

Telangana Biodiversity

Vol. 6 Issue 2

Apr-Jun, 2025

A Newsletter of Centre for Biodiversity and Conservation Studies, Osmania University

Editorial

Wildlife conservation today is as much about genetic analysis and data models as it is about forests and field boots. Molecular tools and techniques have revolutionized the way we study and protect species, offering insights that were once impossible to obtain. DNA barcoding helps identify cryptic species, genetic analysis reveals population health and connectivity, stable isotope studies trace animal movements and diets, while camera trap data and satellite telemetry feed into predictive models for habitat use and threats.

In India, such tools have uncovered new species, monitored elusive animals, and guided critical decisions in disease surveillance. Molecular forensics has helped in tackling wildlife crime, allowing authorities to trace seized animal products back to their species and even geographic origin. Non-invasive techniques like collecting shed hair, feathers, or scat have made it possible to gather genetic data without disturbing the animal.

From the conservation of tigers to the study of amphibians threatened by fungal infections, the role of molecular tools and techniques is growing ever more vital. As threats become more complex — from habitat fragmentation to climate change — interdisciplinary collaboration in conservation is not just helpful, it's essential. Embracing this blend of fieldwork and labwork, ensures that efforts for wildlife conservation are informed, efficient, and impactful for the long term.



Photo: Nidia Dias

Briefly

Genetic identification of carnivores at livestock kill-sites

The use of genetic tools and techniques has recently found a novel application in the management of human-wildlife negative interactions. An extensive study conducted by the National Centre for Biological Sciences, in collaboration with Panthera and the Forest Department of Madhya Pradesh has presented a way of using trace DNA of large carnivores left at livestock kill-sites to accurately identify the individual carnivore involved. It is a promising way to reliably establish cases of livestock depredation by carnivores, identify the individual animal, while also allowing for the study of predator behaviour and ecology. If successfully put into practice, this method of genetic identification can provide a better alternative to simple translocation of the carnivore, avoiding misidentification and disturbance to local carnivore populations. As part of the study, researchers investigated 198 kill-sites across Kanha and Bandhavgarh Tiger Reserves. Using Single Nucleotide Polymorphisms (SNPs) analysis, tigers were successfully identified at 85% of kill-sites. The study is a significant contribution to evidence-based management of human-wildlife interactions.

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Courtesy: Gaurav Lele



Special Feature

Kalakad Mundanthurai Tiger Reserve

Kalakad Mundanthurai Tiger Reserve (KMTR) is a vast and ecologically rich protected area located in the southern Western Ghats of Tamil Nadu, India. Spanning approximately 895 square kilometers, it is the second-largest protected area in the state and forms a crucial part of the Agasthyamalai Biosphere Reserve. It was established in 1988 by merging the Kalakad and Mundanthurai Wildlife Sanctuaries and was declared a Tiger Reserve to protect the population of Bengal tigers in the region. KMTR comprises of a diverse range of habitats, including tropical evergreen forests, moist deciduous forests, dry decid-

-uous forests, thorn forests and grasslands. The reserve's altitude varies from 40 to 1,866 meters above sea level, encompassing various ecosystems that support a wide range of flora and fauna. According to the National Tiger Conservation Authority (NTCA), KMTR along with the Periyar Tiger Reserve in Kerala form a critical wildlife corridor; the reserves form the southernmost tiger ranges of the Western Ghats.

The Kalakad Mundanthurai Tiger Reserve hosts a rich assemblage of biodiversity. The floral diversity of the reserve includes trees, orchids, grasses and medicinal species as well. Around 448 endemic speci-

-es of angiosperms are recorded here. The faunal diversity is rich, with around 84 threatened species making their home in KMTR. Key mammals found here include the Bengal Tiger, Indian Elephant, Leopard, Dhole, Sloth bear, and Nilgiri Langur. The Lion-tailed Macaque, an endangered primate, also finds sanctuary here. Avian diversity is equally impressive, with species like the Great Hornbill, Malabar Pied Hornbill, and various endemic laughingthrushes. The reserve is a significant birding hotspot, especially for migratory species during the winter months.



Courtesy: Lakes of India

The reserve is a critical watershed area and plays a pivotal role in climate regulation and water conservation in the region. Notably, around 14 rivers originate from KMTR including the Tamirabarani, Manimuthar, and Ramanathi Rivers, which are essential for the water security of southern Tamil Nadu, supporting wildlife, agriculture and human consumption. The Manimuthar and Karaiyar dams within the reserve help in irrigation and hydroelectric power generation, though they have taken up vital natural spaces for construction and functioning.

