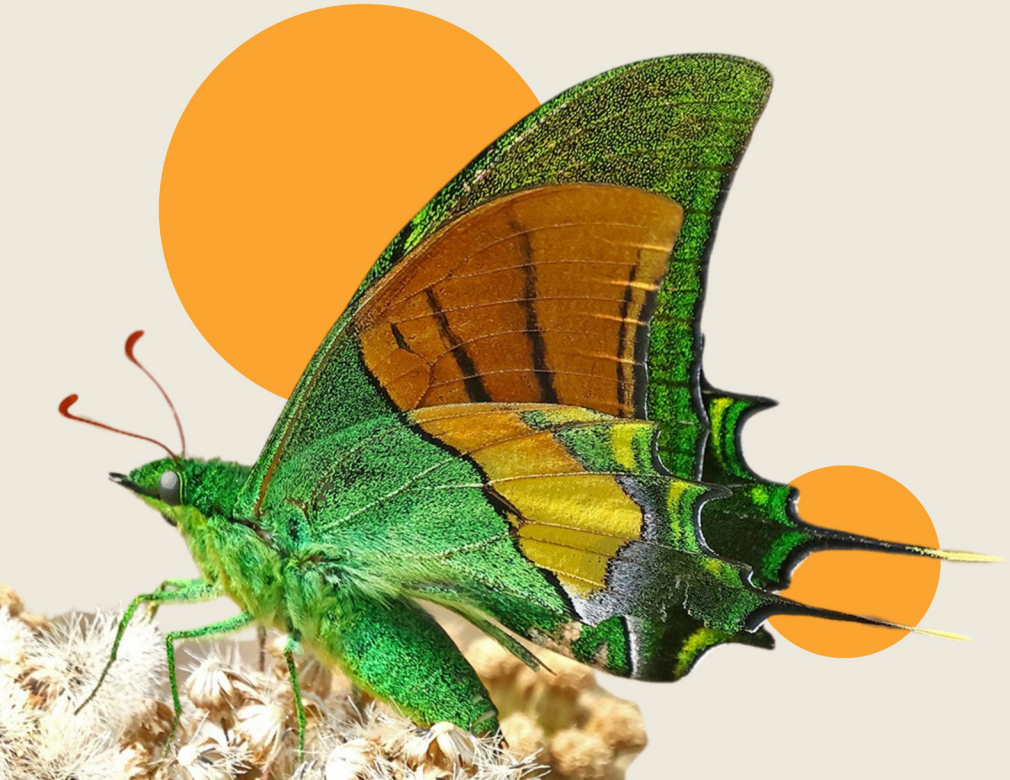
भारतीय वन्यजीव संस्थान
Wildlife Institute of India

36th Annual Research Seminar

14th-15th October 2025

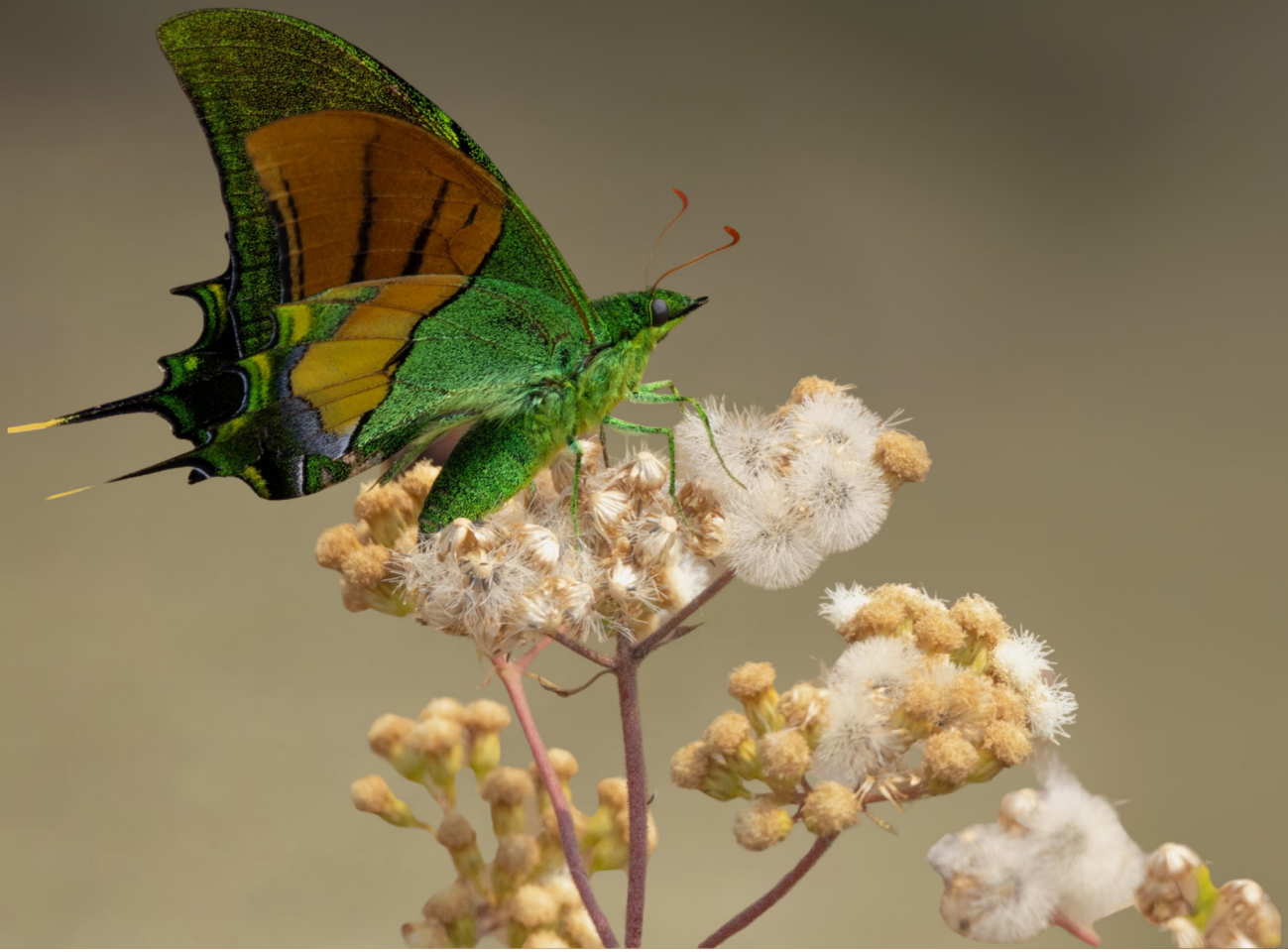


PROGRAMME & ABSTRACTS

ARS 2025

ANNUAL RESEARCH SEMINAR

— PROGRAMME —



36TH ANNUAL RESEARCH SEMINAR (ARS)

14TH - 15TH OCTOBER, 2025

DAY 1: 14TH OCTOBER, 2025 (TUESDAY)

Inaugration Ceremony		
09:15 - 09:45	Registration	
09:45 - 09:50	Welcome	Dr. Vishnupriya Kolipakam, *Research Coordinator , WII*
09:50 - 10:05	Research activities & Accomplishments	Dr. Ruchi Badola, *Dean, WII*
10:05 - 10:15	Release of Publications	Dr. Karan Bharat Jain, *Scientist- C, WII*
10:15 - 10:20	Remarks by Guest of Honour	Dr Erach Barucha, *Chairman, ICSAP*
10:20 - 10:25	Remarks by Guest of Honour	Shri Ramesh Pandey, *ADG (WL)*
10:25 - 10:35	Opening Remarks	Dr. GS Bhardwaj, *Director, WII*
10:35 - 10:50	Inaugural Address by Seminar Chairperson	Dr. SP Yadav, *Director General, IBCA*
10:50 - 11:20	Group Photo and Tea	
Session Facilitator (Inaugural Session)		Dr. Vineet Singh

TECHNICAL SESSION I:
LANDSCAPE ECOLOGY & MANAGEMENT - (ORAL PRESENTATIONS)

Session Chair: TBD
Session Co-Chair 1: TBD
Session Co-Chair 2: Dr. Bivash Pandav, Scientist-G, WII
Session Facilitator: Dr. Neeraj Mahar

Oral presentation		**Presenter**
11:30 - 11:40	Status of Blind Sentinels in Our country - Insights into the First Rangewide Survey of River Dolphins	Vishnupriya Kolipakam
11:40 - 11: 50	Integrated Landscape Management of Greater Panna Landscape: Consolidating Conservation and Community Interests	K. Ramesh

11:50 - 12:00	Assessment and Monitoring of Climate Change Effects on Wildlife Species and Ecosystems for Developing Adaptation Strategies in the Indian Himalayan Region – Phase II	Vineet K Dubey
12:00 - 12:10	Pollution Characteristics and Identification of Pollution Hotspots of Heavy Metals in the East and West-flowing Rivers of India	Anisha Ganguly
12:10 - 12:20	Small River Systems at Risk: Geospatial Insights into River Ecology and Watershed Vulnerability in the Upper Ganga Basin	Ashish Mani
12:20 - 12:40	Session discussion	

TECHNICAL SESSION II:
CONSERVATION ACROSS SCALES - (SPEED TALKS)

Session Chair: TBD
Session Co-Chair 1: TBD
Session Co-Chair 2: Dr. BS Adhikari, Scientist - G, WII
Session Facilitator: Dr. Swapnali Gole

Speed Talk session		**Presenter**
12:40- 12:45	Aligning Global Policy and Conservation Research: Capacity Building as a Tool in Institutional Diversification	Anuranjan Roy
12:45- 12:50	From Shadows to Stripes: Conserving Tigers in the Semi-arid Western Indian Landscapes	Rajrajeshwar Thakar
12:50- 12:55	Lightning Facilitates Species Richness Hotspots in Mangroves: A Case Study from the Andaman Islands	Perarivalan Sengannan
12:55- 13:00	From Barriers to Pathways: Long-term Monitoring of Crossing Structures on NH44 in Pench Tiger Reserve, Maharashtra	Vedanshi Maheshwari
13:00- 13:05	Assessing the Impact of Livelihood Training, Public Awareness and Stakeholder Engagement on Community-Led Conservation in the Ganga Basin	Sweta Bhattacharya
13:05- 13:10	Reviving the Roar: Mapping the Habitat Connectivity of Tigers in & around Palamau Tiger Reserve	Rohan Desai
13:10- 13:15	Modelling Probabilistic Co-occurrence Patterns of Red Panda within a Sympatric Terrestrial- Arboreal Assemblage in Singalila National Park, India	Pooja Kumari
13:15- 13:20	Seasonal shifts in mammal community composition across elevation gradients in the Teesta Basin, Eastern Himalaya	Pooja Pant
13:20- 13:30	Speed talk discussion	
13:30- 14:30	Lunch	

TECHNICAL SESSION III:
POSTER I

Session Co-ordinator: Dr. Sutirtha Dutta, Scientist-E, WII
Session Facilitator: Dr. Ruchika Sah

Poster Session		Presenter
14:30 - 15:30	Contamination Pattern and Ecological Risks of Potentially Toxic Elements in Sundarbans Wetland	Samridhi Gururani
	Beyond Protected Areas: Avian Assemblages in a Central Indian Corridor Compared with Melghat and Satpura Tiger Reserves	Nonita Rana
	Tracking Progress, Shaping the Future: India's Experience with CBD National Reporting	Upma Manral
	Potential Shifts in Predator-Prey Habitat under Climate Change: A Case Study of Leopards and Selected Ungulates in Kuno National Park, Madhya Pradesh	Khushbu Kaushik
	Assessment of Wildlife Values along National Chambal Gharial Sanctuary Falling under Mukundra Hills Tiger Reserve, Rajasthan, india	Oindrila Paul
	Assessing of Kaziranga-Itanagar Riverine Corridor in the Brahmaputra River, Northeast India	Mujahid Ahamad
	Monitoring in Motion: Freshwater Fish and Long-Term Ecological Observation (LTEO)	Rakshit Rayal
	Assessment of Genetic Diversity and Gene Flow in *Wallago attu* Populations of the Godavari River	Anshu Panwar
	Rising Seas, Deep Trouble- Shifts in Dugong Habitat-use Patterns in Future Inundation Scenario in the Gulf of Kachchh	Sameeha Pathan
	People and the Sea: Understanding Seagrass Ecosystems through the Human Perspective	Sumit Prajapati
	Listening to the Forest: Documenting Biodiversity through Bioacoustics	Burney Rosetta
	A Deer in Peril: Socio-Ecological Impacts and Conservation Planning of Endangered Manipur's Brow Antlered Deer or Sangai	Mirza Ghazanfarul-lah Ghazi
	Mainstreaming Biodiversity Conservation in Village Level Planning	Mukesh Deorari
	Population status of Saltwater Crocodile (*Crocodylus porosus*) Schneider 1801 on the East Coast of Great Nicobar Island	Baskaran M
	Influence of Invasive Plants on Native Tree Saplings in Tropical Dry Deciduous Forests of Kuno National Park, Madhya Pradesh	Guna Sekaran M/ Akash Rana

TECHNICAL SESSION IV:
BIODIVERSITY & MONITORING - (ORAL PRESENTATIONS)

Session Chair: TBD
Session Co-Chair 1: TBD
Session Co-Chair 2: Dr. J A Johnson, Scientist-F, WII
Session Facilitator: Dr. Vineet Dubey

Oral presentation		Presenter
15:30- 15:40	From Villages to Cities: Tracking the Fate of House Sparrows in the Uttarakhand Himalaya	Renu Bala
15:40- 15:50	Whispering Tales from the Sea: Understanding the Distribution Status of Arabian Sea Humpback Whale along the West coast of India	Abhishek Bettaswamy
15:50- 16:00	Conservation Ecology of Reticulated python (*Malayopython reticulatus*) in the Nicobar Archipelago	Tannu Balhara
16:00- 16:10	Does Grid Size Influence Density Estimates of the Clouded Leopard in a Semi-Evergreen Forest of Northeastern India?	Tribhuwan Singh
16:10- 16:20	Spot-billed Pelican (*Pelecanus philippensis*): an Ecological Indicator of Wetland Quality in Agricultural Landscape in Southern Tamil Nadu	Rachaveelpula Sreeja
16:20- 16:40	Session discussion	
16:40- 17:00	Tea Break	

TECHNICAL SESSION V:
CONSERVATION POLICY & MANAGEMENT - (ORAL PRESENTATIONS)

Session Chair: TBD
Session Co-Chair 1: TBD
Session Co-Chair 2: Dr. K. Ramesh, Scientist -F
Session Facilitator: Dr. Frank SJD

Oral presentation		Presenter
17:00- 17:10	Assessment of Wildlife Values along proposed Hubballi–Ankola Railway Alignment in Uttara Kannada, Karnataka	Beependra Singh
17:10- 17:20	Monitoring the Wildlife Overpasses and Underpasses of Samruddhi expressway	Neha Yadav

17:20- 17:30	From Silence to Rush Hour: Linking Traffic Volume with Road Edge Effects on Wildlife	Manisha Bishnoi
17:30- 17:40	From Waste to Wealth: Addressing Abandoned Fishing Gears through the Lens of Circular Economy and Livelihood Development	Suman Mallick
17:40- 17:55	Session discussion	

DAY 2: 15TH OCTOBER, 2025 (WEDNESDAY)

TECHNICAL SESSION VI
ADVANCES IN SPECIES RECOVERY - (ORAL PRESENTATIONS)

Session Chair:TBD
Session Co-Chair 1: TBD
Session Co-Chair 2: Dr. Gopi GV, Scientist F, WII
Session Facilitator: Dr. Ayan Sadhu

Oral presentation		**Presenter**
09:30- 09:40	Lesser Florican – on the Brink of Extinction	Mohib Uddin
09:40- 09:50	Population Recovery of the Threatened Megapode of the Nicobar Islands	Vishnu T
09:50- 10:00	Indian Dugongs from the Brink: A Decade of Hope, Setback, Success, and Future!	Swapnali Gole
10:00- 10:10	Landscape Use and Human Avoidance by Reintroduced Gaur	Bhaskar Bhandari
10:10- 10:20	Advancing Freshwater Turtle Rehabilitation: Digital Image Processing as a Tool for Morphometric Assessment	Ashish Panda
10:20- 10:40	Session discussion	

TECHNICAL SESSION VII
BEHVAIOURAL ECOLOGY & MOVEMENT - (ORAL PRESENTATIONS)

Session Chair: TBD
Session Co-Chair 1: TBD
Session Co-Chair 2: Dr. Parag Nigam, Scientist-G, WII
Session Facilitator: Dr. Ujjwal Kumar

Oral presentation		**Presenter**
10:40- 10:50	Steps Before the Sprint: Initial Movements & Habitat Selection of Free-Ranging Cheetahs in Kuno National Park, Madhya Pradesh	Moulik Sarkar
10:50- 11:00	From Blue Isles to Seagrass Pastures: Satellite Tracking Green Turtles from Lakshadweep reveal movements across the Arabian Sea	Mohit M Mudliar
11:00- 11:10	Grouping under Pressure: Predator – Prey – Habitat Interactions in Social Ungulates of Vidarbha Landscape, Maharashtra	Suman Koley
11:10- 11:20	Red Panda Site Use Intensity in Suitable Habitats of the Western Arunachal Landscape, Eastern Himalaya	Pujan Kumar Pradhan
11:20- 11:40	Session discussion	
11:40- 12:00	Tea break	

TECHNICAL SESSION VIII
INTEGRATIVE APPROACHES TO BIODIVERSITY RESEARCH, MONITORING, AND POLICY IN INDIA - (SPEED TALKS)

