## INDIA'S BIODIVERSITY: ENVIRONMENT

**NEWS:** Kerala emerges as India's top biodiversity discovery hotspot

### WHAT'S IN THE NEWS?

India had a record-breaking year for biodiversity documentation in 2024, with 683 new faunal and 433 new floral discoveries, prominently led by Kerala due to its rich ecosystems and advanced research efforts. These discoveries highlight India's status as a megadiverse country, emphasizing the critical need to conserve its four biodiversity hotspots facing significant threats.

**India's Biodiversity Documentation: A Record-Breaking Year (2024)**

- **Overall Discoveries:** India documented an unprecedented **683 new faunal (animal) species and subspecies** in 2024, a significant increase from 641 in 2023. This marks the highest number of discoveries in a single year since formal documentation began in 2008.
    - **Globally New Species:** Of these, **459 species are entirely new to science**, meaning they were previously unknown anywhere in the world.
    - **New Records for India:** The remaining **224 species are new records for India**, indicating they were already known globally but identified for the first time within India's geographical boundaries.
- **Leading State for Faunal Discoveries – Kerala:**
    - Kerala secured the top position with **101 new faunal discoveries**.
    - This includes **80 species new to science** and **21 species newly recorded** in India.
- **Other Significant State Contributions (Faunal Discoveries):**
    - **Karnataka:** Documented **82 new discoveries**.
    - **Arunachal Pradesh:** Contributed **72 new discoveries**.
    - **Tamil Nadu:** Recorded **63 new discoveries**.
    - **West Bengal:** Registered **56 new discoveries**.
    - **Meghalaya:** Followed with **42 new discoveries**.
    - **Andaman and Nicobar Islands:** Despite being an archipelago, contributed a notable **43 new faunal entries** (14 new species and 29 new records), reinforcing its status as an endemic wildlife hub.
- **Notable Faunal Discoveries:**
    - **Anguiculus Dicaprioi:** A newly discovered snake species from Himachal Pradesh was named in honor of actor and environmentalist Leonardo DiCaprio, recognizing his significant advocacy for climate change and biodiversity.

- **Herpetological Highlights:** The report also highlighted substantial discoveries in the study of amphibians and reptiles, including:
    - Two entirely new genera.
    - 37 new reptilian species.
    - Five new amphibian species, with one representing a new genus.

**Botanical (Flora) Discoveries (2024 Report by BSI):**

- **Total New Plant Taxa:** The Botanical Survey of India (BSI) reported a substantial **433 new plant taxa**.
- **Kerala Leads in Flora:** Similar to faunal discoveries, Kerala led the count with **58 new plant discoveries**.
- **Composition of New Plant Taxa:** These discoveries encompass a wide range of plant groups:
    - 154 angiosperms (flowering plants)
    - 63 lichens
    - 156 fungi
    - 32 algae
    - 9 microbial species
- **Reinforcing India's Biodiversity Status:** With these additions, India's total documented plant species now stands at **56,177**, solidifying its global significance as a biodiversity hotspot.

**Why Kerala Stands Out in Biodiversity Documentation:**

- **Rich Ecosystems:** Kerala possesses a diverse array of ecosystems, including:
    - The ecologically significant **Western Ghats**.
    - Extensive **coastal wetlands**.
    - Lush **tropical rainforests**. These varied habitats provide fertile grounds for discovering new species.
- **Scientific Approach:** The state's success is directly attributed to:
    - **Targeted Field Surveys:** Systematic and focused expeditions conducted in biodiverse regions.
    - **Advanced Molecular Techniques:** Utilization of modern scientific methods like DNA barcoding, which aids in accurate species identification and differentiation.

- **Systematic Taxonomy Efforts:** Dedicated and organized research by scientists from the Zoological Survey of India (ZSI) and Botanical Survey of India (BSI) in classifying and naming newly found organisms.