Conservation efforts at KMTR focus on protecting the tiger population and its habitat. Anti-poaching measures, community engagement programs, and

habitat restoration projects are actively undertaken. The Ashoka Trust for Research in Ecology and the Environment (ATREE) have implemented a community conservation program in KMTR, to increase their awareness of the value of biodiversity and decrease their dependency on fuel wood from the forests.

KMTR's ecological richness and diversity make it an invaluable part of India's natural heritage. However, the reserve faces challenges such as habitat fragmentation, a low tiger population, and human-wildlife conflict. Strengthening community involvement and coexistence are essential here, just as in other regions of the Western Ghats, to ensure the long-term conservation of this biodiverse landscape.

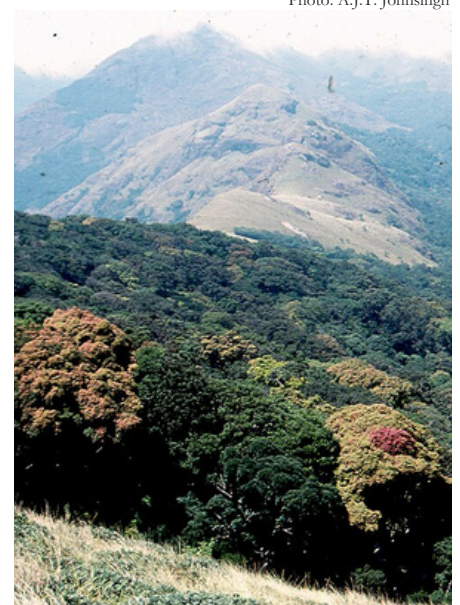


Photo: A.J.T. Johnsingh

Threatened Taxa

Plant - *Dimeria orrisae* Bor



Photo: Dhatchanamoorthy et al. 2020

Taxonomy Order Poales; Family Poaceae.

Geographic Range Endemic to India; distributed in Odisha and Telangana State.

State Distribution Very rare; found only in Mancherial, Medak, and Wanaparthy districts.

Population Nothing is known about its population status or trends.

Habitat & Ecology Grass species, found in grassy patches in dry deciduous forests.

Major Threats Threatened due to habitat loss and destruction, livestock grazing, and forest fires.

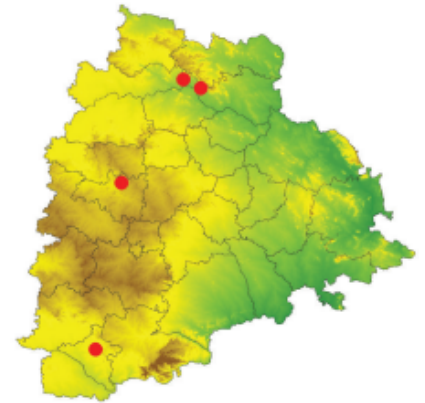
Use & Trade The species is not in trade.

Conservation Measures No species-specific conservation measures are in place. This species is reported from Kawal Tiger Reserve.

Remarks

This species is found in dry deciduous forests. It occurs in Kawal TR. It is threatened by habitat destruction, livestock grazing, and forest fires. The estimated number of localities is 4; the estimated extent of occurrence (EOO) in Telangana State is <20,000 km², and the area of occupancy (AOO) is <100 km². There is an inferred continuing decline in the area, extent, and quality of suitable habitat. At the global level, this species has not been assessed. In Telangana State, this species is assessed as Vulnerable, with the criteria B1ab(iii)+2ab(iii).

Distribution in Telangana State



Animal - *Platycephalus bholanathi* (Sharma, 1976)



Photo: Adithya Vattam

Taxonomy Class Reptilia; Order Squamata; Family Colubridae.

Geographic Range Endemic to India; being known from Andhra Pradesh and Telangana State.

State Distribution Occasional; known from Nalgonda, Medchal-Malkajgiri, Rangareddy, Sangareddy, Hyderabad, and Kamareddy districts.

Population Nothing is known about its population status and trends. Known from many localities in Telangana State.