Session Chair: TBD
Session Co-Chair 1: TBD
Session Co-Chair 2: Dr. R. Suresh, Scientist -F, WII
Session Facilitator: Dr. Avilekh

Speed talk session		**Presenter**
12:00- 12:05	Management Effectiveness Evaluation (MEE) of NP and WLS in India – Repeat Cycle	Ananya Das
12:05- 12:10	Basking Habitat Preference of Gharial and Turtles in the Gandak River, Bihar, India	Surojit Moitra
12:10- 12:15	From Hotspots to Causes: Investigating Fifteen Years of Elephant Mortality in Tamil Nadu	Mukesh Chand

12:15- 12:20	Ecological and Anthropogenic Correlates of Red Panda occurrence in Sikkim, Eastern Himalayas	Roshme Borgohain
12:20- 12:25	Linking Tradition and Science: Mishmi Takin	Gaurav P J
12:25- 12:30	Assessing Impact of Top-Down Control by Large Predators on Meso- Carnivores in India and Austria	Ashish Kumar
12:30- 12:35	Policy Gaps: Five Conservation Challenges for Sustainable Development in India	Rohit R.S. Jha
12:35- 12:40	Following the Microscopic Trails: Trichotaxonomy of Pashmina	Priya Singh
12:40- 12:45	Skyframes to Riverframes: Integrating Satellites, UAVs, and AI for Riparian Habitat Monitoring in the Ganga River	Ravindra Nath Tripathi
12:45- 12:50	Spatio-Temporal Movement of Bats in the Limestone Caves of the Tropical Islands of India	Avimanyu J. Mukherjee
12:50- 12:55	Exploring Environmental Predictors of Indian Rock Python Occurrence: A Case Study from Mandla, Central India	Gaurav Singh
12:55- 13:00	Speed talk discussion	
13:00- 14:15	Lunch	

TECHNICAL SESSION IX
POSTER II

Session Co-ordinator: Dr. Samrat Mondol, Scientist-F
Session Facilitator: Dr. Sankarshan Chaudhuri

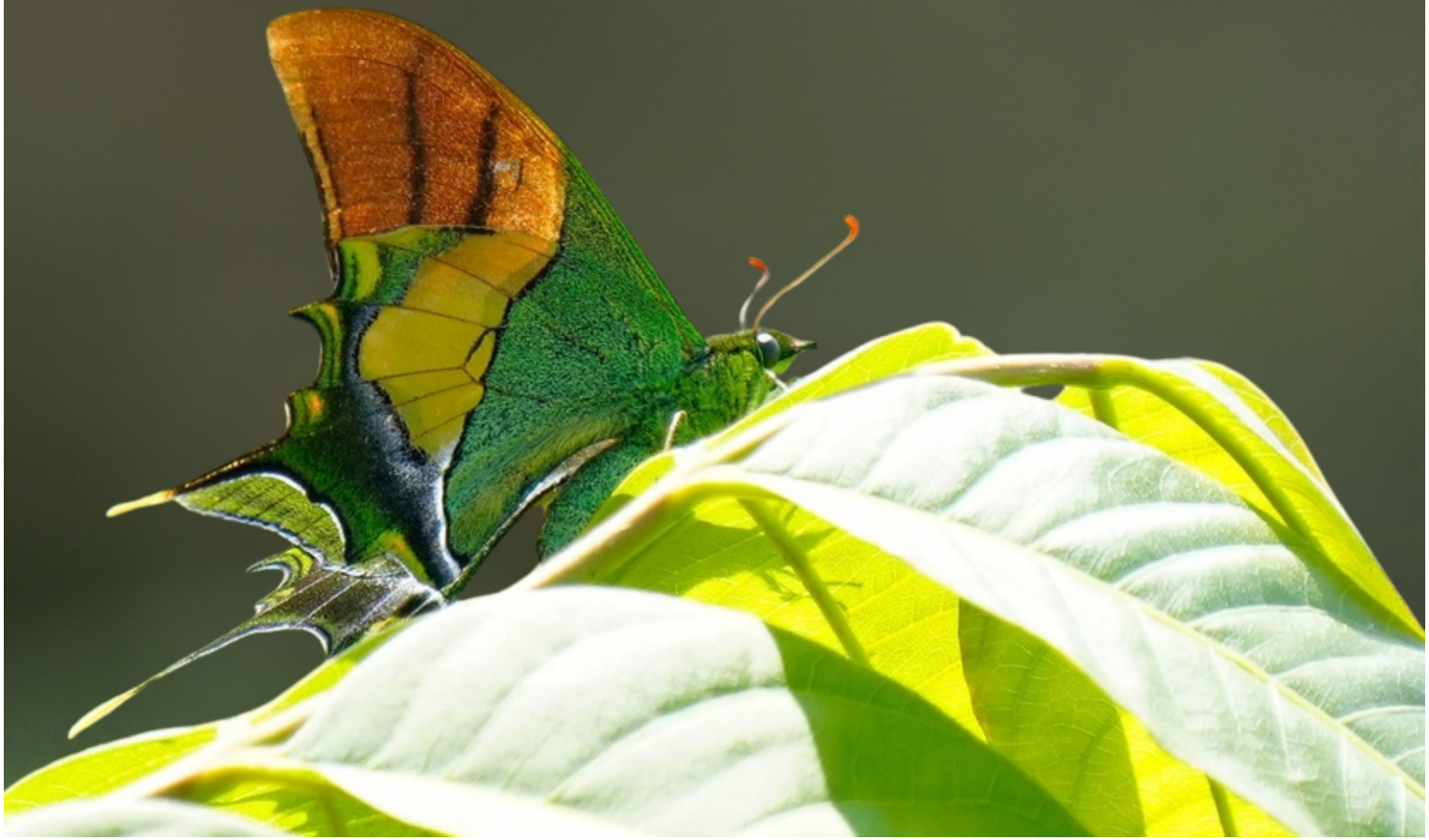
	Poster presentation	**Presenter**
14:15- 15:00	Bringing Back from the Brink: A Conservation Approach for Batagur baska in Sundarban Tiger Reserve	Swati Nawani
	Synchronized Drone Surveys for Dugong Population Estimation in Palk Bay and Gulf of Mannar, Tamil Nadu	Akarsh Aggarwal
	Ganga Praharis Guardians of the River - A Life Less Ordinary	Sunidhi Mishra
	Strengthening Human Capital for Effective Conservation Actions	Uttaran Bandyopadhyay
	The Wild Side of the Rocks: Understanding the Wildlife Usage of Rock Shelters in a Human-Dominated Forest Landscape	C S Ashik

14:15- 15:00	From Challenges to Conservation Solutions: The Story of Asola Bhatti Wildlife Sanctuary (ABWS)	Rashi Nautiyal
	Status of Predators, Prey and Habitat in Buxa Tiger Reserve, West Bengal in the context of Tiger Recovery	Palak Thakur
	Habitat Mapping of Caracal in Kachchh, Gujarat	Himani Singh Khati & Sneha Pandey
	Assessing the Seasonal Variation in Behavior and Physiological Stresses in Captive Himalayan Goral at Delhi Zoo: A Preliminary Study	Mohit Singh
	Outstanding Universal Values of Satpura Tiger Reserve, Madhya Pradesh	Deepika Saire
	Safeguarding the Indian Rhinoceros: Using Genetic Database to Combat Poaching and Aid Conservation Management	Jyoti Soun
	Developing a Conservation Action Plan Framework for elusive small and medium wild felids	Urjit Bhatt
15:00- 15:20	Tea	

	Closing Ceremony
15:20- 16:00	Comments on the Annual Research Seminar by Evaluators and Guests
16:00- 16:10	Comments by Director, WII
16:10- 16:30	Photography competition Awards
16:30- 16:50	Awards for ARS and IARS presentations
16:50- 17:10	Concluding Remarks by Seminar Chair
17:10- 17:15	Vote of Thanks
18:30	**Cultural Evening**

ABSTRACTS

ORAL PRESENTATIONS



Status of Blind Sentinels in Our country - Insights into the First Rangewide Survey of River Dolphins

-Vishnupriya Kolipakam, Abdul Wakid, Sunny Deori, Vineet Singh, Shovana Ray, Merin Jacob, Gargi Roy Choudhury, Gautam, Hiyashri Sarma, Vijay Pratap SIngh, Surojit Moitra, Bhawana Pant, Sneha Mane, Lallianpuii Kawlni, Qamar Qureshi

The river dolphins (*Platanista spp.*) are obligate freshwater cetaceans and ecological flagships of India's riverine ecosystems. Highly adapted to turbid waters, they exhibit functional blindness and depend almost exclusively on echolocation for orientation and foraging.

Despite their conservation significance, no rigorous range-wide population estimate existed for India. To address this gap, we conducted the largest freshwater cetacean survey ever undertaken globally, encompassing 8,507 km of river channels across 28 rivers within the species' distribution, supplemented by reconnaissance of an additional 30 rivers to verify presence–absence. Employing a standardized tandem boat–based double-observer protocol, integrated with passive acoustic monitoring, we explicitly corrected for perception and availability biases, thereby enhancing abundance estimation reliability. The survey extended across eight states covering the entire known range of India's river dolphins.

Our analyses yielded a baseline estimate of 6,327 individuals, comprising 6,324 Ganges River dolphins (*Platanista gangetica*) and only three Indus River dolphins (*Platanista minor*), now confined to a residual fragment of their historic range. These findings underscore the critically imperilled status of the Indus dolphin in India while reaffirming the Ganges dolphin as the nation's principal freshwater cetacean.

This first robust range-wide assessment establishes a benchmark for long-term monitoring, adaptive management, and evidence-based conservation planning. Moreover, it demonstrates the feasibility of implementing standardized, large-scale surveys in complex riverine environments and highlights the urgency of coordinated conservation interventions to secure the future of South Asia's last surviving freshwater dolphins.

Title of the Project

Development of Conservation Action Plan for Ganges River Dolphins

Name of PI(s)

Dr. Vishnupriya Kolipakam

Name of Co-PI(s)

Dr. Lallianpuii Kawlni

Funding Agency

National CAMPA & MoEFCC

Project Duration

2021-2025

Keywords

Freshwater Cetaceans; Odontocetes

Handles

@wii_india, @moefcc, @V_Kolipakam @lalanikawlni, @campa_dolphin, @vrtiwari1, @CAMPA_Dolphin

Instagram Handles

wii_india, vishnupriya_kolipakam, wii_india, lalani_kawlni_crystalle

& Instagram Text

First robust, range-wide estimate of India's river dolphins: 6,327 individuals (6,324 Ganges, 3 Indus). Survey spanned 8,507 km across 28 rivers—the largest freshwater dolphin survey globally. A critical baseline for long-term monitoring & conservation. #Conservation #Dolphins

Title of the Project

Implementation of Integrated Landscape Management Plan for Greater Panna Landscape, Madhya Pradesh and Uttar Pradesh

Name of PI(s)

Dr. Ramesh Krishnamurthy

Name of Co-PI(s)

Dr. Sandeep Gupta, Dr. Ramesh Chinnasamy, Dr. Prashant Mahajan, Ms. Amarjeet Kaur, Dr. Rajah Jayapal, Dr. Vidyadar Atkore

Funding Agency

Department of Water Resources, River Development, and Ganga Rejuvenation; Ministry of Jal Shakti

Project Duration

2025-2026

Keywords

Adaptive Management, Biodiversity Conservation, Human–Wildlife Conflict, Landscape Governance, Spatial Prioritisation

Handles

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Instagram Handles

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Integrated Landscape Management of Greater Panna Landscape: Consolidating Conservation and Community Interests

-Ramesh Krishnamurthy

Integrated Landscape Management (ILM) is an unifying framework that consolidates conservation means with community interests within multifunctional systems. In India, the National Wildlife Action Plan endorses ILM for connecting ecological integrity, livelihoods and production systems. The Greater Panna Landscape (GPL) in central India, anchored by Panna Tiger Reserve (PTR), is an ecologically rich yet socio-economically vulnerable mosaic of forests, rivers, farmlands, and settlements. To address the intersecting challenges of biodiversity loss, hydrological modifications and the ever-existing development agenda, the Integrated Landscape Management Plan (ILMP) was conceived as a 10-year, legally mandated roadmap to consolidate conservation and community interests.

The GPL spans eight districts in Madhya Pradesh and three in Uttar Pradesh, encompassing critical tiger and vulture habitats, riverine systems and forest-dependent communities across the Vindhyan highlands, spread across ~47,000 km^2, with a forest cover of ~12,000 km^2.

Using participatory and science-based planning, the ILMP was prepared by employing multi-scale field surveys (camera trapping, vegetation, aquatic, socio-economic assessments), spatial prioritisation and stakeholder consultations. Adaptive feedback loops were built into the implementation of ILMP.

The ILMP identified conservation priorities and designed integrated interventions for each of its components (e.g., tiger, vulture, crocodilians, biodiversity, community, One Health and integrated management), implementations of other specific activities, *viz.*, species recovery programs, livelihood diversification and human–wildlife conflict mitigation, through community microplanning. To institutionalise this integration, an Integrated Centre for Landscape Management (ICLM) was proposed to be established as the knowledge, capacity-building, and monitoring nucleus in the GPL.

The ILM demonstrates a replicable model where conservation and community trade-offs are co-managed through participatory governance. Furthermore, the ICLM will serve as the cornerstone for long-term success, ensuring data-driven decision-making, adaptive management and sustained partnerships for inclusive landscape stewardship.

& Instagram Text

Integrated Landscape Management in Greater Panna Landscape, central India, unites biodiversity conservation & community well-being. The ILMP & ICLM pioneer data-driven, participatory governance for tigers, vultures, crocodilians, biodiversity, livelihoods & resilience. A replicable model for inclusive stewardship.

Assessment and Monitoring of Climate Change Effects on Wildlife Species and Ecosystems for Developing Adaptation Strategies in the Indian Himalayan Region – Phase II

-Vineet K Dubey, J. A. Johnson

The Himalaya, a global biodiversity hotspot, is increasingly threatened by rapid development, urbanization, and climate change. Under the National Mission for Sustaining the Himalayan Ecosystem (NMSHE), the observed and projected impacts of climate change on wildlife populations were assessed across longitudinal and elevational gradients of the Indian Himalayan Region (IHR).

The study was conducted in four representative river basins: Beas (north-western Himalaya), Bhagirathi (western Himalaya), Teesta (eastern Himalaya), and West Kameng (eastern Himalaya) during 2022-2025.

Standardized protocols were used for different taxa: kick-netting for freshwater insects, visual encounter surveys for herpetofauna, cast and drag-netting for fishes, mist-netting for birds, and camera trapping for mammals. Seasonal elevational shifts, community reorganization, phenological trends, and modelling approaches were used to assess species richness, functional richness, and taxonomic diversity, as well as the overlap among these biodiversity facets, to examine patterns of biodiversity dynamics and potential future changes.

Long-term monitoring (2016–2024) of Snow trout (Schizothorax richardsonii) revealed seasonal breeding phenology, with gonadosomatic indices peaking in November (6.07%) and lowest in February (0.14%). In the Teesta basin, mammalian richness pattern shifted seasonally, with a peak at 2000–2500 m in summer (22 species) and 1500–2000 m in winter (25 species), indicating downslope community reorganization. Temporal beta diversity averaged 0.234, with species gains exceeding losses in winter. Galliformes diversity (taxonomic, functional, and endemic) was highest in mid-elevation zones; however, these hotspots showed limited overlap with existing Protected Areas (PAs).

The study documents seasonal phenological variation, seasonal redistribution of species, community turnovers, and gaps in PA coverage for biodiversity-rich zones. The findings emphasize the need to strengthen long-term monitoring, assess PA networks, and adopt landscape-scale approaches to conserve Himalayan ecosystems effectively.

& Instagram Text

Phase II of NMSHE in the #IndianHimalaya reveals seasonal wildlife shifts, Snow trout breeding phenology, mammal community reorganization & mid-elevation #Galliformes hotspots, highlighting the need for improved monitoring under changing environmental conditions

Title of the Project

Assessment and Monitoring of Climate Change Effects on Wildlife Species and Ecosystems for Developing Adaptation Strategies in the Indian Himalayan Region – Phase II

Name of PI(s)

Dr. J. A. Johnson

Name of Co-PI(s)

Dr. Ruchi Badola, Dr. S. Sathyakumar, Dr. K. Ramesh, Dr. R. Suresh Kumar, Dr. Gautam Talukdar, Dr. Abhijit Das, Dr. Ashish Jha, and Sh. Ritesh Kumar Gautam

Funding Agency

DST

Project Duration

2022-2026

Keywords

Elevational gradients, community reorganization, functional diversity, phenology, temporal beta diversity

Handles

@moefcc, @wii_india, @moefcc, @wii_india, @Vineet_Climate, @DST, @Shagun_Thakur91, @BoraHimangshu12, @Anuj_bio, @poojapant131995

Instagram Handles

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Title of the Project

Assessment of ecological status of select Indian river for conservation planning

Name of PI(s)

Dr. Ruchi Badola

Name of Co-PI(s)

Dr. Syed Ainul Hussain

Funding Agency

National River Conservation Directorate

Project Duration

2020-2025

Keywords

Freshwater, Water-Quality, Industries, Agricultural-Runoff

Handles

NA

Instagram Handles

NA

Pollution Characteristics and Identification of Pollution Hotspots of Heavy Metals in the East and West-flowing Rivers of India

-Anisha Ganguly, Syed Ainul Hussain, Ruchi Badola

The Narmada and Mahanadi rivers are significant river systems in central India, with the Narmada flowing west to the Arabian Sea and the Mahanadi east to the Bay of Bengal. Both rivers face threats from pollution due to industrial discharges, agricultural runoff, and urbanization. However, there has been a limited comprehensive study on heavy metal contamination from source to mouth in these rivers. This study evaluates water quality and heavy metal contamination in river systems during the post-monsoon season. Sampling sites were chosen based on elevation and land use. Water and sediment samples were collected following standard procedures and analysed for heavy metals using ICP–MS, with spatial interpolation in ArcGIS to identify pollution hotspots.

