

Telangana Biodiversity

Vol. 4 Issue 3

July-Sept, 2023

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

Editorial

The third quarter of 2023 highlighted critical strides and challenges in biodiversity conservation. India's announcement of a record 3,682 wild tigers—a 24% increase since 2018—is a testament to Project Tiger's 50-year legacy. This success, driven by habitat protection and anti-poaching efforts, proves sustained action can reverse species decline. Yet, habitat fragmentation in regions like the Western Ghats and rising human-wildlife conflicts underscore the need for adaptive strategies that balance conservation with community needs. Globally, the launch of the Global Biodiversity Framework Fund (GBFF) at August's GEF Assembly offered hope, prioritizing Indigenous-led initiatives and vulnerable nations. However, India's catastrophic monsoon floods—linked to climate change—served as a grim reminder of intertwined ecological crises. Over 300 lives were lost, and Himalayan ecosystems suffered irreversible damage, exposing gaps in climate adaptation planning. The UN's September Global Stocktake reinforced the urgency: current efforts remain inadequate to limit warming to 1.5°C. India's dual identity—a conservation leader and climate-vulnerable nation—mirrors this global paradox. While Project Tiger and the GBFF exemplify collaborative success, scaling solutions demands greater political will, funding, and integration of climate resilience into biodiversity policies. The path forward requires bridging ecological and socio-economic priorities. Protecting biodiversity is not a standalone goal but a cornerstone of climate action and human well-being. As threats escalate, the world must choose: accelerate inclusive, science-driven strategies or risk irreversible losses. The time for half-measures is over.



Photo Courtesy: Press Trust of India

Briefly

India's Tiger Population Reaches Record High

India's Project Tiger, launched in 1973, marks a historic conservation triumph, with the 2022 All India Tiger Estimation reporting 3,682 wild tigers—a 24% surge from 2,967 in 2018. This growth reflects decades of habitat protection, anti-poaching efforts, and community engagement across 53 reserves, revitalizing ecosystems like the Sundarbans and Central India. Achieving the global goal to double tiger populations by 2022 ahead of schedule, India has solidified its role as a global conservation leader. Yet challenges loom. Habitat fragmentation from infrastructure and deforestation disrupts wildlife corridors, notably in the Western Ghats and Northeast India. Expanding tiger populations also escalate human-wildlife conflicts, endangering communities and animals alike. Climate change compounds these threats, altering habitats and prey availability. While Project Tiger's success is monumental, addressing these issues requires urgent action: restoring ecological corridors, deploying conflict mitigation measures, and adopting policies that balance ecological health with local livelihoods. Sustaining progress demands increased funding, interdisciplinary collaboration, and adaptive strategies to secure tigers' future amid rapid environmental shifts. The initiative's legacy hinges on integrating conservation with sustainable development, ensuring India's tigers thrive.

Contents

Editorial	1
Briefly	1
Special Feature	2
Threatened Taxa	3
Pioneers in Conservation	4
Environment Education	4
Nature for Kids	5
Our Biodiversity	5
Feature - Flora	6
Feature - Fauna	7
Events	8
News	8
Signing Off	8

Editorial Board

Chief Patron

Prof. D. Ravinder

(Vice-Chancellor, Osmania University)

Editor-in-Chief

Dr. Chelmala Srinivasulu

^{Ph.D., FZS}
(Director, Centre for Biodiversity and Conservation Studies, Osmania University)

Editorial Team

Sri Kalicharan S. Khartade

(Secretary, Telangana State Biodiversity Board)

Dr. Bhargavi

(PDF, Department of Zoology, Osmania University)

Ms. Farida Tampil

(State Director, WWF-India Hyd. Office)

Dr. C. Sudhakar Reddy

(NRSC-ISRO, Hyderabad)

Article Editor

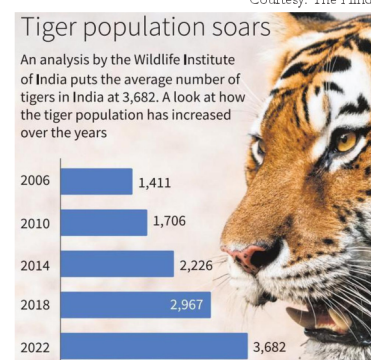
Ms. Vyshnavee Sneha

(Intern, Centre for Biodiversity and Conservation Studies, Osmania University)

Email

biodiversityclub@osmania.ac.in

Courtesy: The Hindu



Special Feature

Kakatiya Zoological Park

Kakatiya Zoological Park, situated in the historic city of Warangal, Telangana, stands as a testament to wildlife conservation and environmental education. Established in 1972 and spanning 121 acres of carefully planned landscape, this zoological park carries forward the legacy of the Kakatiya dynasty while serving as a crucial center for wildlife preservation and public awareness.