Habitat & Ecology Diurnal found in dry deciduous forests, and also in mosaic habitat comprising of agriculture land, scrubland, human habitation, grasslands, and rocky outcrops. Both the localities where this species has been recorded has been recorded are highly disturbed areas.

Major Threats Threatened due to human apathy and killed at sight and due to decline in prey species availability.

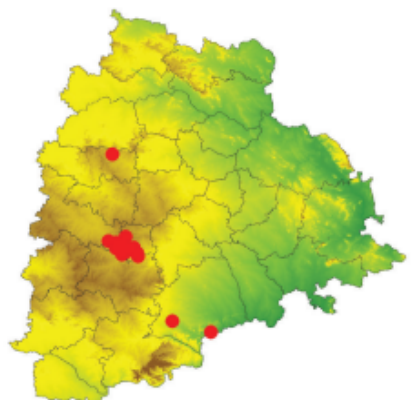
Use & Trade This species is not in trade.

Conservation Measures This species is not known from any protected areas of the State. It is included under Schedule IV of the Wildlife (Protection) Act, 1972.

Remarks

This taxon is found both in dry scrubland, agriculture habitat and human dwellings interspersed with rocky outcrops. It is not known from any protected area in Telangana State. It is threatened by general human apathy. It is occasional and is known from many locations. The estimated extent of occurrence (EOO) in Telangana State is <20000 km², and the area of occupancy (AOO) is <500 km². At the global level, this species has been assessed as Data Deficient. In Telangana State, this species is assessed as Vulnerable, with the criteria B1b(iii).

Distribution in Telangana State



Pioneers in Conservation

Padma Shri Daripalli Ramaiah

Daripalli Ramaiah hails from the village of Reddypalle, Telangana State. Ramaiah's deep connection with nature began early in life, inspired by his mother who used to tell him about the importance of trees and shade in rural life.

What sets him apart is his tireless and self-funded commitment to tree planting. Over the decades, he has planted and nurtured more than 1 crore (10 million) saplings, including banyan, peepal, neem, tamarind, and fruit-bearing trees, particularly favouring native and drought-resistant species. He additionally, set aside 3-acres of his farmland to only grow and nurture plants. His method is as humble as it is effective — travelling on his bicycle, pockets and bags filled with seeds, he sows them in barren lands, along roadsides, and in deforested patches, often digging the soil himself. Ramaiah is not just a tree planter but also a seed preserver and environmental educator. According to locals, Ramaiah would go around the village with a green board tied around him, that read “Vriksho Rakshati Rakshitaha” — if you protect trees, they will protect you. His philosophy was rooted in simplic-



Photo: President's Secretariat

ity and responsibility. His efforts contributed greatly to the “Telangana ku Haritha Haram” state government program. His grassroots conservation efforts have earned him numerous recognitions, including the prestigious Padma Shri in 2017 in the field of environmental conservation. Ramaiah passed away on the 13th of April, 2025 following a cardiac arrest. Condolences poured in from across the country, in recognition of his extraordinary contributions to environmental conservation.

Environment Education

Rock Outcrops - Significant, Yet Overlooked Ecosystems

Rock outcrops are lesser-known and often overlooked habitats. These unique ecosystems are characterized by large rocky areas exposed above the ground, including inselbergs, koppjes, lateritic plateaus, granite outcrops, and rock boulders. Due to their perceived barrenness and a lack of awareness about their significance, they are often wrongly classified under the Wasteland Atlas of India. For instance, rock outcrops are commonly seen in and around Hyderabad, but they are rarely recognized as distinct ecosystems, instead being treated as barren rocky lands. Rock outcrops hold immense evolutionary importance due to the unique assemblage of species found here. Isolated from their surroundings and exposed to harsh climatic conditions, these rugged landscapes have shaped the evolution of species that are highly specialized and uniquely adapted. Rock outcrops are also essential for maintaining local biodiversity. They serve as critical refuges for endemic species that cannot thrive elsewhere and act as stepping stones for animal movement across fragmented habitats. In urban areas like the city of Hyderabad, where natural habitats are under constant threat, protecting these rock outcrops becomes crucial for conserving biodiversity. Raising awareness about their ecological value is vital to their conservation.



Courtesy: Uniquely Telangana

Nature for Kids

Rays - Graceful Gliders of the Sea

Imagine gliding through the water like a bird soaring through the sky—that's how rays move! These fascinating creatures are related to sharks, belonging to a group of fish called elasmobranchs. Rays have flattened bodies, wide fins that look like wings, and long, thin tails. Some species even have stingers on their tails, like the stingray, while others, like the manta ray, are completely harmless.