The assessment of the Narmada River revealed spatial variations in water quality, particularly in pH levels. Concentrations of zinc (Zn), cadmium (Cd), and lead (Pb) were elevated in water, exceeding permissible limits for aquatic life. Additionally, the level of Pb in sediment surpassed acceptable thresholds as well. Considering the overall length of the Narmada River (1,300 km), heavy metal contamination affects 16.62% of the waterway, with an even higher impact on sediments, covering 27.08% of the river stretch. In contrast, the assessment of the Mahanadi River highlights depletion of dissolved oxygen, especially at Rajim, indicating serious dysfunction in the freshwater ecosystem. Water samples showed elevated levels of Zn and Pb near major industrial sites. While heavy metals in sediment samples remained within acceptable limits. Considering the overall length of the Mahanadi River (853 km), heavy metal contamination affects 16% of the waterway, with an impact on sediments covering 14% of the river stretch.

These findings will help develop management strategies for addressing point and non-point pollution sources through improved wastewater treatment, better agricultural practices, and strict regulation to protect the river's ecological health.

& Instagram Text

NA

Small River Systems at Risk: Geospatial Insights into River Ecology and Watershed Vulnerability in the Upper Ganga Basin

Ashish Mani, Priti Kumari, Sk. Zeeshan Ali, Shivani Barthwal, Ruchi Badola, Syed Ainul Hussain

Small rivers are vital for freshwater, agriculture, biodiversity, and stabilizing larger rivers, yet face increasing anthropogenic pressures that resulting in degraded water quality, altered flows, and heighten flooding and erosion risks. This study integrates geospatial techniques and analytical hierarchical process methods to assess River Risk Zones (RRZs) and prioritize watersheds for targeted management.

The study covers three river systems of the Doon valley, Uttarakhand, India- Asan, Suswa, and Song. Fifteen thematic layers, including water quality parameters (TDS, conductivity, pH, salinity, temperature), environmental and topographical variables (LULC, soil type, geology, slope, aspect, elevation, flow, drainage density, width, depth), were analysed to identify RRZ. Morphometric analysis was conducted using compound factor values to prioritize watersheds for conservation.

56.38% of these riverscape areas fall within high and very high-risk zones, driven by inefficient sewage management, agricultural runoff, and urban encroachment. The headwaters of Suswa- Bindal and Rispana (urban rivers), show critical stress, with higher TDS and conductivity threatening its aquatic biodiversity. Watershed prioritization highlights Suswa watershed as most vulnerable due to its low elongation ratio, high compactness coefficient, and pronounced erosion susceptibility, compounded by intense pollution and sedimentation pressures, thereby demanding urgent conservation action. Asan watershed is moderately stressed and requires intervention to maintain ecological resilience, while Song watershed is least stressed, but with steep slopes and high relief, faces rapid runoff and flood hazards. Asan and Song retains aquatic biodiversity mostly in form of ichthyofauna and avifauna, the headwaters of Suswa, *viz.*, Bindal and Rispana have lost their ecological character.

Policy implications include strengthening sewage treatment, regulating land use, restoring riparian buffers, controlling sand mining and water extraction. By linking river ecology and morphology with watershed dynamics, this study contributes to sustainable freshwater management in the upper Ganga Basin and offers a transferable framework for conservation science and policy planning globally.

& Instagram Text

Small rivers in Doon Valley face severe stress—56% riverscape areas fall within very high to high-risk zones due to sewage, runoff & urban encroachment. Suswa watershed is most vulnerable, Asan watershed moderately stressed, Song watershed least but flood-prone. Urgent action is needed to protect freshwater lifelines.

Title of the Project

Planning and Management for Aquatic Species Conservation and Maintenance of Ecosystem Services in the Ganga Basin for a clean Ganga

Name of PI(s)

Dr. Ruchi Badola

Name of Co-PI(s)

NA

Funding Agency

National Mission for Clean Ganga (NMCG), Ministry of Jal Shakti, Government of India

Project Duration

2020-2026

Keywords

Riverscape, Morphometric Analysis, Hydrology, Doon Valley, Watershed Management

Handles

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Instagram Handles

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Title of the Project

A comprehensive study on the Ecology and Population Status of a human commensal – the House Sparrow *Passer domesticus* in the Uttarakhand

Name of PI(s)

Dr R Suresh Kumar

Name of Co-PI(s)

Dr Dhananjai Mohan

Funding Agency

Uttarakhand State Forest Department

Project Duration

2021-2025

Keywords

Synanthropic species; population ecology; rural-urban gradient; microhabitat features

From Villages to Cities: Tracking the fate of House Sparrows in the Uttarakhand Himalaya

Renu Bala, Ayan Khanra, Parmod Kumar, Harsh Pratap Chauhan, Shrabasti Majumdar, Sarbapriya Dutta, Ashish Rawat, Dhananjai Mohan, R Suresh Kumar

The House sparrow (*Passer domesticus*), once a common species across India, has undergone major population declines and is now scarce in urban centres. In Uttarakhand, an agro-economic Himalayan region where sparrows are still found, including higher elevations, their population status remains poorly understood. In this study, we aimed to assess the status of house sparrows in the State. We conducted tehsil-level surveys using a stratified random sampling that included 5% of villages per tehsil, totalling 875 villages, 16 towns, and 4 major cities. We sampled along standardized 100 m line transects, and detection-corrected counts were estimated using MCDS models. We performed negative binomial regression and hierarchical partitioning to identify the habitat characteristics influencing sparrow abundance. We found that sparrow abundance varied widely across tehsils: 9 tehsils had mean counts of fewer than 1 individual per transect, 12 had 1-2 individuals, 25 had 2-3, 14 had 3-4, 10 had 4-5, and another 10 tehsils had means exceeding 5 individuals. Sparrow abundance varied with habitat type. At low elevations, rural and semi-urban sites supported similar numbers, whereas urban sites had ≈67% fewer birds. At mid elevations, sparrows were most abundant in rural areas, with semi-urban and urban habitats showing 33-50% lower abundances, though differences were only marginally significant ($p \approx 0.05$). Apart from habitat type, 4 microhabitat features: the presence of open grocery stores, garbage bins, shrubs, and private gardens were identified as significant positive predictors of sparrow abundance. Other features (traditional houses, fallow land, mature trees, cowsheds, vegetation cover) and seasonality showed no significant effect. This study provides the first statewide count of House Sparrow populations in Uttarakhand conducted between July 2024- June 2025, showing strong variations across different habitat types. The results highlight habitat features most critical for sparrow abundance and provide guidance for conservation planning in the Himalayan landscape.

Handles

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NA

& Instagram Text

Are House Sparrows still thriving in the Himalaya? Renu Bala presented "From Villages to Cities: Tracking the Fate of House Sparrows in the Uttarakhand Himalaya". Findings show sparrows thrive in villages but decline in urban parts- the presence of shrubs, rubbish bins, open grocery shops, and gardens makes a big difference.

Whispering tales from the Sea: Understanding the Distribution Status of Arabian Sea Humpback Whale along the West coast of India

- Abhishek Bettaswamy, Chinmaya Ghanekar, Nehru Prabakaran, J. A. Johnson

The Arabian Sea Humpback Whale (ASHW; Megaptera novaeangliae) is an isolated, endangered population found exclusively in the Arabian Sea. Investigating their status is challenging due to its wide range, elusive nature and inherent monitoring limitations. To address this, we combined systematic semi-structured social surveys targeting fisherfolk (n=2606) along Passive Acoustic Monitoring (PAM) to understand their current distribution status along west coast of India.

We conducted grid-wise sampling (20×20 km, up to 200 km offshore) incorporating positive fisherfolk responses (n=1833), creating a reliability index (0–1) that integrated their reported fishing efforts, experience, and ASHW identification cues scores. This index served to mitigate the effects of heterogeneity in sighting reports. Weighted geometric means were then aggregated into spatial grids and adjusted for relative occupancy corrections. General Additive Models, utilizing 14 environmental (physical, chemical and biological) variables, provided insights into perceived seasonal occurrence pattern of ASHW.

Despite 1833 fisherfolks reporting ASHW sightings, the frequency of encounters was relatively low within their regular fishing area. ASHW sightings were most prominent offshore of the Goa-Karnataka states in all seasons.

Partial effects of the cyclic sea direction indicate that the probability of perceived ASHW occurrence is elevated when currents are between 180° and 230°, peaking around 200°. This pattern is strongly influenced by chlorophyll-a ($p<0.001$) and net primary productivity ($p<0.001$). Perceived occurrence pattern aligns with the southwest monsoon circulation and Malabar upwelling, with occurrences shifting southward from pre-monsoon to southwest monsoon.

With standardized PAM protocol, ~1100 hours of acoustic recordings were collected from Malvan, Goa, and Lakshadweep Islands, provided no ASHW detections during the effort. Here, we tried to demonstrate the potential of combining fisherfolk's knowledge as a viable method for understanding the perceived seasonal occurrence pattern of rare-elusive species-ASHW in a challenging ecosystem as offshore waters, particularly when PAM fails to detect the species.

Text

Whispering tales from the Arabian Sea

Instagram Text

Whispering tales from the Sea: Understanding the distribution status of Arabian Sea Humpback Whale along the West coast of India

Title of the Project

IDWH - Pan India Assessment and Monitoring of Arabian Sea Humpback Whale

Name of PI(s)

Dr J. A. Johnson

Name of Co-PI(s)

Ms. Chinmaya Ghanekar, Dr. Nehru Prabakaran

Funding Agency

CAMPA -MoEFCC

Project Duration

2022-2025

Keywords

Arabian sea, Semi-structure interviews, Fisherfolks, Passive Acoustic Monitoring (PAM), Perceived Occurrence pattern

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Instagram Handles

NA

Title of the Project

Conservation Ecology of Reticulated Python *Malayopython reticulatus* (Schneider 1801) in the Nicobar Archipelago, India

Name of PI(s)

Dr. Ramesh Chinnasamy

Name of Co-PI(s)

Dr. S.K. Gupta
Dr. Nehru P.

Funding Agency

SERB-DST;
CRG/2021/005095

Project Duration

2022-2025

Keywords

Distribution, Molecular phylogeny, Habitat, Pythonidae

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Conservation Ecology of Reticulated Python (*Malayopython reticulatus*) in the Nicobar Archipelago

-Tannu Balhara, Nehru P, S.K. Gupta, Ramesh Chinnasamy

The Reticulated python (*Malayopython reticulatus*), world's longest snake, is widely distributed across Southeast Asia. Its distribution in India is limited to the Nicobar Archipelago, with some sporadic records from the Northeast. However, baseline information such as distribution, habitat requirements, and genetic connectivity is lacking for this top terrestrial predator of Nicobar Islands. This study aimed to study the distribution, habitat and genetic relationships of Reticulated python in the Nicobar Islands.

The archipelago (1,841km^2) consists of 21 islands clustered into northern, central, and southern groups. Intensive surveys were conducted on 11 islands, using visual encounter surveys (851.5 Km, 3152.5 man-hours) in 3 × 3 km^2 grids, supplemented with opportunistic sightings and questionnaire surveys. Samples such as shed skins and scales of dead individuals were collected for the genetic analysis. Mitochondrial Cytochrome b gene (320bp) and control region (700bp) was analysed using DNASP, BEAST, POPART, Sequencer softwares.

Pythons were recorded on 13 out of the 21 islands, in total, 60 individuals, including 35 dead, were recorded. Pythons were frequently encountered in human settlements (38%), followed by rainforests (34%) and plantations (17%). Prey species included 6 mammals, 8 birds and 1 reptile species with heavy reliance on domestic livestock, particularly poultry (39.6%) and pigs (25.2%). Genetic analyses revealed four haplotypes distributed across the archipelago: Car Nicobar (H1); Kamorta, Trinket, Bompoka (H2); Teressa, Katchal, Little Nicobar (H3) and Great Nicobar (H4) with overall moderate genetic diversity (Hd = 0.6841; pi = 0.00283).

Our findings provide the first comprehensive baseline on the distribution, habitat, and genetic relationships of reticulated pythons in the Nicobar Archipelago, highlighting their strong interactions with human environments, integrating both ecological and genetic perspectives for future conservation planning.

& Instagram Text

Ms. Tannu Balhara presented the first comprehensive baseline on the distribution, habitat, and genetic relationships of Reticulated pythons in the Nicobar Archipelago, integrating both ecological and genetic perspectives for future conservation planning.

Does Grid Size Influence Density Estimates of the Clouded Leopard in a Semi-evergreen Forest of Northeastern India?

-Tribhuwan Singh, Daniel Miranda, Govindan Veeraswami Gopi, Bilal Habib

Estimating carnivore density is crucial for conservation planning yet remains challenging for elusive species such as clouded leopard *Neofelis nebulosa*. Most available estimates are derived from bycatch data collected with large grid sizes in surveys targeting larger sympatric carnivores, which may not accurately represent their status. To address this gap, we conducted a camera-trap survey in Balpakram National Park of Garo Hills, Meghalaya, and compared density estimates across three grid sizes.

We deployed 239 camera traps across the BNP between January-May 2025, resulting in a total effort of 14,100 trap nights. To maximize spatial coverage, we used single-camera traps and standardized all identifications to the right flank. Capture histories from the sampling period were analysed in a spatially explicit capture-recapture framework using the secr package in R. Density estimates were compared across 0.5, 1, and 2 km^2 grids by systematically thinning the trap layout to match each grid resolution.

Density estimates varied with grid size and trap spacing. At 0.5 km^2 grid, 13 individuals were identified giving a density of 8.9 per 100 km^2 (SE 2.55; 95% CI:5.1-15.5; CV 29%) providing the most precise estimates; while 1 km^2 grid yielded 7.6/100 km^2 (SE 3.04; 95% CI:3.6-16.2; CV 40%) with 9 individuals. The 2 km^2 grid produced 3.9/100 km^2 (SE 2.03; 95% CI:1.5-10.2; CV 52%) with only 5 individuals, resulting in unstable parameter estimates.

Our findings suggest that coarser grids reduce spatial recaptures, inflate variance, and may bias density estimates downward. For elusive species such as the clouded leopard, finer grid size of 0.5 km^2 could provide more precise estimates, comparable to 1 km^2 while balancing logistical constraints. The study highlights the importance of grid resolution in SECR analyses and supports the use of finer trap spacing (≤0.4-1 km) for meaningful inference when studying smaller felids in complex tropical landscapes.

Title of the Project

Pan India assessment of monitoring of endangered species under Integrated Development of Wildlife Habitats-Clouded Leopard

Name of PI(s)

Dr. Bilal Habib

Name of Co-PI(s)

Dr. G.V. Gopi

Funding Agency

Ministry of Environment, Forests & Climate Change (MoEFCC)

Project Duration

2022-2026

Keywords

camera traps, secr, smaller felids, Balpakram, Garo Hills

& Instagram Text

How does grid size affect density estimates of the elusive #CloudedLeopard?
Our camera-trap study in Balpakram NP (Meghalaya) shows finer grids (0.5–1 km^2) give more precise results, while coarse grids inflate uncertainty.
#Conservation #smallerfelids #SECR #Balpakram

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Title of the Project

Characterization of wetland habitat in a breeding range of Spot-billed Pelican (*Pelecanus philippensis*)

Name of PI(s)

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Name of Co-PI(s)

Dr. Riddhika Kalle

Funding Agency

Anusandhan National Research Foundation

Project Duration

2023-2026

Keywords

Bioindicator, Habitat requirement, Piscivorous, Wetland, N-mixture pcount model

Handles

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Spot-billed Pelican (*Pelecanus philippensis*): an ecological indicator of wetland quality in agricultural landscape in southern Tamil Nadu

-Rachaveelpula Sreeja, Tharmalingam Ramesh, Riddhika Kalle

The acute and chronic wetland losses due to the hydrological alterations endangers the wetland-dependent fauna. Lack of monitoring the changes in the wetland habitat jeopardizes the wetland-dependent species survival. To investigate the influence of wetland characteristics, we monitored the occurrence and habitat-use by a 'near-threatened' species, the Spot-billed Pelican (*Pelecanus philippensis*) across select wetlands of Tamil Nadu. We sampled 51 wetlands in 3 districts of the State where we assessed for 14 physiochemical water parameters; 8 habitat characteristics; 4 human influenced landscape features, 12 threats during breeding and non-breeding season. We had 3 sampling replicates for a wetland per season and adapted total count method with double observer to conduct pelican count and analysed the data using N-mixture pcount abundance model. Our results revealed that during the breeding season, increasing distance from breeding grounds and wetlands with fish tender decreases the detection probability of pelicans and the pelican abundance positively correlated with increased fish diversity and number of pedestrians. However, extreme concentration of Ammonia and Oxidation Reduction Potential reduced the pelican abundance in the wetlands. In the non-breeding season, optimal windspeed and increased percentage of agriculture fields increased the pelican detection and wetlands with moderately alkaline concentration, optimal phosphate and depth conditions increased the pelican abundance; wetlands with less plastic pollution supported greater pelican abundance. Our findings identified the core influential habitat parameters on pelican abundance in the breeding, non-breeding season and localised, landscape threats that affects the wetland quality. Thus, the study helps to devise mitigation measures to conserve wetland-dependent species at the landscape level.