Under the stewardship of the Telangana Forest Department, the park has evolved into one of the state's premier wildlife facilities, distinguished by its commitment to creating naturalistic habitats that closely mirror the animals' native environments. This approach not only ensures the well-being of the resident species but also prov-

-ides visitors with authentic insights into wildlife behavior and ecosystems.

The park's role in environmental education is particularly noteworthy, as it serves as a living classroom for students and nature enthusiasts. Through structured educational programs, the zoo staff conducts regular workshops and guided tours that illuminate the complexities of wildlife conservation, ecosystem interdependence, and environmental sustainability. These programs are specifically designed to foster a deep appreciation for biodiversity among young learners, helping create the next generation of conservation advocates.

Housing an impressive collection of fauna, including magnificent big cats like tigers, lions, and leopards, alongside elephants,

giraffes, and zebras, the park offers visitors unprecedented opportunities to observe and understand wildlife behavior. The strategic design of enclosures enables visitors to witness natural behaviors while maintaining appropriate distances that ensure both animal and visitor safety.

The park's butterfly garden serves as a specialized educational zone, demonstrating the crucial role of pollinators in ecosystem health. Similarly, the dedicated section for nocturnal animals helps visitors understand the diversity of wildlife active during different times of the day, challenging common misconceptions about wildlife behavior patterns.

Courtesy: Internet Resource



One of the park's most innovative features is its safari experience, which provides visitors with a more immersive wildlife viewing experience. This approach helps bridge the gap between traditional zoo exhibits and natural wildlife habitats, offering insights into animal behavior in more spacious, naturalistic settings.

Beyond its role as a conservation facility, Kakatiya Zoological Park functions as a vital research center, contributing to our understanding of wildlife biology, behavior, and conservation needs. The park maintains detailed records of animal behavior, breeding patterns, and healthcare requirements, which prove valuable for wildlife conservation efforts beyond its boundaries.

Amenities such as food courts, rest areas, and souvenir shops are designed and operated with minimal environmental impact, serving as examples of sustainable facility management.

Through its multifaceted approach to conservation, education, and recreation, Kakatiya Zoological Park plays an instrumental role in fostering public understanding of wildlife conservation challenges and solutions. By providing direct experiences with wildlife in a controlled yet natural setting, the park helps develop emotional connections between visitors and wildlife, ultimately contributing to broader conservation efforts and environmental awareness in the region.

Courtesy: Internet Resource



Threatened Taxa

Plant - *Celastrus paniculatus* Willd.



Photo: C. Sudhakar Reddy

Taxonomy Order Celastrales; Family Celastraceae

Geographic Range Widespread, distributed across South and Southeast Asia. It is distributed throughout India.

State Distribution Occasional; found in many districts.

Population Nothing is known about its population status or trends.

Habitat & Ecology Straggler, found in dry deciduous forests.

Major Threats Threatened due to habitat loss and destruction, and over-harvesting for its seed oil.

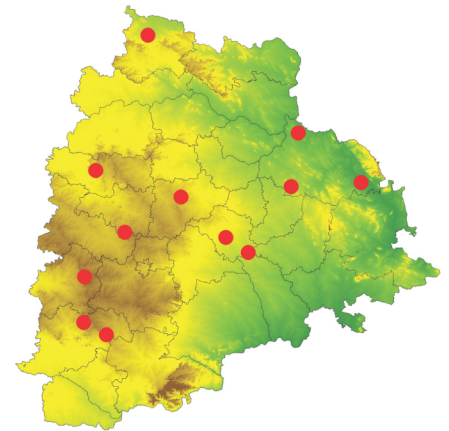
Use & Trade This species is in trade for seed oil.

