistan-occupied Jammu & Kashmir. Nine targets were struck.

- **Aimed and Measured Response** - India emphasized that the strikes were aimed, measured, and non-provocative, with no Pakistani military bases targeted. Significant restraint was exercised in target selection and operations.
- **Response to Pahalgam Attack -** These actions follow the deadly Pahalgam terrorist attack on April 22, 2025, where 25 Indian civilians and one Nepalese citizen were killed by Pakistan-based terrorists.
- **Targeting Terrorist Infrastructure** - Nine terrorist infrastructure sites linked to Lashkar-e-Taiba, Jaish-e-Mohammed, and Hizbul Mujahideen were precisely hit in the operation.
- **Government Clarification** - The Indian government clarified that the operation exclusively targeted non-state terror elements, avoiding any Pakistani military installations.
- **Pakistan as a Terror Haven** -The government reiterated its long-standing accusation of Pakistan being a well-documented haven for terrorism, necessitating the retaliatory action.

Science

Semaglutide Shows Promise for Metabolic Dysfunction-Associated Steatohepatitis (MASH).

A recent New England Journal of Medicine study highlights the effectiveness of weekly semaglutide doses in treating MASH.

- **Semaglutide: A GLP-1 Agonist -** Is a GLP-1 receptor agonist, was initially developed for Type 2 diabetes and is the active ingredient in drugs like Ozempic and Wegovy.
- **MASH -** MASH is a severe form of non-alcoholic fatty liver disease characterized by fat buildup, inflammation, and fibrosis, often linked to metabolic issues.
- **Significance of the Research -** This study is crucial as there is currently no approved drug for MASH, making semaglutide a potential breakthrough treatment.
- **Positive Impacts of Semaglutide -** The research demonstrates that semaglutide not only improves liver health but also targets underlying metabolic dysfunctions like insulin resistance and inflammation.
- **Hope for MASH Patients -** These findings offer hope for an additional therapeutic option for individuals with MASH, who are also at risk for cardiovascular, metabolic, and kidney complications, areas where semaglutide has shown benefits.

Saola Genome Successfully Mapped

An international scientific team has recently achieved a significant breakthrough by successfully mapping the genome of the critically endangered Saola using tissue fragments from hunter-collected remains.

- **The Elusive "Asian Unicorn"** - The Saola (Pseudoryx nghetinhensis), a rare large mammal discovered in 1992, is known for its long, parallel horns and white facial markings, earning it the nickname "Asian Unicorn."
- **Listed as** - Critically Endangered by the IUCN.
- **Estimated population of** - Only 50 to 300 individuals, found exclusively in the Annamite Mountains of Vietnam and Laos.
- **Threats to Survival** - The Saola faces severe threats from widespread snaring, illegal hunting, and habitat loss due to agriculture and deforestation, exacerbated by low reproduction rates.
- **Significance of Genome Mapping** - For the first time, scientists mapped the complete saola genome from DNA fragments, compiling data for 26 individuals to gain crucial insights into genetic diversity and conservation.
- **Key Genetic Discoveries** - Revealed two distinct saola genetic groups that split millennia ago due to habitat changes and later faced increased genetic isolation due to human activities, highlighting the importance of combining their gene pools for conservation.

Airglow Captured Over Atacama

Images have captured the faint phenomenon of airglow above the La Silla Observatory in Chile's Atacama Desert, a prime location for astronomical observations.

- **The Science of Airglow** - Airglow is a natural light emission in the upper atmosphere. It occurs when atoms and molecules, energized by the sun's ultraviolet radiation during the day, release this excess energy as faint light at night.
- **Invisible to the Naked Eye** - While constantly present in the night sky, airglow is typically too dim to be seen without specialized, highly sensitive cameras and dark, unpolluted viewing conditions.
- **Similarity to Auroras** - Airglow shares a visual similarity with auroras (the Northern and Southern Lights). However, their origins differ significantly.
- **Different Energy Sources** - Unlike auroras, which are powered by high-energy charged particles from the solar wind interacting with Earth's magnetic field, airglow is solely driven by the regular, daily solar radiation.
- **Importance for Astronomy** - Capturing airglow, particularly in dark sites like the Atacama Desert, is not just visually stunning but also scientifically relevant for astronomical observations, as it forms part of the background light that astronomers must account for.