& Instagram Text

Our study investigates the influence of habitat parameters (landscape features, water quality and impending threats) on Spot-billed Pelican abundance in the breeding and non-breeding season. Thus, leverage our understanding to devise mitigation measures for restitution of wetland habitat.

Assessment of Wildlife Values along proposed Hubballi–Ankola Railway Alignment in Uttara Kannada, Karnataka

-Beependra Singh, Bitupan Boruah, Avinash Yadav, Ekta Shekhawat, Burney Rosetta, Shilpa Bevoor, Amirtha Balan R, Aparna Ajith, Asim Bashir, Blessy Tereena D'Cruz, Venketesh S, Lakshminarayanan Natarajan, Navendu Page, J.A. Johnson and Abhijit Das

A railway connecting Karnataka's interior to west coast ports was first proposed by the Ministry of Railways in 1997-1998. The proposed double-track railway alignment poses significant environmental concerns including habitat fragmentation and loss in the biodiverse rich Western Ghats. To minimize adverse effects on wildlife, science-based mitigation measures are crucial.

Following the Standing Committee-National Board for Wildlife recommendations, WII initiated a study of the greenfield railway project's effects on biodiversity in the Western Ghats of north Karnataka. The specific objectives were (i) assess biodiversity value at landscape level (ii) measure the potential threat, avoid, and minimize the adverse impacts through mitigation measures to maintain connectivity in the larger landscape.

We conducted the study in Dharwad, Yellapur, and Karwar forest divisions along 163 km Hubballi–Ankola proposed railway line during December 2024 to July 2025. We used spatial sampling units at one-kilometer segments to sample vegetation, ichthyofauna, herpetofauna, avifauna and mammals. Sampling was done using 500m transect for vegetation, 100m stream transect for ichthyofauna, visual encounter surveys and quadrat sampling for herpetofauna, point counts for birds, and camera traps for mammals. We also used passive acoustic monitoring for cryptic diversity. Proposed alignment will affect 556 hectares of forests: 57 ha dry deciduous, 89 ha evergreen, 322 ha wet deciduous, and 88 ha semi-evergreen. The present study recorded 201 plant species, including 43 Western Ghats endemics, 29 fish species, 65 herpetofaunal species, 142 bird species, and 33 mammal species. The documented species include 12 IUCN Red List species and 35 WLPA 1972 Schedule I species.

Findings reveal key patterns in biodiversity and seasonal habitat use variation across taxa. These insights will be instrumental in guiding site-specific mitigation planning and maintaining ecological integrity. Overall, the study emphasizes the need for rigorous biodiversity assessments in infrastructure projects to balance conservation and sustainable development.

Text

Our study on the approx. 163 km Hubballi–Ankola line recorded 221 plants, 142 birds, 33 mammals, 65 herps. Science-based mitigation is key for connectivity & conservation. #WIIResearch

Instagram Text

The proposed approx. 163 km Hubballi–Ankola railway line passes through Karnataka's rich forests in Dharwad, Yellapur & Karwar. Our year-long surveys recorded: 221 plants, 142 bird species, 33 mammals, 65 herpetofauna and 28 fish.

Title of the Project

Cumulative impact assessment and preparation of Mitigation plan for the proposed Hubballi – Ankola Railway Line Project

Name of PI(s)

Dr. Abhijit Das

Name of Co-PI(s)

Dr. J.A. Johnson

Funding Agency

South Western Railways

Project Duration

2024-2026

Keywords

Railway line, Biodiversity assessment, Mitigation, Corridor, Habitat.

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Title of the Project

Monitoring wildlife overpasses and underpasses of Samruddhi expressway.

Name of PI(s)

Dr. Bilal Habib

Name of Co-PI(s)

NA

Funding Agency

Maharashtra State Road Development Corporation Limited (MSRDC)

Project Duration

2023-2027

Keywords

Crossing structures, Linear infrastructure, Ungulates, Carnivores, Wildlife

Handles

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Monitoring the Wildlife Overpasses and Underpasses of Samruddhi Expressway

-Neha Yadav, Bilal Habib

This study aims to assess wildlife use of crossing structures (CS), specifically overpasses (WOP) and underpasses (WUP), on the Nagpur-Mumbai Expressway (Samruddhi Mahamarg), Maharashtra.

Monitoring began in December 2023 with 62 camera traps placed on 7 WOPs (28 cameras) and 17 WUPs (34 cameras). Data were collected every 15-20 days and analyzed to identify species. Over a total of 10,154 camera days, monitoring recorded 3,03,442 captures between December 2023 and July 2025.

Out of these, 1,02,034 captures were of wild animals, while 2,01,408 came from human activities (such as people, livestock, and vehicles). WUPs documented 9,592 wildlife captures spanning 12 species, including 5 ungulates (blackbuck, chinkara, chital, nilgai, wild pig), 5 small mammals (common palm civet, grey mongoose, Indian hare, Indian porcupine, jungle cat), leopard, and langur. In comparison, WOPs had far more wildlife captures (92,442) and were used by four-horned antelope, Indian jackal, Indian wolf, Indian fox, wild dog, and hyena. Species richness was higher on WOPs than WUPs, with nilgai, wild pig, and chital frequently sighted on WOPs. Analysis of capture timing revealed some species (wild pig, nilgai, hare, chital) appeared on the first day of camera trapping. Blackbuck and small Indian civet were observed after 64 days on WOPs, while langur and common palm civet appeared after 35 days under WUPs. Hyena and wild dog were rarely seen on WOPs.

These early findings show that wildlife species prefer different types of crossing structures. Ongoing long-term monitoring will help clarify species-specific patterns and preferences for CS use.

& Instagram Text

Crossing the divide: Long-term monitoring of WOPs and WUPs on Samruddhi Expressway to understand the animal usage patterns.

From Silence to Rush Hour: Linking Traffic Volume with Road Edge Effects on Wildlife

-Manisha Bishnoi

Roads disturb habitats, alter wildlife behaviour, activity patterns, and species distribution. We aim to examine how roads and traffic intensity influence mammalian activity. The study is conducted along two sites within Valmiki Tiger Reserve: a disturbed site along State Highway 64, and an undisturbed control site along a forest road. The single-sided camera traps were deployed approximately at the centroid of each 0.16 km^2 grid cell. We installed an automatic traffic counter device (PicoCount 4500) to record traffic data. Activity overlap of common species at both sites was analysed using overlap package in R Studio.

Across 3,420 trap nights near road and 5,031 at control site, overall Relative Abundance Index (RAI) was higher at road site (97.63) while species richness was greater at the control site. Results indicated that wildlife activity was frequently detected at road site, whereas control site supported a more diverse community. Among the five mammal species common to both sites, the RAI of tiger (2.1) and sambar (14.6) was higher at control site, whereas leopard (5.5), chital (28.5), and wild pig (12.1) showed higher values at road site. Additionally, leopard cat, Indian pangolin, gaur, sloth bear, barking deer and large Indian civet were unique to the control site.

Tigers showed a cathemeral activity pattern while leopards were mostly diurnal at the control site due to minimal disturbance, but at the road site, their activity peaked at dusk as traffic and human presence started to reduce. Among herbivores, wild boar was primarily nocturnal at the road site, but predominantly diurnal at the control site. Over a 65-day period, 238,189 vehicles of varying types and speeds were recorded, potentially impacting wildlife to different degrees. The findings of this study will contribute to understanding road effects on wildlife and provide insights for mitigating the effects of linear infrastructure.

& Instagram Text

Our study titled 'From silence to rush hour: Linking traffic volume with road edge effects on wildlife' from Valmiki Tiger Reserve shows the impact of roads on wildlife species.

Title of the Project

Conserving Vital Connections Across Expanding Linear Infrastructure in a Transboundary Terai Arc Landscape

Name of PI(s)

Dr. Bilal Habib

Name of Co-PI(s)

Dr. Clara Grilo, Dr. Akanksha Saxena, Dr. Anthony P Clevenger, Dr. Naresh Subedi, Dr. Babu Ram Lamichhane,

Funding Agency

United States Fish and Wildlife Service Rhinoceros and Tiger Conservation Fund

Project Duration

2023-2026

Keywords

road-edge effect, road ecology, linear infrastructure, habitat disturbance

Handles

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From Waste to Wealth: Addressing Abandoned Fishing Gears Through the Lens of Circular Economy and Livelihood Development

-Suman Mallick, Diksha Semwal, Srushti Milind Meshram, Heena Nizam, Mohd Fardeen

India, encompassing 8100 kilometers of coastline and vast inland water systems, ranks as the third-largest fish-producing nation. Fisheries sustain millions, yet unsustainable practices threaten aquatic biodiversity and livelihoods. Overharvesting, advanced gear, and abandoned, lost, or discarded fishing gear (ALDFG) choke ecosystems—entangling species, polluting rivers, and eroding incomes. Unfortunately, rivers being the prominent source of such abandoned fishing gears are widely neglected. The Ganga River, a biodiversity hotspot and lifeline for communities, now ranks as the second most polluted river in the world, 1,20,000 tons of ADLFG annually. The endangered dolphins, otters, and freshwater turtles face extinction, while fishing communities confront declining catches and rising poverty.

A transformative solution lies in circular economy innovation by recycling discarded nets and plastics into valuable products—handicrafts, textiles, and industrial raw material. India can turn ecological crises into opportunities, thus reducing pollution, restoring habitats, and creating alternative income streams for fishermen. India's first self-sustaining circular economy for management of fisheries waste needs urgent attention. A collaborative effort integrating fishermen, recyclers, small and medium enterprises, and stakeholders can unlock scalable impact—linking environmental restoration with economic growth. Beyond protecting species, this initiative empowers fishing communities and strengthens the blue economy.

Our study focused on filling the gap by comparing the abandoned fishing gears in freshwater as well as marine ecosystems, focusing on the sources, and getting lessons from international management systems using extensive literature review and statistical models along with a way forward to tackle the issue for the first time in India. The ground truthing is yet to be done by understanding the status and bringing all the stakeholders under one umbrella for successful implementation of this model in India. Such models will contribute to country's GDP thereby promoting ecological sustainability as well as livelihood development.

Title of the Project

Addressing wildlife entanglement in discarded fishing nets through community-based approaches

Name of PI(s)

Dr. Ruchi Badola

Name of Co-PI(s)

Dr. Harish Guleria

Funding Agency

Zoological Survey of London

Project Duration

2020-2025

Keywords

Abandoned, Biodiversity loss, Circular economy, Livelihood development, Sustainability.

Text

Circular business models as a way forward to tackle crucial stressors of aquatic ecosystem-abandoned, lost and derelict fishing gears (ADLFG), often neglected in developing countries like India where fisheries contribute to country's GDP.

Instagram Text

India's first self-sustaining circular economy for management of fisheries waste needs urgent attention to safeguard the aquatic biodiversity from the verge of extinction thereby promoting blue economy and livelihood development.

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Lesser Florican – On the Brink of Extinction

-Mohib Uddin, Vishnupriya Kolipakam, Varun Kher, Lallianpuii Kawlni, Sutirtha Dutta

Lesser florican (LF) is critically endangered and facing imminent risk of extinction. Once distributed across the Indian subcontinent, its breeding range is now confined to Rajasthan and Gujarat where they migrate in monsoon. Their population has declined drastically from 3530 in 1999 to ~800 in 2018. They breed in agri-grasslands and their non-breeding ecology is poorly understood.

As part of the Project Great Indian Bustard, we initiated focused studies on LF in 2017 in Ajmer, Rajasthan to understand their population trend, seasonal habitat uses, threats, movement patterns and breeding success with the help of telemetry and field monitoring. As an insurance against total extinction and with the aim of future rewilding, a conservation breeding program was initiated in 2020.

We tagged 12 individuals, and found that tagged males stayed in breeding areas till mid-October whereas females left the breeding ground once their nest was lost. During the breeding season, the average home range (HR) of females was 36.52 km^2 whereas male HR was 3.10 km^2. They migrated to wintering sites in Maharashtra, Telangana, Karnataka and Andhra Pradesh, flying 12 – 1500 kms away from breeding sites. The population in Ajmer faced a steep decline with only 3 individual sightings in 2025. Nest monitoring showed a very low recruitment rate with loss of >80% eggs, highlighting agriculture as an ecological trap and the need of restoring grasslands. The captive breeding program is in its initial phase with 11 individuals in captivity having only 1 female with >4 years age and 1 male showing signs of breeding.

Husbandry protocols for rearing and captive breeding are being developed with initial success in semen collection for cryo-preservation. The species' future hinges on restoration of grasslands and successful breeding in captivity for rewilding, failing which, the species would go extinct in near future.

Title of the Project

Project Great Indian Bustard (National Conservation Action Plan for GIB and Lesser Florican)

Name of PI(s)

Dr. Sutirtha Dutta

Name of Co-PI(s)

Dr. Vishnupriya Kolipakam, Mr. Varun Kher, Dr. Lallianpuii Kawlni,

Funding Agency

National CAMPA Authority

Project Duration

2024-2029

Keywords

Lesser florican, movement pattern, conservation breeding

& Instagram Text

Presenting conservation efforts for one of the most threatened birds of India the Lesser Florican. An enigmatic species of semi-arid grasslands on the verge of extinction. Learnings and way ahead for its conservation.

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Title of the Project

PAN India Assessment and Monitoring of Endangered Species under the Integrated Development of Wildlife Habitats (IDWH) (VI) – Nicobar Megapode

Name of PI(s)

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Name of Co-PI(s)

Dr. Nehru Prabakaran

Funding Agency

MoEFCC

Project Duration

2022-2025

Keywords

2004-tsunami, Post-tsunami recovery, Coastal forests, Habitat loss, Mound nests

Handles

vishnuthavara, nehruprabakaran, moefccgoi

Instagram Handles

NA

Population Recovery of the Threatened Megapode of the Nicobar Islands

-Vishnu T, Nehru Prabakaran, Suresh Kumar

The 2004 Indian Ocean tsunami had a devastating impact on the Andaman and Nicobar Islands, and the endemic Nicobar Megapode (*Megapodius nicobariensis*), is one among the most severely affected species. An assessment in 2006 reported a 70% population decline, and it is not known if the megapode population has since recovered. This study therefore undertook a systematic assessment of the population across the Nicobar Islands during January-July 2024 and January-May 2025.

We surveyed available coastal forests across 16 islands of both Central and Southern Nicobar group where the species has been reported. On larger islands, nest mounds were located along a 2 km trail (N=108) and extrapolated for the Potential Coastal Habitat for Megapode (PCHM), derived from GIS. A similar extrapolation approach was adopted for Non-Conducive Coastal Habitat for Megapode (NCHM), where opportunistic sampling using trails (N=71) was undertaken. Thorough searches for nest mounds were made in case of smaller islands. Based on literature, every active nest mound was estimated to have either one or two breeding pairs. In Central Nicobar group, 151-302 breeding pairs were estimated, suggesting an increase of more than 54% from post-tsunami estimates (98-196 breeding pairs). In contrast, the Southern Nicobar group reported a 7% decline in population (277-554 breeding pairs) from the previous estimate (297-594 breeding pairs), likely influenced by the differences in previous estimate's PCHM classification (Over-estimated PCHM for Great Nicobar & Little Nicobar).

Our findings indicate signs of recovery in the Nicobar megapode populations in the Central Nicobar group while the Southern Nicobar group observed a decline. Despite the overall population shown 8.4% increase, it still faces significant threats from anthropogenic pressures, particularly the conversion of coastal habitats into plantations, specifically in Teressa, Kamorta and Katchal. Overall, the estimated population is higher than the post-tsunami estimates but significantly lower than that of pre-tsunami.

& Instagram Text

Exciting news! Increase in Nicobar megapode population! Signs of #population recovery from 70% decline due to the 2004 #tsunami from the Nicobar Islands. However, habitat loss due to #forest clearing remains a threat, highlighting the need for #conservation efforts.

Indian Dugongs from the Brink: A Decade of Hope, Setback, Success, and Future!

- Swapnali Gole, Sameeha Pathan, Sagar Rajpurkar, Sumit Prajapati, Sweta Iyer, Srabani Bose, Vabesh Tripura, Akarsh Aggarwal, Arun Sankar, Garima Dhiman, Sonia Negi, Chinmaya Ghanekar, Nehru Prabakaran, K. Sivakumar, J.A. Johnson

Marine megafauna conservation in shallow, coastal waters require a cross-functional, multi-disciplinary initiative. We attempted a comprehensive scientific and participatory approach across the distributional range of dugongs in India at Gujarat, Tamil Nadu, and the Andaman and Nicobar Islands (ANI), to recognise and address management needs.

We identified occurrence hotspots (through social surveys, citizen science, drones), key feeding grounds (through field surveys and remote sensing), and local threats (boat traffic, plastic litter, metal pollution) critical for dugong and seagrass management. Through > 9 years of ecological surveys and community engagement, we report 1846 sightings across sites, where dugongs largely moved as solitary individuals (76 %), in pairs (18 %) and herds (6 %, 3-13 individuals). Genetic analysis reports a unique lineage of Indian dugongs, while habitat surveys provide discoveries of foraging grounds from Gujarat and ANI (n=18 and 32, respectively).