In India, around 68 species of rays have been identified. They are especially spotted in places like the Gulf of Mannar and the Sundarbans. They come in various shapes and sizes—from the tiny blue-spotted ribbontail ray (*Taeniura lymma*) to the giant oceanic manta ray (*Mobula birostris*).

One of the coolest things about rays is the way they move. Their wing-like fins wave gracefully, making them look like they're flying underwater. Some rays, like the eagle ray, can even leap out of the water! Most rays are bottom-dwellers – meaning they are often found resting on the seafloor. They feed on small fish, crustaceans, and molluscs, which they crush with their powerful jaws. Manta rays, on the other hand, are gentle filter-feeders – they glide through the water with their mouths wide open, gulping down tiny plankton.

Rays along with sharks are one of the most threatened marine animals. They face threats from overfishing and habitat loss. Rays are often caught accidentally in fishing nets, and some species are fished and sold for their gill plates and meat. Did you know that, of the 68 species of rays found in India, 38 species are close to extinction!? This gives you an idea of the level of dangers these graceful fish face. Several researchers and conservationists are working towards protecting rays and their habitats by educating people about their importance in the ocean ecosystem and working with the help of local fishing communities. The next time you think of the ocean, remember these graceful gliders and their role in keeping the underwater world balanced!



Photo: Mario Bassini



Photo: Alicia Christman

Our Biodiversity

Moths of Telangana State

Moths are a diverse group of insects belonging to the order Lepidoptera, which also includes butterflies and skippers. While often overshadowed by the more colorful butterflies, moths display an incredible array of patterns, body colorations, and sizes, ranging from tiny micro-moths to the impressively large Atlas moth (*Attacus atlas*). Contrary to popular belief, moths are no less important than butterflies when it comes to their ecological roles.

India is estimated to harbour approximately 12,000 species of moths, though only about 700 species have been formally documented so far. The state of Telangana in particular, is home to a remarkable 201 species. Moths are primarily nocturnal, although a few species exhibit diurnal activity. During the night, they take on the role of pollinators, facilitating the reproduction of many night-blooming flowers such as the Brahma Kamal (*Saussurea obvallata*).

The ecological importance of moths goes beyond pollination. Their larvae are typically detritus feeders, playing a vital role in decomposing organic matter, recycling nutrients back into the soil and contributing to soil health. Additionally, moths are a key link in the food web, providing sustenance to a wide range of predators including bats, birds, amphibians, and small mammals. The death's-head hawkmoth (*Acherontia styx*), for instance, is a known prey for several bat species.

However, moth populations in India and across the world, are facing severe threats. Habitat loss, pesticide use, and increasing light pollution are among the most pressing challenges. According to one study, light pollution can disrupt larval development and interfere with their nocturnal behaviour. Insecticide exposure further diminishes their populations, weakening the ecosystem services they provide. The decline of moths also affects the animal groups dependent on them. Protecting moth populations requires reducing artificial lighting, especially in rural and forested areas, and adopting pollinator-friendly agricultural practices. Raising awareness about the ecological roles of moths can change public perceptions, highlighting that these often-overlooked insects are essential to maintaining healthy ecosystems.



Photo: Nanda Kumar



Photo: Nanda Kumar

Feature - Flora

Teak - *Tectona grandis* L.f.

Classification

Kingdom: Plantae
Division: Magnoliophyta
Class: Magnoliopsida
Order: Lamiales
Family: Lamiaceae
Genus: *Tectona*
Species: *grandis*
Authority: L.f.



Tectona grandis, commonly known as Teak, is a large deciduous tree native to tropical forests. In Telugu, it is called "Sega". Teak trees can grow up to 40 meters tall, with a straight trunk and wide-spreading branches. The leaves are large, rough, and leathery. The flowers are small, white and fragrant, blooming in clusters. It is native to the regions of India, Myanmar, Thailand, and Laos. Outside of this native range, teak has been introduced and cultivated in various tropical regions. In India, it is predominantly found in the central and southern states, where it is a key species in dry deciduous forests. The wood of *Tectona grandis* is renowned for its durability and resistance to termites and water, making it a prime choice for furniture and construction. Its high natural oil content gives it a golden-brown sheen and the ability to withstand harsh weather conditions.