Conservation Measures No species-specific conservation measures are in place. It may be present in protected areas.

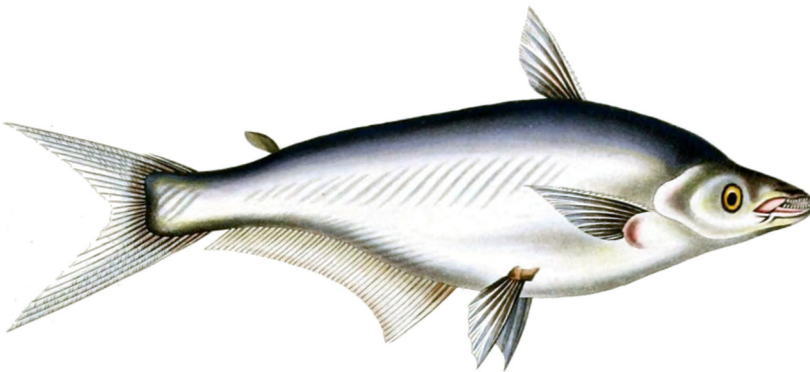
Remarks

This species is found in dry deciduous forests. It has been reported from certain protected areas of the northern districts in Telangana State. It is threatened by habitat destruction, and over-harvesting for its seed oil. It is known from 12 locations; the estimated extent of occurrence (EOO) in Telangana State is >20,000 km², and the area of occupancy (AOO) is <200 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 A2d+B1ab(iii,iv)+2ab(iii,iv).

Distribution in Telangana State



Animal - *Silonia childreni* (Sykes, 1839)



Art: J. Swaine

Taxonomy Class Actinopterygii; Order Siluriformes; Family Schilbeidae

Geographic Range Endemic to India; found in the Krishna, Godavari and Cauvery river basins in Telangana State, Andhra Pradesh, Maharashtra and Karnataka.

State Distribution Found in Krishna river in Jogulamba Gadwal and in Godavari river in Adilabad districts.

Population No information exists about the population of this species. This is a little known species.

Habitat & Ecology Found in large rivers.

Major Threats Overfishing and introduction of major carps into river systems and reservoirs.

Use & Trade This species is harvested for local consumption.

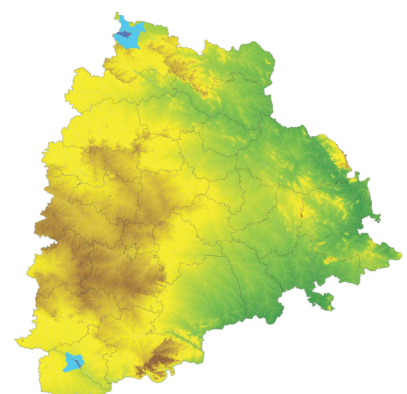
Conservation Measures No known species-specific conservation measures are in place for this species.

Remarks

This taxon is found in major rivers. This species is threatened with overfishing and introduction of major carps into river systems and reservoirs. It is known from Krishna and Godavari river basins in Telangana State. At the global level, this taxon has been assessed as Endangered.

In Telangana State, this species is assessed as Critically Endangered, with the criteria A2d+D2.

Distribution in Telangana State



Pioneers in Conservation

Padma Shri Abbareddy Nageswara Rao

Dr. Abbareddy Nageswara Rao is well renowned for his exceptional contributions to India's orchid taxonomy and conservation. He found that the greatest number of newly discovered orchid species in the world—35—came from India.