Critical habitat suitability-risk assessment identifies 85% of the high-risk areas outside the protected areas. Drone surveys targeted towards population and behaviour assessment revealed encounter rates of 0.027, 0.036 and 0.025 dugongs/km from Palk Bay (19.50 km^2), Gulf of Mannar (17.94 km^2), and ANI (86.58 km^2) respectively, with no detection from Gujarat due to low population and logistical constraints. Observed individuals spent 61% time only on foraging (16.5 hours). Furthermore, pollutant analysis of stranded dugongs (n=46) demands stringent policy measures towards habitat health monitoring, especially in Halodule and Halophila spp. meadows.

Continued outreach and capacity building programs (n= > 1000 programs; > 1,00,000 people) have reduced dugong mortalities (39 entangled rescues) and enhanced legislative protection (First Dugong Conservation Reserve in Tamil Nadu).1,716 fishers' kids from grassroots communities have benefited under the banner of the Dugong Scholarship Program. Our project underscores the value of integrating long-term community engagement, through collaboration, with advanced ecological tools, which informs regional conservation policies for dugongs.

& Instagram Text

Presenting a decade long conservation effort to safeguard dugongs in the Indian waters- A story of community building, setbacks, lessons learned, hope and future! #savedugongs #marineconservation

Title of the Project

Recovery of Dugongs and their habitats: An integrated participatory approach (CAMPA-Dugong)

Name of PI(s)

Dr. J.A. Johnson

Name of Co-PI(s)

Dr. Nehru Prabakaran, Ms. Chinmaya Ghanekar

Funding Agency

CAMPA

Project Duration

2016-2025

Keywords

Marine mammals, Indian Ocean, herbivory, IMMA, community-outreach

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Title of the Project

Gaur Reintroduction Plan 2023-28: Establishment of Gaur (*Bos gaurus gaurus*) population in Sanjay Tiger Reserve, Madhya Pradesh

Name of PI(s)

Dr. Parag Nigam

Name of Co-PI(s)

Dr. Bilal Habib & Field Director, STR

Funding Agency

Madhya Pradesh Forest Department

Project Duration

2023-2028

Keywords

movement behaviour, human-gaur interaction, avoidance behaviour, landscape connectivity

Handles

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Landscape Use and Human Avoidance by Reintroduced Gaur

-Bhaskar Bhandari, Ritesh Vishwakarma, Abhay Sengar, Amit K. Dubey, Bilal Habib, Parag Nigam

Biodiversity in the Anthropocene faces intensifying human pressures, threatening ecosystem integrity and resilience. Amidst this crisis, species reintroductions have emerged as vital interventions to restore ecological balance. The gaur (*Bos gaurus*) plays a pivotal role in shaping forest ecosystems through habitat modification and seed dispersal activities. However, the persistence of gaur in human-dominated landscapes hinges on their ability to adaptively navigate anthropogenic pressures. Despite their ecological significance, gaur responses to human-induced stressors remain poorly understood, highlighting the need for targeted research to inform effective conservation strategies.

Gaurs were reintroduced into Sanjay Tiger Reserve, which is located in the easternmost extent of Vindhyan range of Madhya Pradesh. This study aimed to assess habitat selection patterns of gaur in human-modified landscapes and investigate behavioural strategies used by gaur to mitigate human presence.

We used fine-scale satellite-GPS radio-telemetry data to perform resource selection function (RSF) analysis and trajectory analysis to evaluate spatial and temporal patterns of habitat use. Resource selection functions and trajectory analyses revealed a strong preference for forested habitats with minimal human activity. Movements into agricultural fields and settlements were not frequent and occurred mostly at night, suggesting temporal partitioning to minimize direct encounters with people. When traversing human-dominated areas, gaur exhibited longer and faster movements (mean step length: 515.61 m; mean speed: 1.43 km/h) than in forests (mean step length: 354.57 m; mean speed: 1.12 km/h), reflecting a strategy of rapid passage to avoid human presence. Activity peaks during nighttime further highlighted the avoidance strategy.

Our findings reveal that gaur employs spatial and temporal partitioning as a key mechanism of coexistence. They preferentially use forested habitats while relying on accelerated movements and nocturnal activity to minimize direct encounters with people. These adaptive behaviours facilitate functional connectivity between resource-rich and low-risk areas, enabling gaur to persist across human-dominated landscapes.

& Instagram Text

Sh. Bhaskar Bhandari presented fascinating insights on the movement of reintroduced gaur in Sanjay Tiger Reserve, revealing how these giants avoid human-modified zones and prefer forested corridors—a key step toward successful rewilding!

Advancing Freshwater Turtle Rehabilitation: Digital Image Processing as a Tool for Morphometric Assessment

-Ashish Panda, Vikas Verma, Anupam Srivastav, Ruchi Badola, Syed Ainul Hussain

Freshwater turtle populations in the Ganga River Basin face severe threats from habitat degradation and illegal trade, necessitating effective conservation and rehabilitation strategies. As part of ongoing joint conservation efforts, the Wildlife Institute of India and Uttar-Pradesh Forest Department at the Turtle Breeding and Rehabilitation Centre (TBRC), Sarnath, evaluated the use of digital image processing as a non-invasive tool for morphometric assessment of rescued turtles under rehabilitation.

The primary objective was to compare the efficiency, accuracy, and reliability of digital image processing using ImageJ with vernier caliper-based morphometric assessment. Morphometric assessments, including straight carapace length (SCL) and straight carapace width (SCW), were recorded using both vernier calipers and digital image processing with ImageJ, an open-source image analysis software. A total of 172 individuals from nine freshwater turtle species under rehabilitation were measured. Digital image processing significantly reduced handling and measurement time from an average of 203 seconds using calipers to just 48 seconds with ImageJ, representing a 96.2% reduction in handling time. Statistical comparison revealed no significant differences between manual and digital measurements (paired t-test, $p > 0.05$), and a strong correlation was observed between both methods ($R^2 = 1$). The mean absolute error (MAE) ranged between 0.41 and 0.76 cm, and the root mean square error (RMSE) between 0.32 and 0.71 cm, indicating high precision in ImageJ.

These results demonstrate that digital image processing, which is ImageJ-based morphometry, provides accuracy comparable to conventional methods while substantially reducing stress to the animals and handling time. This ImageJ approach is a rapid, cost-effective, and stress-free alternative for morphometric monitoring of freshwater turtles in captivity. It can be extended for field applications where direct handling is challenging. Digital morphometry thus enhances animal welfare and provides a practical, scalable tool for rescue, rehabilitation, and overall ex-situ management of freshwater turtles in India.

& Instagram Text

A new tool for freshwater turtle morphometry! Our study shows that digital image processing (ImageJ) is a fast, accurate, and stress-free alternative to callipers, enhancing welfare and supporting freshwater turtle rehabilitation.

Title of the Project

Planning and management for aquatic species conservation and maintenance of ecosystem services in the Ganga River basin for a clean Ganga

Name of PI(s)

Dr. Ruchi Badola

Name of Co-PI(s)

NA

Funding Agency

NMCG - Ministry of Jal Shakti

Project Duration

2020-2026

Keywords

morphometry, freshwater turtle, ImageJ, vernier calliper, comparison

Handles

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Instagram Handles

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Steps Before the Sprint: Initial Movements & Habitat Selection of Free-Ranging Cheetahs in Kuno National Park, Madhya Pradesh

-Moulik Sarkar, Bipin C.M., Sanath Muliya, Vishnupriya Kolipakam, Bilal Habib

India reintroduced cheetahs (*Acinonyx jubatus jubatus*) from Namibia and South Africa during 2022–23 at Kuno National Park (KNP), Madhya Pradesh, marking the first intercontinental carnivore translocation 75 years after their local extinction. This pioneering initiative aims to restore lost natural heritage, revive open ecosystems, and re-establish cheetahs as functional apex predators. Ensuring population viability demands adaptive management supported by robust ecological data. This study addresses this need by quantifying the movement patterns and habitat preferences of reintroduced cheetahs at the release site. Kuno NP (area ~748 km^2) is a mosaic of savannah, dry deciduous forest, grasslands, and riverine patches within the contiguous Sheopur–Shivpuri landscape (~6,800 km^2).

Fine-scale movement data were obtained from eight (3 females and 5 males) free-ranging cheetahs (December 2024–August 2025) fitted with GPS-satellite collars. We analyzed home-range size using Minimum Convex Polygon (MCP) and kernel density estimation (KDE). Resource Selection Functions (RSFs) and Ivlev's Index were computed to evaluate habitat use. Results indicate marked variation in ranging behavior. Females covered an area of 275–4,870 km^2, where mothers with subadult cubs demonstrated larger exploratory movements. Adult male coalitions ranged in smaller areas (~1,021 km^2) compared to subadult coalitions (~1,735 km^2). Across eight individuals, average daily distance moved was ~3.56 km (±0.76 SE), mostly during daytime, while they consistently selected open habitats of Terminalia pendula forests in Kuno NP.

As the project is progressing through its formative years, initial patterns of exploratory movements and habitat use provide invaluable insights and learnings—both new and known—on cheetah ecology. By integrating movement ecology with habitat selection, this study offers site-specific evidence vital for designing landscape-scale management strategies. Broadly, these findings contribute to global rewilding science, highlighting how large carnivores adapt to human-dominated ecosystems. Continued monitoring remains essential to guide adaptive management and secure the long-term persistence of cheetahs in India.

Title of the Project
Bringing Back the Cheetah in India

Name of PI(s)
Dr. Bilal Habib

Name of Co-PI(s)
Dr. Vishnupriya Kolipakam

Funding Agency
NTCA

Project Duration
2024-2025

Keywords
Cheetah, Conservation Translocation, Kuno National Park, Habitat Selection, Movement Ecology, Metapopulation, Spatial Ecology, GPS Telemetry

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Instagram Handles
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Text
Steps Before the Sprint: Presenting our latest insights on the initial movements & habitat selection of free-ranging cheetahs in Kuno National Park, Madhya Pradesh. Exploring how these apex predators navigate India's restored landscapes

Instagram Text
Steps Before the Sprint: Sharing new insights on how free-ranging cheetahs explore and select habitats in Kuno National Park, Madhya Pradesh. A journey of movement, survival & conservation in India's restored wild landscapes.#Cheetah #Rewilding #Conservation #Habitat #KunoNationalPark #Metapopulation #Habitat

From Blue Isles to Seagrass Pastures: Satellite Tracking Green Turtles from Lakshadweep reveal movements across the Arabian Sea

-Mohit M Mudliar, R Suresh Kumar

Lakshadweep Islands, an important nesting and foraging ground of green turtle (*Chelonia mydas*) in India, reportedly witnessed high grazing pressure by the species on seagrass meadows between mid-2000 to -2010. This apparently resulted in reduced fish recruitment and catch in the region, leading to negative perception of the species among local fishers. How or whether green turtles in the region continue to affect seagrass meadows remains unknown. In this connection, we initiated a tracking study of nesting green turtles from the Agatti Island to determine their movements and spatial use.

We captured 7 green turtles post nesting and tagged with Argos PTT, which provided locations and dive information at regular intervals. State-space models were employed for track correction and behavioural analysis, along with comparison of dives for different individuals across the tracking period.

Tracking lasted 92-166 days, and within the Lakshadweep waters turtles resided for 16 to 79 days and during this period 4 turtles re-nested 1-8 times. Upon departure from Lakshadweep waters turtles showed directed movements, and moved to the shelf waters of Karnataka, Gulf of Oman, Kutch (Gujarat) and Mannar (Tamil Nadu), and Maldives. There, the turtles diving behaviour switched to shallow dives (median - 2.75 m), spending relatively longer duration under water (TAD index - 64.52) indicative of foraging. While on migration the turtles performed relatively deeper dives, and particularly during night (Median - 15.62; range < 1 m to 66.5 m) suggesting resting behaviour. The TAD index during the migration phase was relatively lower (45.16).

Our findings reveal that green turtles use multiple islands in Lakshadweep for nesting and post nesting move to different foraging areas in the Arabian sea and may be beyond. This further highlights the significance of Lakshadweep islands for green turtle populations of the Northern Indian Ocean

Title of the Project

Understanding the nearshore and migratory movements of Green Sea turtles (*Chelonia mydas*) and Hawksbill Sea turtles (Eretmochelys imbricata) from the Lakshadweep Islands

Name of PI(s)

Dr. R Suresh Kumar

Name of Co-PI(s)

NA

Funding Agency

Lakshadweep Department of Environment and Forest

Project Duration

2024-2026

Keywords

Chelonia mydas, migration, habitat use, diving behaviour

& Instagram Text

From Lakshadweep's blue isles to seagrass pastures afar- Green Turtles chart epic migrations across the Arabian Sea.
#GreenTurtles #Lakshadweep #MarineMigration #ArabianSea

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Instagram Handles

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Title of the Project

Long term monitoring of tigers, co predators and prey in tiger reserves and other tiger bearing areas of Vidarbha, Maharashtra

Name of PI(s)

Dr. Bilal Habib

Name of Co-PI(s)

Dr. Parag Nigam, Dr. J. Ramgaonkar, Dr. Prabhu Nath Shukla, Mr. M Adarsh Reddy, Mrs. Piyusha Jagtap, Mr. Jayaram Gowda R, Mr. Kishore Mankar

Funding Agency

Maharashtra Forest Department

Project Duration

2019-2029

Keywords

ungulates, group size variation, predator density, habitat structure, Vidarbha landscape

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Grouping Under Pressure: Predator – Prey – Habitat Interactions in Social Ungulates of Vidarbha Landscape, Maharashtra

-Suman Koley

For ungulates, predators, habitat, and population density often determine variation in group size. However, whether the underlying causes of these relationships represent an ecological adaptation or a purely mechanistic process, where group size depends only on the rate of group encounters is debatable. Moreover, understanding these processes in a multi-prey–multi-predator system is more complex and relatively understudied.

In this study, we modeled the ecological determinants of group size variation in major large carnivore prey species in the Vidarbha landscape. We surveyed group sizes of spotted deer, sambar, and gaur in five tiger reserves and one wildlife sanctuary across the region. All protected areas had varying densities of large carnivores, which we categorized into three classes: low (0–2 per 100 km^2), medium (>2–5 per 100 km^2), and high (>5 per 100 km^2). The abundance of focal prey species differed among sites. The mean group size and group density estimates of the three species also varied across sites.

We found that the group size of spotted deer was significantly correlated with high tiger density and open forest habitats. As tiger density decreased, spotted deer formed significantly smaller groups ($p < 0.01$). Our results suggest that group size in social ungulates is influenced by multiple ecological factors, with the relative magnitude of each factor differing across species and contexts, supporting our hypothesis of larger grouping under predation pressure.

This study highlights the importance of considering predator density and habitat structure in conservation planning, as group size dynamics can influence prey vulnerability, predator–prey interactions, and ultimately ecosystem stability.

& Instagram Text

Grouping under pressure: Predator – Prey – Habitat Interactions in social ungulates of Vidarbha Landscape, Maharashtra. #PredatorPrey #Conservation #Biodiversity #WildlifeResearch #Ecology #NatureScience #HabitatStudy #CarnivoreEcology #Ungulates #WildlifeConservation #IndiaWildlife

Red Panda Site Use Intensity in Suitable Habitats of the Western Arunachal Landscape, Eastern Himalaya

-- Pujan Kumar Pradhan, Bilal Habib, Govindan Veeraswami Gopi

Red pandas (*Ailurus fulgens*) are classified as endangered, primarily due to severe habitat loss and fragmentation. Anthropogenic disturbances like livestock grazing, developmental activities, and human-induced forest fires pose major threats to their survival. Within the Western Arunachal Landscape, encompassing the Tawang and West Kameng districts, a considerable proportion of highly suitable red panda habitat exists. However, much of this area lies outside the formal protected area network and is increasingly threatened by unsustainable livestock grazing and rearing practices. Additionally, long-standing transhumance traditions, practiced for more than a century, continue to shape the ecological dynamics affecting red pandas and other wildlife.

We used the grid-based approach (2x2 km) and deployed 145 camera traps within suitable habitats, maintaining the inter camera trap distance of at least 500 m. The survey period from October 2023 to March 2025, with the total camera trap nights of 12,259, resulted in 24 red panda captures from 14 locations. We used the habitat suitability maps generated using MaxEnt algorithm on the basis of the primary and secondary presence points of RP across Arunachal Pradesh. Using these data, we applied single-season occupancy models to evaluate site-use intensity, with occupancy probability at each site serving as a proxy. Anthropogenic disturbances were incorporated as covariates to assess their influence on red panda site use.

Despite predictions of high habitat suitability from the MaxEnt model, our results revealed low site-use intensity by red pandas. Occupancy modeling further demonstrated that anthropogenic pressures, particularly feral dogs, livestock grazing, and human presence, were negatively associated with the red panda site use.

These findings highlight the urgent need for targeted mitigation strategies. We recommend the adoption of balanced management approaches that reduce anthropogenic threats while promoting coexistence between red pandas, other wildlife, and local communities dependent on forest resources.