Photo: Ping An Chang

Feature - Fauna

Grey Slender Loris - *Loris lydekkerianus* Cabrera, 1908

Classification

Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

Order: Primates

Family: Strepsirrhini

Genus: *Loris*

Species: *lydekkerianus*

Authority: Cabrera, 1908



Loris lydekkerianus, commonly known as the Grey Slender Loris, is a small, nocturnal primate belonging to the family Lorisidae. In Telugu, it is locally known as "Devanga Pilli". These primates are found primarily in southern India and Sri Lanka. They are characterized by their slender bodies, large round eyes, and long, thin limbs. Their fur is typically grey to light brown, and they possess a distinctive narrow face with a pointed snout. It typically inhabits dry deciduous, scrub, and tropical rainforests, often seen moving cautiously through the branches at night. *Loris lydekkerianus* is insectivorous, feeding on insects, small vertebrates, and occasionally fruits and flowers. Their large eyes enable them to see well in low light, making them effective night hunters. They have slow, deliberate movements to avoid detection by predators.

Photo: Kalyan Varma

Events

Bat Walk conducted by CBCS, OU



Courtesy: Internet Resource

On April 27, 2025, the Centre for Biodiversity and Conservation Studies (CBCS) at Osmania University organized a community awareness session on bats, followed by a bat walk. Prof. Chelmala Srinivasulu, Director of CBCS, delivered an insightful talk on bat behaviour, highlighting the species commonly found in Hyderabad. Joining him were Dr. Bhargavi Srinivasulu and Dr. Aditya Srinivasulu, who discussed the echolocating behaviour of bats, demonstrated the use of bat detectors, and explained how the calls of different species are visualized. Following the session, a night walk was conducted around the campus through Oxygen Park, Osmania University. During the walk, the participants were guided and led to successfully identify seven species of bats, adding to the enthusiasm and awareness of urban wildlife. The walk also provided participants with an opportunity to nurture their curiosity and engage in discussions about the evolution of bats, their habits and habitats, and how these small mammals adeptly navigate through urban spaces.

News

New additions to India's biodiversity in 2024



Photo: Zeeshan Mirza

A detailed report of new discoveries and new records of both floral and faunal species added to India's biodiversity was released by Union Minister for Environment Forest and Climate Change Bhupendar Yadav on 30th June 2025. India's faunal diversity was increased by 683 new species, of which 459 were new discoveries and 224 were new records for the country. For the floral diversity, 433 taxa were added, consisting of 410 species and 23 infra-specific taxa. Maximum number of new faunal and floral species discovered came from the state of Kerala. The states of Karnataka, Arunachal Pradesh, and Tamil Nadu followed for faunal diversity and Maharashtra and Uttarakhand followed for floral diversity. Among the significant species of fauna discovered in 2024 were 5 species of amphibians and 37 species of reptiles including *Dravidoseps goensis* and *Anguiculus dicaprioi*. Significant floral discoveries included orchid species *Bulbophyllum gopalanum*, *Coelogyne tripurensis*, *Gastrodia indica* and *Gastrodia sikkimensis*.

Signing Off

Bat organoids & cell-lines to combat zoonotic disease

Bats are one of the major animal groups to be implicated in the spread of zoonotic diseases, including the recent disastrous Covid-19 pandemic. Recently, an international team of researchers has published a study involving the creation of bat organoids of five insect-eating bat species from Asia and Europe. Exposing these organoids to known viruses that bats commonly harbour has provided crucial insights. For example, the study revealed that SARS-CoV-2 could not infect any of the bat respiratory tissues unless the human gene TMPRSS2 was introduced. Similarly, another independent study has developed immortalised bat cell lines from the organs of *Carollia perspicillata* (Seba's short-tailed bat). This will allow high-throughput testing of the mechanisms of infection that the viruses employ and the immune responses they trigger. Given our increased susceptibility to the spread of zoonotic diseases caused by mounting environmental pressures, tools for prevention and preparedness become highly essential. For a country like India, biotechnological tools like bat organoids and cultured cell lines can greatly boost our knowledge about native bat biology and potential viruses, while also supporting effective disease monitoring and management.



Photo: David. V. Raju

We hope you have enjoyed this issue... If you wish to share any information, please do not hesitate to contact us.



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