Dr. Rao was born on June 19, 1954, and graduated with an MSc in Botany (1977) from Andhra University in Waltair. Later, he researched on the orchid flora of Arunachal Pradesh for his Ph.D. thesis in Botanical Survey of India, supported by a Research Fellowship from the Department of Science and Technology, Government of India. He received his doctorate in 1985. Dr. Rao worked as an orchidologist at the State Forest Research Institute in Itanagar for 30 years while employed by the Arunachal Pradesh government's Department of Environment and Forests. Later, he worked as the Project Director at the Eastern Himalayas Region Center for



Photo Courtesy : Internet & The Rashtrapathi Bhavan

Orchid Gene Conservation, Hengbung, in the Senapati district of Manipur, for 4 years. He has 38 years of distinguished experience in the field of orchid research, and during that time he has conducted numerous thorough journeys in the virgin forests of Northeast Indian states, particularly focusing on remote and unexplored regions. His groundbreaking discoveries of 35 new species, 46 new distribution records for India, and 65 new records for Northeast India are only a few of his outstanding contributions to Indian orchidology. He has almost 200 research publications on all facets of orchidology to his name. As a reward for his exceptional work on orchid taxonomy and conservation in India, Dr. Rao received the highest civil award, the Padma Shri, in 2023, marking a milestone in the recognition of botanical research in the country. His work has not only expanded our knowledge of India's orchid diversity but has also contributed significantly to conservation efforts in the region.

Environment Education

Moths are important too!

Moths, the enchanting creatures with vibrant patterns and colors on their bodies, are an essential part of any ecosystem. Their role in pollinating flowers of various scrub and tree species is crucial for food production and the thriving of plant populations, particularly during nighttime hours when many other pollinators are inactive. Additionally, the genetic diversity of moths contributes greatly to the overall biodiversity of an ecosystem, further enhancing its health and resilience. They play a significant role in the food chain, acting as a source of nourishment for birds, insects, bats, reptiles, and small mammals. Both the caterpillar stage and the adult moths serve as vital food sources for these organisms, aiding in the delicate balance of the ecosystem.

Moreover, moths are excellent predators and help control the population of pests such as aphids and caterpillars. By preying on these harmful species, moths aid in maintaining the equilibrium of the ecosystem and preventing damage to plants and crops. Culturally and economically, moths hold considerable importance, especially with silkmoths. The silk industry, which relies on the production of silk from silkmoths, has flourished for centuries, contributing to the cultural and economic growth of various regions, including India, where traditional silk-making practices continue to support local communities and preserve cultural heritage.

Furthermore, certain moth species have even been utilised as natural pest controllers. For instance, the Indian meal moth (*Plodia interpunctella*) is commonly employed to combat pests in stored grains, further emphasising the significance of moths in maintaining the health and well-being of environments. Their ability to adapt to various ecosystems and their diverse roles make them invaluable components of natural pest management systems.



Photo credit: Rahul Alvares



Photo credit: Sangeeta Kadur

Nature for Kids

Chil

Chil in Rudyard Kipling's "The Jungle Book" is inspired by the real-life Kite (*Milvus migrans*). *Chil* plays the role of a messenger and news-bearer in the jungle, contributing to the story's communication network among various animal characters. In the narrative, *Chil* is portrayed as a keen observer who keeps track of the happenings in the jungle from his aerial vantage point. His character embodies the typical characteristics of a kite - vigilant, opportunistic, and always aware of the activities below. Throughout the story, *Chil* serves as an important source of information for other characters, particularly during crucial moments when news needs to be spread quickly across the jungle.

The Kite (*Milvus migrans*), also known as the Black Kite, is a medium-sized bird of prey that is one of the most successful and widely distributed species in the family Accipitridae. These birds are highly adaptable and can be found across Asia, Africa, Europe, and Australia.

In India, they are particularly common and are often seen soaring over both urban and rural landscapes. The Black Kite is characterized by its distinctive forked tail and dark brown plumage. They are opportunistic feeders, known for their ability to catch prey in mid-flight and scavenge effectively. Their exceptional eyesight allows them to spot potential food sources from great heights, making them efficient hunters.

These birds play a crucial role in the ecosystem by helping to control populations of small animals and cleaning the environment through their scavenging behaviour. They are highly social birds and often gather in large numbers, particularly in areas with abundant food sources.

Their ability to adapt to human presence has made them one of the most successful urban raptors.