& Instagram Text

Study on Red Panda site-use intensity in the Western Arunachal Landscape, Eastern Himalaya, reveals how anthropogenic threats are impacting the species in Arunachal Pradesh. #IDWH #RedPanda #Conservation #NEIndia

Title of the Project

PAN India Assessment and monitoring of Endangered species under the IDWH – Red Panda

Name of PI(s)

Dr. G. V. Gopi

Name of Co-PI(s)

Dr. Bilal Habib

Funding Agency

Ministry of Environment, Forest and Climate Change (MoEF&CC)

Project Duration

2022-2026

Keywords

Ailurus fulgens, Eastern Himalaya, Endangered species, Wildlife Conservation, Small Carnivores

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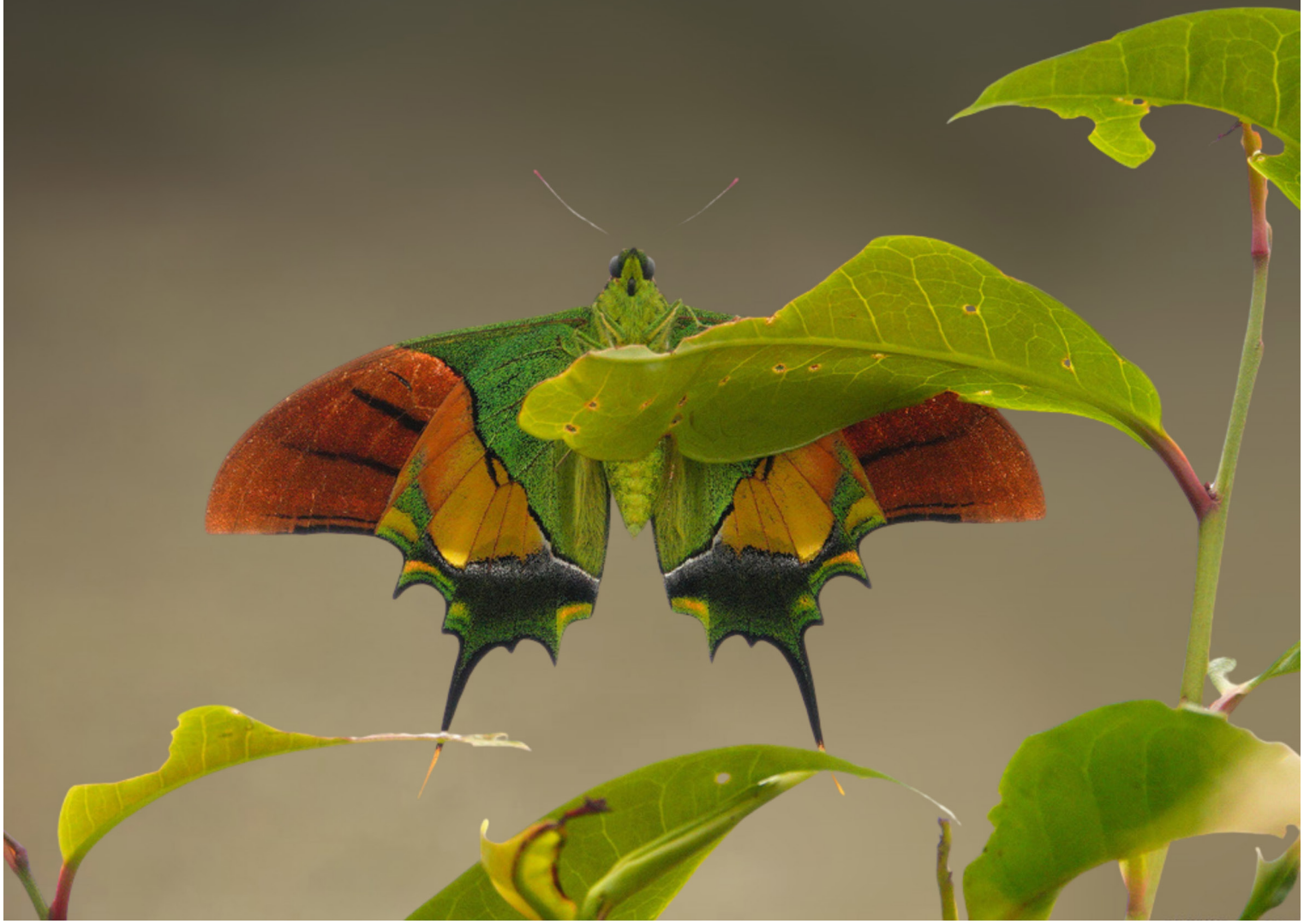
ABSTRACTS
SPEED TALKS



Aligning Global Policy and Conservation Research: Capacity Building as a Tool in Institutional Diversification

-Anuranjan Roy, Jonathan Edward de Rozario, Meghna Ramesh, Athulya NK, Poonam Sati, Rajni, Madhumita Panigrahi, Nehru Prabakaran, R Suresh Kumar

The 1972 UNESCO World Heritage Convention (WHC), with 196 signatory countries, is one of the most widely endorsed international agreements. Of the 10 UNESCO Category 2 Centres (C2Cs) worldwide supporting WHC implementation, the Wildlife Institute of India- Category 2 Centre (WII-C2C), hosted at WII Dehradun, is the only one dedicated to Natural Heritage, expanding WII's role beyond research into global training, policy engagement, and partnerships. Through an evaluation of the Centre's activities in the past decade, we examine the strategic importance of specialized capacity-building centres like WII-C2C, by: (1) conveying the reach of its training initiatives through nationalities, roles and profiles of trainees; (2) review how the Centre complements the research and management focus of WII utilizing conservation science as a key component within natural heritage capacity-building; (3) establish the additional pathways towards conservation outcomes provided by natural heritage capacity-building. The Centre's work will be presented through:(1) documentation of the spectrum of resource persons and materials that natural heritage capacity-building includes; (2) an analysis of its capacity-building curriculum with respect to WHC and conservation priorities; (3) framework for capturing value-addition - including network creation, knowledge brokering, and multiplier effects through educator training programs.

Over a decade, WII-C2C has trained 2,500+ participants from 50+ countries spanning six continents, with an accelerated international reach of 30 countries in the past 18 months. WII-C2C has additionally positioned WII as a recognized international node for WHC-implementation expertise, providing value beyond conventional research metrics.

This multi-tiered approach of WII-C2C utilizes the broad span that heritage - natural, cultural and intangible - offers in knowledge dissemination pathways. A specialized capacity-building centre like WII-C2C represents strategic institutional diversification for WII with enhanced science-policy engagement within international conservation frameworks like the WHC establishing and multiplying the host institution's global impact.

& Instagram Text

This presentation looks at how global policy and conservation research can align through capacity building activities via a review of WII-C2C

Title of the Project

Wildlife Institute of India - Category 2 Centre (WII-C2C) for World Natural Heritage Management and Training for Asia and the Pacific Region, under the auspices of UNESCO

Name of PI(s)

Dr. R Suresh Kumar

Name of Co-PI(s)

Dr. Nehru Prabakaran

Funding Agency

National CAMPA

Project Duration

2015-2026

Keywords

UNESCO World Heritage, Capacity building, Institutional diversification, Institutional impact, Research-to-practice

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Title of the Project

Long term ecological monitoring of Mukundara Hills and Ramgarh Visdhari Tiger reserves.

Name of PI(s)

Dr. Bilal Habib

Name of Co-PI(s)

Dr. Vishnupriya Kolipakam,
Dr. Lallianpuii Kawlni

Funding Agency

Rajasthan Forest Department

Project Duration

2023-2029

Keywords

Reintroduction, Recovery, Semi-arid, Radio-telemetry, Metapopulation

Handles

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From Shadows to Stripes: Conserving tigers in the semi-arid western Indian landscapes

-Rajrajeshwar Thakar, Mohit Kumar Patra, Dixit Verma, Ayan Sadhu, Lallianpuii Kawlni, Vishnupriya Kolipakam, Bilal Habib

Large carnivores worldwide face escalating threats from habitat loss, human encroachment, and declining prey, making their conservation a global priority. In India, despite overall recovery of tigers, the semi-arid western landscape remains highly vulnerable to local extinction due to isolation, prey depletion, and small reserve sizes. To revive and conserve these populations in a metapopulation framework, tigers from Ranthambhore were reintroduced to Ramgarh Visdhari (RVTR) and Mukundara Hills Tiger Reserve (MHTR).

These fragile landscapes demand intensive conservation investment, scientific planning, and timely interventions. We aimed at understanding the ecology of reintroduced tigers in terms of their exploration behaviour, movement, and ranging pattern, resource selection, and prey selection. Tiger movements were tracked using radio-telemetry & camera traps while prey and co-predator densities were estimated through distance sampling and camera-trap–based spatial analyses, respectively.

Initially, reintroduced tigers ranged widely but established smaller home ranges after about 3 months' post-release (range: 2–5 months). Movements varied by individual and time of day, and were constrained by anthropogenic disturbance. Tigers actively used areas within the PA characterized by rugged valleys with dense vegetation and water, avoided highways, but crossed secondary roads when moving between forest patches. They targeted large-bodied prey, mostly cattle, but preferred wild prey when available.

Critically low wild prey densities (1-2 chitals/km^2, <1 sambar/km^2) limit tiger recovery in both reserves. Despite supplementation, prey numbers have not increased, likely due to hard-release practices and rising leopard densities—RVTR (2.82022 to 8.72024/100km^2) and MHTR (4.82022 to 7.22024/100km^2). Human settlements inside both reserves further constrain prey and tiger recovery.

Since 2018, mortalities (6 adults, 5 cubs) have slowed progress, but populations are showing early signs of stabilization. Conservation strategy should prioritise wild prey revival and creation of inviolate habitats through incentivised village relocation, before proceeding with further reintroductions.

Text

India's tigers are rising, but RVTR & MHTR remain on the edge. Prey is scarce, leopards growing, villages inside reserves squeeze space. Fix: revive wild prey + relocate villages → strong, resilient tiger metapopulation. #savetigers #wii_india

Instagram Text

Tigers are making a comeback in India, but semi-arid reserves like Ramgarh Visdhari & Mukundara face big challenges—low prey, rising leopards, and human settlements. We must revive wild prey and create safe spaces to help these tigers thrive and keep the population strong. #SaveTigers

Lightning Facilitates Species Richness Hot Spots in Mangroves: A Case Study from the Andaman Islands

-Perarivalan Sengannan, Nehru Prabakaran

Natural disturbances play a crucial role in ecosystem functioning at varying spatial and temporal scales. The unique canopy gaps within monodominant mangrove stands formed by lightning strikes will alter light intensity, temperature, and sediment properties that facilitate plant reorganisation. These canopy gaps provide an opportunity to study the recovery pathways of flora and fauna.

We studied recovery patterns of vegetation, crab communities, and their influencing factors across various stages of canopy gap recovery. We surveyed 40 canopy gaps under two categories (Recent Canopy Gaps: 1 - 6 years old and Recovering Canopy Gaps: 7 - 15 years old; 20 in each category) across six sites in the Andaman Islands. Each canopy gap was paired with a control plot in the intact forest. Vegetation was surveyed from 7 m circular plots (trees, saplings, seedling, trees), and crabs were sampled from three 25 m2 quadrats within the vegetation plots.

Plant species richness was high in recently formed canopy gaps but declined in the late gap succession. Both seedling and sapling densities were more than two-fold higher in recent canopy gaps compared to recovering canopy gaps and intact forests. Rhizophora apiculata was dominant across tree, sapling and seedling. Crab diversity was highest in the intermediate gap recovery stage (Shannon diversity, H' = 0.93), with a moderate canopy cover (average canopy cover = 68%). Crabs of the families Ocypodidae and Varunidae were positively correlated with canopy gaps. Ocypodidae crabs were abundant in recent canopy gaps, whereas their count declined in recovering canopy gaps and intact forests.

Canopy gaps within monodominant mangrove forests enhance plant structural heterogeneity and serve as hotspots for crab diversity. Further, long-term monitoring of canopy gaps at fixed intervals and of varying sizes would provide crucial insights into mangrove canopy gap successional dynamics.

& Instagram Text

Lightning facilitates species richness hot spots in mangroves: A case study from the Andaman Islands

Title of the Project

Influence of Canopy Gaps on Mangrove vegetation and Crab communities in the Andaman Islands

Name of PI(s)

Nehru Prabakaran

Name of Co-PI(s)

NA

Funding Agency

Wildlife Institute of India

Project Duration

2024-2025

Keywords

Lightning gaps, Light gaps, Seedling density, Disturbance ecology, Recruitment, Mangrove recovery, Succession

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Title of the Project
Long-term Monitoring of Underpasses on NH44 in Pench Tiger Reserve, Maharashtra

Name of PI(s)
Dr. Bilal Habib

Name of Co-PI(s)
NA

Funding Agency
Maharashtra Forest Department

Project Duration
2019-2029

Keywords
Connectivity, mitigation, linear infrastructure, tiger, Central India

From Barriers to Pathways: Long-term Monitoring of Crossing Structures on NH44 in Pench Tiger Reserve, Maharashtra

-Vedanshi Maheshwari

Wildlife Crossing Structures (CS) aim at maintaining connectivity in fragmented landscapes. Long-term monitoring of CS under National Highway 44 (NH44) in Pench Tiger Reserve (PTR), Maharashtra, aims to assess trends and patterns of use by animals over the years. 78 camera traps have been operational across 9 CS since March 2019. We present the results of the monitoring for the year 2024. We calculated capture rates of mammals using trapping effort and species-specific captures for each CS separately. We estimated overlaps of animal activity under CS and inside PTR using the software R, package 'Overlap', and compared these with previous estimates of 2020.

We obtained 13,651 captures across 23 wild mammal species using the CS. Bengal fox and honey badger were recorded for the first time in 2024. Capture rates revealed high use of CS near PTR by wild dogs (6.04) and sambar (15.43), while sloth bear captures (2.01) were more intense near villages. We observed reduced overlaps between animal activity under CS and inside PTR. Overlap estimates reduced from 0.81 to 0.75 for tigers, from 0.64 to 0.56 for leopards, and from 0.81 to 0.60 in the case of wild dogs when compared with estimates from 2020. We recorded 28 tiger individuals using the CS this year, with 9 new individuals.

Long-term monitoring of mitigation measures such as crossing structures can help assess the efficacy of the measures and understand the preferences of wild species.

Handles
@moefcc, @ntca_india, @wii_india, @MahaForest, @wildwithwolves, @bhlab_india, @akadarj, @VedanshiM

Instagram Handles
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& Instagram Text
Importance of long-term monitoring of underpasses on NH44 at Pench Tiger Reserve, Maharashtra, reveal trends and patterns of use of wild animals.
#NH44 #underpass #largecarnivores #PenchTRMaharashtra#mitigationeffectiveness

Assessing the Impact of Livelihood Training, Public Awareness and Stakeholder Engagement on Community-Led Conservation in the Ganga Basin

-Sweta Bhattacharya, Saurav Gawan, Syed Ainul Hussain, Ruchi Badola

The Ganga River basin, critical for aquatic ecosystems and livelihoods, faces threats from various anthropogenic activities. Integrating community livelihoods with biodiversity conservation remains underexplored. Through the Jalaj project, we addressed this gap across all Ganga states.

Our objective was to evaluate the impact of skill development, public awareness, and stakeholder collaboration on aquatic biodiversity and local economies. To achieve this, we conducted three studies across the 5 major states of the Ganga basin. Study 1 was where we trained 887 participants across 20 programs using the Sustainable Livelihood Framework, applying mixed methods such as random sampling and participatory rural appraisal. In Study 2, we surveyed 360 visitors (45 per site, aged 18+) at eight Jalaj sites through closed-ended pre- and post-sensitization Likert-scale questionnaires on freshwater biodiversity awareness, analysed using MANOVA and paired t-tests (95% CI). Lastly, Study 3 convened stakeholder workshops as focus group discussions, employing qualitative, semi-structured, open-ended questionnaires to engage communities, environmentalists, and government representatives.

Preliminary results across the three studies revealed that, firstly, the training programs enhanced participant incomes and reduced labour migration. Secondly, the visitor survey indicated a significant education–gender interaction effect ($p = 0.019$) and improved awareness of industrial pollution ($p = 0.0093$) and mining ($p = 0.0090$), with composite scores confirming higher post-sensitization awareness ($p = 0.047$; mean difference = –0.191). Finally, focus group discussions generated fresh ideas, surfaced new challenges, and enabled their immediate resolution, resulting in solutions that were closely tailored to the landscape and its people. Together, these outcomes highlight the potential of integrated livelihood training, awareness building, and stakeholder collaboration to advance community-led conservation in the Ganga basin.

Title of the Project

Jalaj: Connecting River and People to Realize Arth Ganga

Name of PI(s)

Dr. Ruchi Badola, Dr. S.A. Hussain

Name of Co-PI(s)

NA

Funding Agency

National Mission for Clean Ganga, Ministry of Jal Shakti

Project Duration

2022-2026

Keywords

River basin management, Participatory approaches, Freshwater biodiversity, Conservation interventions, Environmental awareness

& Instagram Text

Sweta Bhattacharya presents on behalf of the NMCG- Jalaj Project at WII ARS 2025, highlighting how skill development training, public awareness, and stakeholder collaborations are shaping sustainable river basin management.

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Title of the Project
Identification of Tiger Corridors in and around Palamau Tiger Reserve

Name of PI(s)
Dr. Bilal Habib

Name of Co-PI(s)
Dr. Vishnupriya Kolipakam

Funding Agency
Jharkhand Forest Department

Project Duration
2022-2025

Keywords
Habitat connectivity, Tiger dispersal, Circuit theory modeling, Landscape ecology

Handles
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Reviving the Roar: Mapping the Habitat Connectivity of Tigers in and around Palamau Tiger Reserve

-Rohan Desai, Shahzada Iqbal, Ujjwal Kumar, Vishnupriya Kolipakam, Bilal Habib, Qamar Qureshi

Palamau Tiger Reserve (PTR), once a robust tiger stronghold, now faces several threats including habitat fragmentation, human extractive pressures, and inaccessibility due to insurgency. This study aims to assess functional connectivity between PTR and adjoining protected areas across Jharkhand and neighbouring states, with the goal of identifying critical corridors for tiger dispersal and developing long-term restoration and conservation strategies.