**India's Biodiversity Hotspots: A Global Perspective**

- **Megadiverse Nation:** India is recognized as one of the world's **17 megadiverse countries**, signifying its exceptionally rich biological diversity.
- **Concept of Biodiversity Hotspots:** This critical conservation concept, introduced by Norman Myers and further defined by Conservation International, identifies regions of immense biodiversity that are also under significant threat. To qualify as a hotspot, a region must meet two stringent criteria:
    1. **High Endemism:** It must contain at least **1,500 endemic vascular plant species** (meaning these plant species are found nowhere else on Earth).
    2. **Significant Habitat Loss:** It must have lost **70% or more of its original natural vegetation**, indicating a high degree of threat to its biodiversity.
- **Four Globally Recognized Biodiversity Hotspots in India:**
    1. **Himalayas:**
        - **States/Regions Covered:** Jammu & Kashmir, Ladakh, Himachal Pradesh, Uttarakhand, Sikkim, Arunachal Pradesh, Assam.
        - **Key Endemic Species/Ecosystems:** Iconic species like the Snow Leopard, Red Panda, Himalayan Tahr, and unique Rhododendron forests.
    2. **Indo-Burma:**
        - **States/Regions Covered:** Northeast India (excluding Sikkim), Andaman Islands.
        - **Key Endemic Species/Ecosystems:** Home to species such as the Hoolock Gibbon, Golden Langur, Clouded Leopard, and a remarkable diversity of Orchids.
    3. **Western Ghats:**
        - **States/Regions Covered:** Kerala, Tamil Nadu, Karnataka, Goa, Maharashtra, Gujarat.
        - **Key Endemic Species/Ecosystems:** Renowned for species like the Lion-tailed Macaque, Nilgiri Tahr, and Malabar Civet.
    4. **Sundaland:**
        - **States/Regions Covered:** Nicobar Islands (part of a larger Sundaland hotspot that includes Southeast Asian countries).
        - **Key Endemic Species/Ecosystems:** Features unique species such as the Nicobar Megapode, Saltwater Crocodile, and pristine Coral Reefs.

**Importance of Biodiversity Hotspots:**

- **High Endemism:** These regions are crucial because they harbor a vast number of species that are **found exclusively within their boundaries**, making them irreplaceable.
- **Ecological Services:** They provide indispensable "ecosystem services" vital for human well-being and planetary health, including:
    - Regulation of water cycles.
    - Prevention of soil erosion.
    - Buffering against climate extremes (e.g., absorbing carbon dioxide).
- **Cultural Significance:** Beyond ecological value, these hotspots hold deep cultural importance for indigenous communities, who often depend on these ecosystems for their livelihoods, traditional knowledge, and heritage.
- **Global Conservation Priority:** Despite covering only a mere **2.3% of Earth's land surface**, these hotspots collectively support **over 50% of the world's endemic plant species**, highlighting their critical role in global conservation efforts.

**Threats to India's Biodiversity Hotspots:**

- **Deforestation & Habitat Fragmentation:** The conversion of forests and natural areas for agriculture, urban expansion, and industrial development leads to loss and breaking up of habitats.
- **Climate Change & Glacial Retreat:** Rising temperatures, altered rainfall patterns, and melting glaciers directly impact species distributions, ecological processes, and habitat viability.
- **Poaching & Illegal Wildlife Trade:** Illegal hunting and trafficking of endangered species for their parts or as pets pose a direct and severe threat to numerous populations.
- **Infrastructure Development & Mining:** Large-scale projects such as roads, dams, and mining operations often lead to significant habitat destruction and disruption of ecological corridors.
- **Invasive Species & Agricultural Expansion:** The introduction of non-native species can outcompete native flora and fauna, while expanding agricultural frontiers consume natural habitats.

**Conservation Efforts in India:**

- **Protected Areas Network:** Establishment and management of:
    - **National Parks:** Areas designated for the protection of wildlife and biodiversity.
    - **Wildlife Sanctuaries:** Areas designated for the protection of specific animal species or habitats.

    - **Biosphere Reserves:** Internationally recognized areas aiming to reconcile biodiversity conservation with sustainable use.

- **Legislation:** Enactment of strong legal frameworks to protect biodiversity:
    - **Wildlife Protection Act (1972):** Provides for the protection of wild animals, birds, and plants, and for matters connected therewith or ancillary or incidental thereto.
    - **Biological Diversity Act (2002):** Aims to conserve biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits arising out of the use of biological resources.
- **Community-Based Conservation:** Promoting local community involvement in conservation:
    - **Sacred Groves:** Traditional forest patches protected by local communities due to religious or cultural beliefs.
    - **Joint Forest Management (JFM):** Programs where local communities and forest departments collaborate in the management and protection of forests.
- **Global Commitments:** India's active participation in international agreements and initiatives:
    - **Convention on Biological Diversity (CBD):** An international treaty to conserve biodiversity, promote sustainable use, and ensure fair and equitable sharing of benefits.
    - **Sustainable Development Goal 15 (Life on Land):** Part of the UN's SDGs, aiming to protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and biodiversity loss.

**Source:** **https://www.downtoearth.org.in/wildlife-biodiversity/kerala-emerges-as-indias-top-biodiversity-discovery-hotspot#google_vignette**