Photo: Disney Films

Our Biodiversity

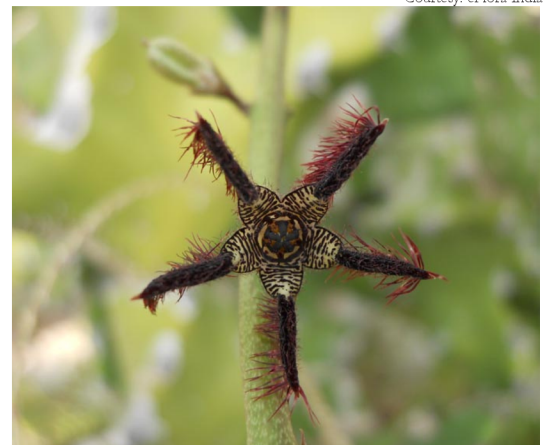
Edible Cactus of *Caralluma* genus

Caralluma sp., a resilient succulent within the Apocynaceae family, thrives in arid and semi-arid regions of India, Sri Lanka, and parts of the Middle East. Renowned for its striking angular stems and star-shaped flowers, this plant exhibits remarkable adaptations to drought, including water-storing stems and CAM photosynthesis. Beyond its ecological role in stabilizing fragile ecosystems, it holds cultural and medicinal value. Traditionally, tribal communities have used it as a famine food and appetite suppressant, while modern interest explores its potential in weight-loss supplements, though scientific validation remains limited.

Though taxonomically classified as a single species, *Caralluma adscendens* displays notable phenotypic diversity across its range. Regional variants differ in stem coloration (green to purple), flower size, and growth patterns, likely influenced by local environmental conditions. For instance, populations in India's Western Ghats exhibit compact forms, while those in drier regions of Rajasthan grow taller. Recent genetic studies suggest these variations may represent ecotypes rather than formal subspecies, highlighting adaptability to microhabitats. In Telangana, besides the *C. adscendens*, two more species - *C. attenuata* and *C. fimbriata*, occur.

Habitat loss due to urbanization, agriculture, and overgrazing poses the greatest threat. Overharvesting for traditional medicine and ornamental trade exacerbates decline, particularly in India. Climate change further strains populations by altering rainfall patterns and increasing drought frequency. Invasive species like *Prosopis juliflora* outcompete native flora, fragmenting habitats critical for pollinators such as flies and beetles, which are essential for the plant's reproduction.

Efforts to protect *Caralluma* spp. face hurdles, including limited legal safeguards and insufficient awareness. Conservation strategies emphasize habitat restoration, community-led initiatives, and ex-situ measures like seed banking.



Courtesy: eFlora India



Courtesy: Internet

Feature - Flora

Indian Banyan - *Ficus benghalensis* L.

Classification

Kingdom: Plantae

Division: Magnoliophyta

Class: Magnoliopsida

Order: Urticales

Family: Moraceae

Genus: *Ficus*

Species: *benghalensis*

Authority: L.



Ficus benghalensis, commonly known as the Indian Banyan, is a magnificent tree species of the family Moraceae. Native to the Indian subcontinent, it grows into a massive structure spreading over several acres, with a primary trunk reaching heights of 20-30 meters and numerous aerial roots that develop into secondary trunks. This evergreen tree features large, leathery, oval-shaped leaves, tiny figs as fruits, and an extensive root system that creates a forest-like canopy. Culturally, the Banyan holds immense significance in Indian traditions, often associated with wisdom, longevity, and spiritual enlightenment. It serves as a gathering place for community meetings and religious ceremonies, earning the title '*Vata Vrikshd*' in Sanskrit texts. The tree provides crucial ecosystem services, supporting numerous species of birds, mammals, and insects. Its figs are a vital food source for various wildlife, particularly birds and fruit bats, making it a keystone species in urban and forest ecosystems. Traditional medicine systems utilize various parts of the Banyan for treating ailments. The latex treats rheumatism and skin disorders, while the bark has antibacterial properties. The aerial roots are used in traditional medicine for treating conditions including diabetes. Beyond medicinal uses, the tree provides natural air purification, shade, and helps in soil conservation. Due to its cultural and ecological importance, many ancient Banyan trees are protected as heritage trees, though urbanization poses challenges to their survival.