We combined remote sensing, circuit theory modeling (via Circuitscape), and extensive field surveys. Resistance surfaces were modeled using land use, topography, and anthropogenic disturbance data. A 25 km^2 grid guided polygon-based sign surveys, habitat assessments, and opportunistic camera trapping. Data on species presence, habitat features, disturbance levels, and carnivore scats were collected. Pellet/dung counts served as proxies for prey abundance. These inputs fed into micro-scale connectivity mapping and bottleneck identification.

Despite severe habitat degradation, PTR is endowed with corridor linkages in most directions—toward Sanjay Dubri, Bandhavgarh, Saranda, and Kaimur. We identified critical dispersal paths, notably Palamau–Garhwa–Kaimur and Palamau–Gumla–Palkot in the landscape. However, many are hindered by settlement encroachment, degraded forests, and law-and-order issues. Field signs confirmed the presence of tigers, prey, and other fauna, indicating viable habitat patches and movement potential.

PTR remains a strategic node in the Central Indian tiger landscape. Scientific identification of corridors and bottlenecks provides a foundation for evidence-based conservation. Legal protection (e.g., Eco-sensitive Zones), community engagement, and targeted restoration can re-establish Palamau's ecological role. Project outputs support informed planning by the Forest Department to secure corridors and enhance long-term tiger recovery across the region.

& Instagram Text
NA

Modelling Probabilistic Co-occurrence Patterns of Red Panda within a Sympatric Terrestrial- Arboreal Assemblage in Singalila National Park, India

-Pooja Kumari, Bilal Habib, Govindan Veeraswami Gopi

Ecological communities are composed of multiple interacting species, and understanding these interspecific interactions is of primary interest in wildlife conservation and management. The probabilistic approaches such as species co-occurrence models enable us to estimate the probability that two species co-occur at a frequency less than or greater than the observed frequency of occurrence.

In the present study, we investigated the patterns of red panda co-occurrence with its associated species using probabilistic co-occurrence models in Singalila National Park, West Bengal. We used species presence-absence data collected through 80 camera traps deployed systematically using 1 km^2 grids, and analysed the species co-occurrence pattern of 18 species across the assemblage.

Our analysis revealed that 19.6% of the species pairs displayed non-random co-occurrence pattern; however, a significant number of pairs (63.4 %) remained too rare to test, indicating sparse spatial distribution of Himalayan species in the study area. The probabilistic models resulted in 10 significant positive associations and 1 negative association among the terrestrial–arboreal assemblage. Of these interactions, a strong positive association was observed between red panda and squirrel spp. (observed = 8, expected = 4, Pgt = 0.011), perhaps attributable to their shared arboreal habitat. Conversely, red panda showed no negative association with any of the species indicating spatial segregation.

Our findings underscore the importance of species interactions for guiding informed management and conservation interventions.

Title of the Project

Integrated Development of Wildlife Habitats- Red Panda

Name of PI(s)

Dr. G.V. Gopi

Name of Co-PI(s)

Dr. Bilal Habib

Funding Agency

MoEF&CC & DST-INSPIRE

Project Duration

2022-2026

Keywords

Red Panda, Probabilistic models, habitat association, Species interactions, eastern himalaya

& Instagram Text

Study from Singalila National Park: Unpacking Red Panda (*Ailurus fulgens*) ecology using probabilistic models, identifying key co-occurrence patterns.
Insights from camera traps. #Himalayas #EndangeredSpecies #RedPanda

Handles

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Title of the Project
National Mission for Sustaining the Himalayan Ecosystem

Name of PI(s)
Dr. J.A. Johnson

Name of Co-PI(s)
Dr. S. Sathyakumar

Funding Agency
DST

Project Duration
2022-2026

Keywords
elevational migration, seasonal variation, community structure, montane mammals

Seasonal shifts in mammal community composition across elevation gradients in the Teesta Basin, Eastern Himalaya

Pooja Pant, Vineet K Dubey, S Sathyakumar

Montane species adapt to seasonal environmental variation through shifts in elevational distribution and community structure, but such dynamics remain poorly understood in biodiversity hotspots like the Himalaya. We investigated seasonal variation in species richness, elevational distributions, and community interactions of mammals in the Teesta Basin. Systematic surveys using n=140 camera traps across 1000–5500m) during summer (May to October) and winter (November to April) periods during 2023-2025. A 500 m elevation band was selected for maximizing spatial coverage and species presence. Seasonal elevational shifts were quantified using abundance-weighted mean, temporal beta diversity (TBI). The co-occurrence networks (summer-winter) were analysed to examine the seasonal changes in community structure with different topological parameters. The study reports 38 mammal species (789 detections: summer and winter) with richness peaked at 2,000–2,500 m in summer (22 species) but shifted to 1,500–2,000 m in winter (25 species). Twenty-nine species (76% of total) exhibited elevational shifts from –284 m to +198 m (mean = –47.3 m downslope, SD = 89.7 m). Mean TBI was 0.234 (range 0.067–0.500), with species gains exceeding losses in winter (0.145 vs. 0.089), suggesting habitat expansion. Co-occurrence networks showed seasonal variations: winter networks had higher connectance (complete: 0.235 vs. 0.177; subset: 0.294 vs. 0.249), greater mean degree (complete: 7.76 vs. 4.79; subset: 7.93 vs. 5.48), and lower modularity (complete: 0.249 vs. 0.442; subset: 0.229 vs. 0.364). Our findings reveal diverse, species-specific responses to seasonal variation along the elevational gradient. The downslope movement trend (79% of species) during winters and strong network differentiation between summer and winter seasons highlight the importance dynamic nature of elevation range of mountain mammals.

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& Instagram Text
Seasonal shifts shape Himalayan wildlife.Our camera-trap study in the Teesta Basin found 38 mammal species, with most moving downslope in winter & changing community networks. Elevation matters for mountain biodiversity! #Himalaya #WildlifeResearch #Mammals

Management Effectiveness Evaluation (MEE) of NP and WLS in India – Repeat Cycle

-Avilekh, Ananya Das, Gautam Talukdar

The Management Effectiveness Evaluation (MEE) is a globally recognized framework developed under the IUCN-WCPA to assess how well Protected Areas (PAs) are being managed in achieving their biodiversity conservation goals. India initiated MEE in 2003 and has since conducted it periodically for National Parks, Wildlife Sanctuaries, and Tiger Reserves.

The second repeat cycle of MEE (2020–25) assessed the management of 438 Protected Areas across the country. The evaluation applied a structured scorecard framework adapted to Indian conditions, examining aspects such as planning, inputs, processes, outputs, and outcomes. The results were categorized into four rating classes: Poor (≤40%), Fair (41–59%), Good (60–74%), and Very Good (≥75%). Overall, a majority of the evaluated PAs fell in the 'Good' and 'Very Good' categories, reflecting steady improvement since the first MEE cycle. However, a notable proportion of PAs continue to remain in the 'Fair' and 'Poor' categories, highlighting the need for targeted interventions in those sites.

The exercise generated valuable insights into the strengths and weaknesses of PA management. While several PAs demonstrated improvements in management planning, patrolling infrastructure, staff capacity, and stakeholder engagement, persistent challenges remain in terms of timely fund allocation, staff shortages, boundary demarcation, human–wildlife conflict, and unregulated tourism pressures.

The findings are of particular relevance in the context of the Kunming–Montreal Global Biodiversity Framework (KMGBF) Target 3 (30x30), which calls for 30% of terrestrial, inland water, and marine areas to be effectively conserved and managed by 2030. MEE outcomes provide a robust evidence base for aligning India's PA network with this global target.

& Instagram Text

NA

Title of the Project

Management Effectiveness Evaluation (MEE) of NP and WLS in India

Name of PI(s)

Dr. Gautam Talukdar

Name of Co-PI(s)

NA

Funding Agency

MoEFCC

Project Duration

2023-2025

Keywords

Protected Areas (PAs), Evaluation framework, Adaptive management, Conservation challenges, Monitoring mechanism

Handles

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Instagram Handles

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Title of the Project
CAMPA-Development of conservation action Plan for River Dolphins

Name of PI(s)
Dr. Vishnupriya Kolipakam

Name of Co-PI(s)
Dr. Lallianpuii Kawlni, Dr. Vidyadhar Atkore

Funding Agency
CAMPA- MoEFCC

Project Duration
2016-2025

Keywords
Gharial, Turtle, basking, habitat preference, Gandak

Basking Habitat Preference of Gharial and Turtles in the Gandak River, Bihar, India

-Gautam, Surojit Moitra, Vidyadhar Atkore, Lallianpuii Kawlni, Vishnupriya Kolipakam

Understanding basking habitat preferences of gharials and freshwater turtles is critical for conservation planning, particularly as riverine ecosystems face increasing pressures from anthropogenic disturbance, land-use change, and hydrological alteration. Gharials and turtles are highly dependent on specific aquatic–riparian conditions, and identifying their preferred basking habitats provides essential insights for habitat management and restoration.

The study was conducted in river Gandak in Bihar. Basking habitat-use by the Gharial (*Gavialis gangeticus*), the Brown roofed turtle (*Pangshura smithii*), and Indian tent turtle (*Pangshura tentoria*) was investigated across a 60-km stretch of the Gandak, divided into upper, middle, and lower reaches. Boat-based surveys were conducted during peak basking hours (08:00-17:00) at a speed of 5–6 km/h. Encounter rates, activity states, and basking substrates were recorded, alongside habitat parameters measured throughout every 4 km segment. Generalised Linear Models were employed to evaluate the influence of environmental predictors on species encounter.

Cropland extent was negatively associated with encounter rates of all three species (Gharial $\beta = -2.73$; P. smithii $\beta = -5.01$; P. tentoria $\beta = -0.87$). In contrast, sandbars significantly increased Gharial ($\beta = 1.12$) and P. smithii ($\beta = 2.97$) encounters, while shrubland presence positively influenced all species presence (Gharial $\beta = 0.79$; P. smithii $\beta = 1.35$; P. tentoria $\beta = 1.01$). Increasing channel depth reduced encounters across species. P. smithii preferred logs and woody debris ($\beta = 0.75$) while avoiding grasslands for basking whereas P. tentoria exhibited an affinity for grasslands ($\beta = 1.10$).

Conservation of Gharial and hardshell turtle populations in the Gandak requires the protection of mid-channel sandbars and Saccharum-dominated sandbanks from agricultural encroachment. Maintaining habitat heterogeneity—sandbanks interspersed with shrubland and grassland—is essential for basking and potential breeding. Hydrological alterations affecting channel depth may compromise basking habitat availability and should be carefully regulated.

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& Instagram Text
Gharials, Brown roofed turtles and Indian tent turtles rely on sandbars, shrubland, and grasslands for basking, while cropland and deep channels reduce basking site use. Protecting mid-channel sandbars and regulating flow are vital for conservation of these reptiles.

From Hotspots to Causes: Investigating Fifteen Years of Elephant Mortality in Tamil Nadu

-Mukesh Chand, Anukul Nath, Bilal Habib

Human–elephant conflict (HEC) poses serious risks to elephant survival and local livelihoods across Asia. It is driven by habitat fragmentation, agricultural expansion, and loss of natural forage, which elevate human–elephant encounters and mortality. We investigated patterns of elephant deaths linked to HEC and identified key mortality factors to develop mitigation measures.

Data were collected between June and August 2025 across 26 elephant-bearing forest divisions in Tamil Nadu. Fifteen years of records (2010–2025) were compiled from forest department databases and cross-verified with Elephant Death Audit Framework post-mortem reports. We quantified temporal and spatial mortality patterns, division/range hotspots, and shifts over time. Each record was assigned to categories (anthropogenic, disease, medical condition, natural, post-mortem awaited, and unfit for post-mortem). We mapped land use and fitted generalized linear models to nine environmental and anthropogenic predictors.

From 2010 to 2025, we compiled 1,758 elephant mortality records: 774 females, 488 males, 382 calves, 99 makhna and 15 unidentified. Deaths by type were natural (568), medical condition (398), disease (335), anthropogenic (183), post-mortem awaited (214), and unfit for post-mortem (60). Electrocution was the leading anthropogenic cause (132). Zoonotic and bacterial infections were among the major disease-related causes, including anthrax, septicemia, and hepatitis enteritis and gastroenteritis were also noted. Spatial analysis identified key forest division level hotspots for elephant mortality: Sathyamangalam (299), Coimbatore (237), and Hosur (151). Within these divisions, forest range level hotspots included Bhavanisagar (112) and Sirumugai (64). Areas with high mortality rates were concentrated near roads, croplands, and protected area boundaries.

Our findings highlight two priority areas for mitigation. First, electrocution-related deaths require safer power line designs, insulation, and community awareness. Second, disease-related mortality demands vaccination near forest edges, improved carcass handling, water sanitation, and regular disease surveillance. Strengthening these measures can substantially reduce elephant mortality in Tamil Nadu.

& Instagram Text

Human–elephant conflict in Tamil Nadu: 1,758 elephant deaths (2010–2025). Electrocution leads anthropogenic causes; anthrax & septicemia drive disease deaths. Hotspots in Sathyamangalam, Coimbatore, Hosur. Solutions: safer power lines, vaccination & surveillance. #Conservation

From 2010–2025, Tamil Nadu lost 1,758 elephants. Electrocution and diseases like anthrax & septicemia are key threats. Hotspots: Sathyamangalam, Coimbatore & Hosur. Safer power lines, vaccination & surveillance are vital for coexistence.

Title of the Project

Understanding Human-Elephant conflict and suggesting mitigation measures in five states (Karnataka, Kerala, Tamil Nadu, Odisha and West Bengal)

Name of PI(s)

Dr. Bilal Habib

Name of Co-PI(s)

Dr. Anukul Nath

Funding Agency

MoEFCC

Project Duration

2024-2026

Keywords

human–elephant conflict, electrocution, zoonotic diseases.

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Title of the Project

Pan India Assessment and Monitoring of Endangered Species under the Integrated Development of Wildlife Habitats (IDWH) - Red Panda

Name of PI(s)

Dr. G. V. Gopi

Name of Co-PI(s)

Dr. Bilal Habib

Funding Agency

Ministry of Environment, Forest and Climate Change Government of India

Project Duration

2022-2026

Keywords

Red Panda, Habitat specialization, Generalized Linear Modeling, Camera trapping, Sikkim,

Handles

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Ecological and Anthropogenic Correlates of Red Panda Occurrence in Sikkim, Eastern Himalayas

-Roshme Borgohain, Bilal Habib, Govindan Veeraswami Gopi

The red panda (*Ailurus fulgens*), an endangered and highly specialized species, occupies a narrow ecological niche within Temperate Himalayan Forest dominated by bamboo. Its distribution is constrained by specific elevation ranges, forest structure, and bamboo availability, making it sensitive to environmental variation and anthropogenic pressures. Understanding fine-scale habitat determinants is crucial for effective conservation. This study aimed to identify the key ecological, environmental, and human-related factors influencing red panda occurrence in protected and non-protected areas of Sikkim.

We conducted systematic camera-trap surveys across 2×2 km grids spanning 2,100–4,500 m elevation, deploying 106 camera traps and accumulating 14,779 trap-nights. At each site, we recorded ecological variables, including elevation, canopy cover, bamboo clump density, and vegetation structure, along with anthropogenic indicators such as livestock presence, feral dogs, and logging activity. Bioclimatic variables were extracted from WorldClim and Google Earth Engine. Red panda presence/absence was modeled using generalized linear model (GLM) as a function of environmental, anthropogenic, and climatic factors. The best model is selected based on AICc value.

The best supported model (AICc = 75.7) identified bamboo clump density ($\beta = 2.13 \pm 0.44$, $p < 0.001$) and elevation ($\beta = 1.28 \pm 0.46$, $p = 0.006$) as strong positive predictors of occurrence. During our study red pandas were detected primarily between 2,500 and 3,600 m elevation. Feral dog activity showed a negative trend ($\beta = -0.057 \pm 0.030$, $p = 0.056$), suggesting potential suppression in areas with high dog presence. Our results reinforce the red panda's specialist dependence on bamboo-rich forests within a narrow elevation band, while also highlighting emerging anthropogenic constraints. Conservation strategies should focus on protecting bamboo habitats at optimal elevations and mitigating feral dog impacts to ensure long-term persistence of this habitat specialist in the eastern Himalaya.

& Instagram Text

Uncovering the factors shaping the habitat use of the elusive red panda in the remote Eastern Himalayas.

Uncovering the factors shaping the habitat use of the elusive red panda in the Sikkim. #RedPanda #SikkimHimalayas #Engangered #Habitatuse

Linking Tradition and Science: Mishmi Takin

-Gaurav P J, Govindan Veeraswami Gopi

Mishmi Takin is a lesser-studied mountain ungulate belonging to the family Bovidae, distributed across the Eastern Himalaya ranges. In India, its habitat is mostly restricted to Arunachal Pradesh, which is also home to many indigenous communities possessing immense traditional ecological knowledge (TEK) that remains largely undocumented. The objective of this study attempted to integrate TEK with scientific methods to document feeding ecology and identification of critical habitat of Mishmi Takin.

We conducted key informant surveys and informal discussions with Idu, Digaru, Miju Mishmis, and Meyor tribes, complemented by camera trap surveys and expeditions. This integrated approach documented both ecological and indigenous knowledge. Along with detailed feeding observations, the rituals and taboos associated with Takin were recorded.