Photo Courtesy: McKay Savage

Feature - Fauna

Osprey - *Pandion haliaetus* (Linnaeus, 1758)

Classification

Kingdom: Animalia

Phylum: Chordata

Class: Aves

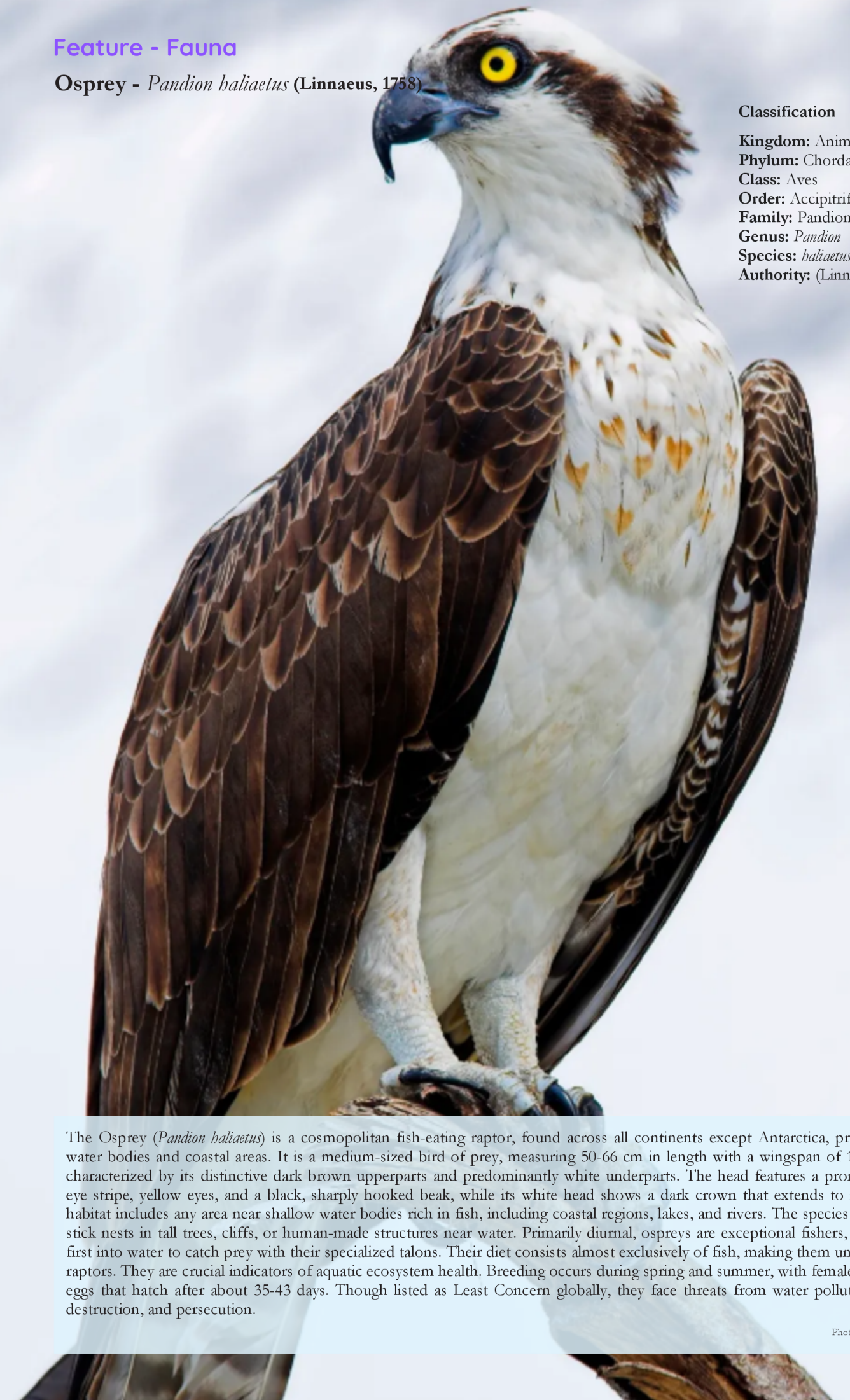
Order: Accipitriformes

Family: Pandionidae

Genus: *Pandion*

Species: *haliaetus*

Authority: (Linnaeus, 1758)



The Osprey (*Pandion haliaetus*) is a cosmopolitan fish-eating raptor, found across all continents except Antarctica, primarily near water bodies and coastal areas. It is a medium-sized bird of prey, measuring 50-66 cm in length with a wingspan of 127-180 cm, characterized by its distinctive dark brown upperparts and predominantly white underparts. The head features a prominent dark eye stripe, yellow eyes, and a black, sharply hooked beak, while its white head shows a dark crown that extends to its neck. Its habitat includes any area near shallow water bodies rich in fish, including coastal regions, lakes, and rivers. The species builds large stick nests in tall trees, cliffs, or human-made structures near water. Primarily diurnal, ospreys are exceptional fishers, diving feet-first into water to catch prey with their specialized talons. Their diet consists almost exclusively of fish, making them unique among raptors. They are crucial indicators of aquatic ecosystem health. Breeding occurs during spring and summer, with females laying 2-4 eggs that hatch after about 35-43 days. Though listed as Least Concern globally, they face threats from water pollution, habitat destruction, and persecution.

Photo courtesy: Internet

Events

New Building for CBCS inaugurated



Photo: C. Srinivasulu

The Centre for Biodiversity and Conservation Studies opened on May 22nd, 2023, World Biodiversity Day. Originally established in 2019 as a center of excellence under the MoE-RUSA 2.0 project within the CFRD building, this new 5,158-square-foot facility is situated in a forested region of the campus.

The centre features specialized laboratories including a dry lab for computational analysis, a wet lab for biological samples, a DNA lab for sequencing and barcoding, and a GIS lab for biodiversity mapping. A conference room supports meetings and presentations.

Focusing on biodiversity monitoring, climate change impacts, and public awareness, the center conducts workshops, training programs, and webinars to educate young individuals. It serves as a platform to develop professional, institutional, and community capabilities while providing comprehensive research facilities in biodiversity and conservation.

News

Rare blue pinkgill mushroom spotted for the first time in Telangana



Courtesy: Wikimedia Commons

The rare *Entoloma hochstetteri*, or blue mushroom, has been rediscovered in the Vempalli forest of Kagaznagar's Adilabad forest area, Telangana. This unique species, also known as the blue pink gill or sky-blue mushroom, was first spotted in India in Odisha in 1989.

Forest staff on routine patrol made this significant discovery, and immediate steps are being taken to protect and preserve these mushrooms in their natural habitat. Their keen eye for detail led to this extraordinary finding.

Native to New Zealand, these striking blue mushrooms are toxic but have captured the interest of scientists and environmentalists. Their reappearance in India marks an important development for biodiversity studies. The species' distinctive blue coloration combined with its toxic properties makes it particularly fascinating for both nature enthusiasts and mycologists. The protection and conservation of these remarkable specimens not only safeguards an extraordinary species but also contributes to the rich ecological diversity of the Vempalli forest.

Signing Off

Why India is vulnerable to climate extremes?

India's vulnerability to climate extremes has become increasingly evident, with the devastating floods of 2023 serving as a stark reminder of the challenges ahead. The catastrophic events in Northern India, particularly in Himachal Pradesh and Uttarakhand, demonstrate how climate change is intensifying natural weather patterns with devastating consequences. The root cause can be traced to warming Indian Ocean temperatures, which directly influence monsoon patterns. This warming creates conditions for more intense rainfall events, leading to floods and landslides in regions that historically managed seasonal rains effectively. The death toll of over 300 lives in 2023's monsoon season underscores the human cost of these climate extremes. The impact extends beyond human casualties to severe ecological degradation, particularly in sensitive regions like the Himalayan foothills. These areas, which play crucial roles in India's water security and biodiversity, face unprecedented pressures from extreme weather events. The damage to these ecosystems can trigger a cascade of environmental challenges, from soil erosion to habitat loss. Rising global temperatures expose gaps in India's climate adaptation, highlighting the dual need to protect vulnerable communities and ecosystems. This demands urgent disaster-response measures and long-term resilience planning across urban and rural areas.



Image Courtesy: IANS

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



Centre for Biodiversity and Conservation Studies

A Centre of Excellence under MHRD-RUSA 2.0 at Osmania University

#F5, First Floor, CFRD Building, Osmania University, Hyderabad- 500007, TS

Visit us at: www.osmania.ac.in/rusa2/cbcs

Email: biodiversityclub@osmania.ac.in