The study examined responses from indigenous communities' knowledge on plant feeding preferences, plant parts consumed, and the feeding encounters were highest on herbs 43, primarily on new shoots and leaves, followed by shrubs 36 with similar feeding preferences. Bamboo was fed on 27 times, mainly for leaves and new shoots, while trees were encountered 13 times, with feeding on bark, bark plus leaves, and fruit. Grasses and other plants were least affected, each with 5 feeding encounters, mainly on leaves or mature grass. Foraging patterns showed selective feeding behaviour with dependence on soft plant parts (leaves, shoots) as well as harder parts (bark, fruit), indicating flexibility and adaptation to seasonal availability.

The study also identified group structures and critical habitats such as calving grounds. The conventional camera trap surveys generated limited data, TEK-guided efforts effectively validated presence, feeding and habitat use. Overall, integrating TEK with scientific methods shown valuable for understanding the ecology of the Mishmi Takin, an elusive and data-deficient species, and has implications for its conservation in diverse mountain habitats.

& Instagram Text

Integrating traditional ecological knowledge with science, our study on Mishmi Takin in Arunachal Pradesh provides unique information on Ecology and conservation insights for this elusive mountain ungulate.

Bridging indigenous knowledge and science to understand Mishmi Takin Ecology in Eastern Himalya, Arunachal Pradesh

Title of the Project

An Integrated Approach for Conservation of Mishmi Takin: Linking Species Ecology with Traditional Ecological Knowledge

Name of PI(s)

Dr. G.V. Gopi

Name of Co-PI(s)

Dr. Parag Nigam
Dr. Bilal Habib

Funding Agency

Ministry Of Environment & Climate Change

Project Duration

2019-2025

Keywords

Traditional ecological knowledge, Mishmi Takin, Feeding preference, Integrated approach, Arunachal Pradesh

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Title of the Project

Assessing population status and effect of top predators on the population of mesocarnivores in the Indian and Austrian large carnivore landscapes

Name of PI(s)

Dr. T Ramesh

Name of Co-PI(s)

Dr. Riddhika Ramesh

Funding Agency

Department of Science and Technology (DST), Government of India

Project Duration

2023-2025

Keywords

Striped Hyaenas, Golden Jackals, Top-down effect, meso-carnivore, random forest

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Assessing Impact of Top-down Control by Large Predators on Meso-carnivores in India and Austria

-Ashish Kumar, Tharmalingam Ramesh, Riddhika Ramesh

Interspecific competition plays an important role in determining the structure of carnivore communities. Top-down effects can impact the coexistence of superordinate and subordinate competitors and prey across a shared landscape. However, resource availability, their restricted distribution and other habitat features can influence interspecific competition among sympatric carnivores. Golden jackal (*Canis aureus*) and Striped hyaena (*Hyaena hyaena*) are key scavengers that co-occur with large predators. Hyaenas and jackals are subordinate to the tiger and leopard and prefer secondary habitat.

In the face of increasing climate change, invasion of non-native plant species, deterioration of secondary habitat, and large predator-centric habitat management, we studied the top-down effect on hyaena in India and on jackal in India and Europe. We tested the top-down effect in India by fitting the presence-absence of scavengers as a function of tiger, leopard, chital, and sambar collated from secondary sources along with other environmental variables, using a random forest algorithm. The effect of wolves on jackals in Austria was assessed using the distance of wolves instead of their presence-absence.

In India, the distribution of hyaena and jackal is found to be indifferent to the presence of predators. Instead, climatic variables like mean diurnal range, isothermality, and annual precipitation were observed to explain the occurrences of hyena and jackal in India. In Austria, jackal exhibited a negative association of wolf proximity, indicating top-down control by wolves. Overall, our study did not suggest any trend of absolute avoidance for predators by scavengers across the models. Top-down control is density-dependent, and the observed lack of absolute avoidance based on presence–absence data warrants further investigation using abundance data for a better understanding.

& Instagram Text

Insights from India and Austria on Scavenger Space Selection in Response to Large Predators

Policy Gaps: Five Conservation Challenges for Sustainable Development in India

- Rohit R.S. Jha, Govindan Veeraswami Gopi

Despite significant advances in wildlife science and legal frameworks in India, persistent gaps in conservation policy continue to undermine effective biodiversity protection. Drawing from an independent policy analysis of current guidelines, statutory frameworks, multi-sectoral experiences, and available literature, 5 urgent policy gaps are identified, that warrant immediate attention and reform.

First, inconsistencies in the preparation and implementation of site-specific wildlife mitigation/ management plans result from the absence of national guidelines and standard terms of reference, leading to variable plan quality and limited compliance monitoring. Second, fragmented and poorly coordinated human-wildlife conflict ex-gratia relief/compensation systems across states create inequitable relief outcomes and fuel community resentment, as recent events demonstrate. Third, the routine neglect of thorough biodiversity integration in Impact Assessments (IAs) perpetuates ecosystem-level oversight – especially in the face of rapid infrastructure development. Fourth, the lack of a comprehensive, centralised database and management framework for sacred groves leaves these eco-culturally important biodiversity hotspots vulnerable to degradation and invisible in conservation planning. Fifth, the absence of a coherent legal or policy framework for ecological corridors continues to fragment critical habitats, threatening long-term species and ecosystem viability.

Based on these findings, a suite of actions are recommended: the participatory development of robust national standards and protocols for mitigation planning following the mitigation hierarchy, fund-streamlining and digitalisation of ex-gratia relief/compensation systems, landscape-level and cumulative biodiversity assessment requirements in IAs, establishment of a dynamic national sacred groves registry, and the legal recognition and management of ecological corridors suitable for multi-taxa threatened wildlife.

This analysis highlights the imperative for focused policy reform and coordinated action to close critical gaps, thereby advancing effective wildlife conservation and sustainable ecosystem governance in India. The speed talk will provide a synthesis of policy and practice, aiming to encourage dialogue and collaboration between researchers and policy practitioners for actionable change.

Text

5 policy gaps we must close now—clear mitigation ToRs, fair/fast HWC payouts, stronger/ cumulative biodiversity assessments, sacred groves registry, and corridor recognition—to accelerate effective #ecosystemconservation and #sustainabledevelopment.

Instagram Text

Five urgent policy gaps to address for effective wildlife conservation in India: inconsistent mitigation plans, fragmented human-wildlife conflict relief, weak biodiversity in EIAs, lack of sacred groves registry, and missing corridor protection. Time for evidence-based reforms!

Title of the Project

Conservation Advisory & Policy Cell

Name of PI(s)

Dr. G.V. Gopi

Name of Co-PI(s)

NA

Funding Agency

Wildlife Institute of India

Project Duration

2024-2026

Keywords

conservation policy, mitigation planning, cumulative impact assessment, sacred groves, ecological corridors

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Title of the Project
Pashmina Certification Centre

Name of PI(s)
Dr. S. K. Gupta

Name of Co-PI(s)
NA

Funding Agency
Public Private Partnership (PPP) Model

Project Duration
2023-2030

Keywords
Fibre, authenticity, guard hair, certification

Following The Microscopic Trails: Trichotaxonomy of Pashmina

- Priya Singh, Chandra Prakash Sharma, Shrey Dandriyal, Mansi Saini, Neetu Bathla, Nishant Saraswat, Rajeev Chand Ramola, Nitesh Goswami, Shivani Rana, Abha Purohit, Ashmita Bhatt, Ritu, Vinayak, Richa, S. K. Gupta

Pashmina, often called the "diamond fibre", embodies not only luxury but also cultural identity and the livelihood of Himalayan communities. Derived from the undercoat of Changthangi goats, it is globally acclaimed for its fineness, warmth, and lightweight texture. Traditionally, Pashmina is crafted into diverse products, distinguished by weaving styles, embroidery, size, and finish reflecting regional artistry and craftsmanship. This product diversity enriches cultural heritage and drives demand, yet simultaneously complicates authentication, as adulteration can occur at multiple stages of production.

The global market has witnessed increasing adulteration of Pashmina with cheaper fibre and even mis-declaration of prohibited animal fibre. Such practices mislead weavers, traders, and buyers, leading to financial loss and, in some cases, legal consequences. The absence of standardized methods for authenticating genuine Pashmina directly impacts Himalayan weavers, whose livelihoods depend on the fair recognition of their craft.

To safeguard trade integrity and cultural heritage, scientific research into authentication has been pioneered at the Pashmina Certification Centre. Trichotaxonomy, the microscopic study of guard hair morphology emerges as a reliable method to authenticate Pashmina and differentiate it from other fibre. However, Pashmina products lacking visible guard hairs present challenges under light microscopy. In such cases, Scanning Electron Microscopy (SEM) offers a high-resolution tool to study underfur surface patterns.

This advanced approach strengthens authentication where conventional methods fall short. It not only enhances transparency in trade but also protects artisans, traders, and consumers by ensuring accountability and trust. Ultimately, adopting trichotaxonomy and SEM-based authentication upholds the value of Pashmina as both a cultural treasure and an economic lifeline for Himalayan communities.

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Text
"Pashmina, the 'diamond fibre', is often adulterated, risking heritage & livelihoods. Trichotaxonomy & SEM bring science to authenticity—protecting artisans, traders & trust in the global market. #Pashmina #Authenticity #Innovation"

Instagram Text
"Pashmina, the 'diamond fibre', is often adulterated, risking heritage & livelihoods. Trichotaxonomy & SEM bring science to authenticity—protecting artisans, traders & trust in the global market.

Skyframes to Riverframes: Integrating Satellites, UAVs, and AI for Riparian Habitat Monitoring in the Ganga River

-Ravindra Nath Tripathi, Sk. Zeeshan Ali, Shivani Barthwal, Syed Ainul Hussain, Ruchi Badola

Riparian habitats along the Ganga River support aquatic and terrestrial biodiversity, yet they face intense pressure from development and change. Traditional monitoring provides limited insight into the dynamics of riverbank ecosystems. We address this conservation and technological gap by developing an integrated, data-driven monitoring framework.

We used cloud-based satellite analysis and UAV surveys for rapid habitat assessment and species monitoring from Haridwar (Uttarakhand) to Narora (Uttar Pradesh). Out of a total area of 3,664 km^2, the spatio-temporal satellite analysis identified ~291 km^2 as critical habitats, with the largest grassland patch of about 23.99 km^2 located at Haiderpur. A weighted-overlay model produced habitat-suitability index, ~40% of the area was classified as suitable for aquatic and semi-aquatic macro fauna, but only ~10% remained as intact core habitat. From these, 284 UAV-survey sites were selected strategically to classify habitat condition. Machine learning based classification of high-resolution imagery for 4 focal areas yielded detailed habitat maps with 98% overall accuracy (κ=0.97).

For species monitoring over 4 years, we focused on the globally threatened swamp deer (Rucervus duvaucelii), the critically endangered gharial (*Gavialis gangeticus*), and freshwater turtles. CNN and transformer-based models were trained on (n=71,957) images (augmented from ~13,200 originals). In real-time evaluations, the best detectors achieved a precision of 92% ± 0.8 for swamp deer, 97% ± 0.13 for gharial, and 92% ± 0.6 for turtles. This study fine-tuned optimal drone flight parameters including distance, speed, altitude, and capture angle, for maximal real-time detection with minimal disturbance to wildlife. In a pre-monsoon UAV survey at Haiderpur, the model counted 77 deer (≈99%) in real time, effectively matching known population counts.

Overall, this integrated approach directly supports adaptive management, restoration prioritization, early warning of habitat conversion, and evidence-based policy under India's Namami Gange River rejuvenation program.

Title of the Project

Planning and management for aquatic species conservation and maintenance of ecosystem services in the Ganga River basin for a clean Ganga

Name of PI(s)

Dr. Ruchi Badola

Name of Co-PI(s)

NA

Funding Agency

Ministry of Jal Shakti Department of Water Resources River Development and Ganga Rejuvenation

Project Duration

2020-2026

Keywords

Ecological monitoring, Conservation technology, Deep Learning, Computer Vision, Habitat mapping, Large Language Models, Real-time wildlife detection

& Instagram Text

Integrated Satellite–UAV–AI framework:
3,664 km^2 surveyed → only ~10% intact habitat
284 UAV missions → 98% mapping accuracy
AI detection: Swamp Deer 92% | Gharial 97% | Turtles 92%

AI-Powered Conservation of Rivers & Wildlife
3,664 km^2 surveyed → only ~10% intact habitat
284 UAV missions → 98% mapping accuracy
AI detection: Swamp Deer 92% | Gharial 97% | Turtles 92%

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Title of the Project
Conserving the Overlooked Subterranean Cave Habitat: A Sustainability Approach

Name of PI(s)
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Name of Co-PI(s)
Dr. Jaishri Sanwal Bhatt

Funding Agency
The Habitat Trust

Project Duration
2024-2027

Keywords
Cave-dwelling bats, Echolocation, Passive acoustic monitoring, Bat assemblages, Activity pattern

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Spatio-temporal Movement of Bats in the Limestone Caves of the Tropical Islands of India

-Avimanyu J. Mukherjee, Dhanusha Kawalkar, Manchi Shirish S, Rima Sadhukhan, Pooja R. Patil, Jaishri Sanwal Bhatt

The limestone caves of the Andaman and Nicobar archipelago hold the significant roosting sites for many insectivorous and frugivorous bats, including the endangered Andaman horseshoe bat (AHB). The temporal activity, described as circadian rhythm, of the bats at the cave opening is generally marked by their emergence at dusk and return at dawn. This phenomenon is influenced by the time of sunset and sunrise. Recent studies have examined the diversity, assemblage, and population of the cave-dwelling bats of the North and Middle Andaman Islands. To contribute with additional knowledge, we studied the temporal activity pattern of cave-dwelling bats using passive acoustic monitoring (PAM).

The audiomoths were deployed to collect the acoustic data for 338 h at the entrances of 26 caves across three sites (Baratang Island, Chalis-Ek, and Interview Island) between December 2024 and May 2025. The recorded call sequences were analysed using Kaleidoscope Pro and Raven Pro to identify species and their temporal activities. We documented varied patterns of activity among seven species.

The preliminary findings indicated that the endemic Homfray's horseshoe bat (*Rhinolophus andamanensis*) was active throughout between 1700-0600h. The Andaman horseshoe bat (*Rhinolophus cognatus*) and black-bearded tomb bat (*Taphozous melanopogon*), though fairly active between 1700-0600h, were mostly active between 2000 and 0200h. Little insectivores, Indian pipistrelle (*Pipistrellus coromandra*), Javan pipistrelle (*Pipistrellus javanicus*), and the carnivore lesser false vampire bat (*Megaderma spasma*) were comparatively less encountered and were most active during dusk (1800-1900h) and pre-dawn hours (0400-0500h). Tickell's bat (*Hesperoptenus tickelli*) remained active from dusk to late midnight (1700-0100h) and was not detected later.

These temporal patterns indicate how various species co-existing in caves manage to avoid overlapping in their peak foraging hours to avoid competition. By documenting the temporal activity of various species, this study contributes to our understanding of the ecological association of bat assemblages.

& Instagram Text

Passive acoustic monitoring in 26 limestone caves of the Andaman Islands revealed species-specific temporal activity in cave-dwelling bats. Endemic *Rhinolophus cognatus* and others stagger peak foraging times, minimizing competition and promoting niche partitioning.

Exploring Environmental Predictors of Indian Rock Python Occurrence: A Case Study from Mandla, Central India

Gaurav Singh

This study aims to understand the distribution of the Indian Rock Python (IRP) in non-protected areas of the Mandla district, Central India. The research primarily focuses on the distribution of IRP, while also identifying potential IRP habitats that require protection and management in the study area. Data on IRP presence were collected from June 2022 to October 2024 through direct, indirect sightings, and questionnaire surveys. We selected multiple environmental variables, including biophysical, edaphic, geological, and topographical factors, was compiled and analysed using GIS tools. Three modelling approaches: single-season occupancy model, Generalised Linear Model (GLM), and MaxEnt were employed to assess the species' distribution and the factors influencing its presence. IRPs were detected in all sampling units, resulting in a naïve occupancy estimate of 1.00. Occupancy modelling with different covariate combinations yielded similar results, indicating high site use and consistent detection across the study area. The GLM identified four key variables influencing IRP presence: precipitation during the warmest quarter, temperature seasonality, elevation, and the presence of sedimentary rocks. The MaxEnt model further indicated that IRPs occur at lower elevations and near waterbodies, which may facilitate thermoregulation. In GLM, the species also showed a lower significance for areas with sedimentary rock types. In Mandla, the species is frequently observed in riverine habitats, especially along the Narmada River and its tributaries, reflecting a strong occurrence pattern in these areas. In Ajgardadar, IRPs were seen using rock crevices for thermoregulation, particularly during winter. The temperature ranges in the Narmada River basin align with the ideal thermal requirements of IRPs, which may contribute to their occurrence in these habitats. The study also identified a congregation site in the Ajgardadar area near the Surpan River, warranting protection.

Title of the Project

Non-invasive approach to understanding the habitat use, activity regime, and movement ecology of Indian Rock Python, Python molurus from two select locations in India

Name of PI(s)

Aditi Mukherjee

Name of Co-PI(s)

H.N Kumara, Shrish Manchi

Funding Agency

Department of Science and Technology – Science and Engineering Research Board (DST-SERB)

Project Duration

2021-2025

Keywords

Central India | Riverine habitat | MaxEnt | GLM| Elevation| Narmada

& Instagram Text

Indian Rock Pythons ???? in Mandla, Central India, thrive in riverine and rocky habitats, especially along the Narmada. Field surveys and models reveal their strong link to water and terrain. #Python #distribution

Handles

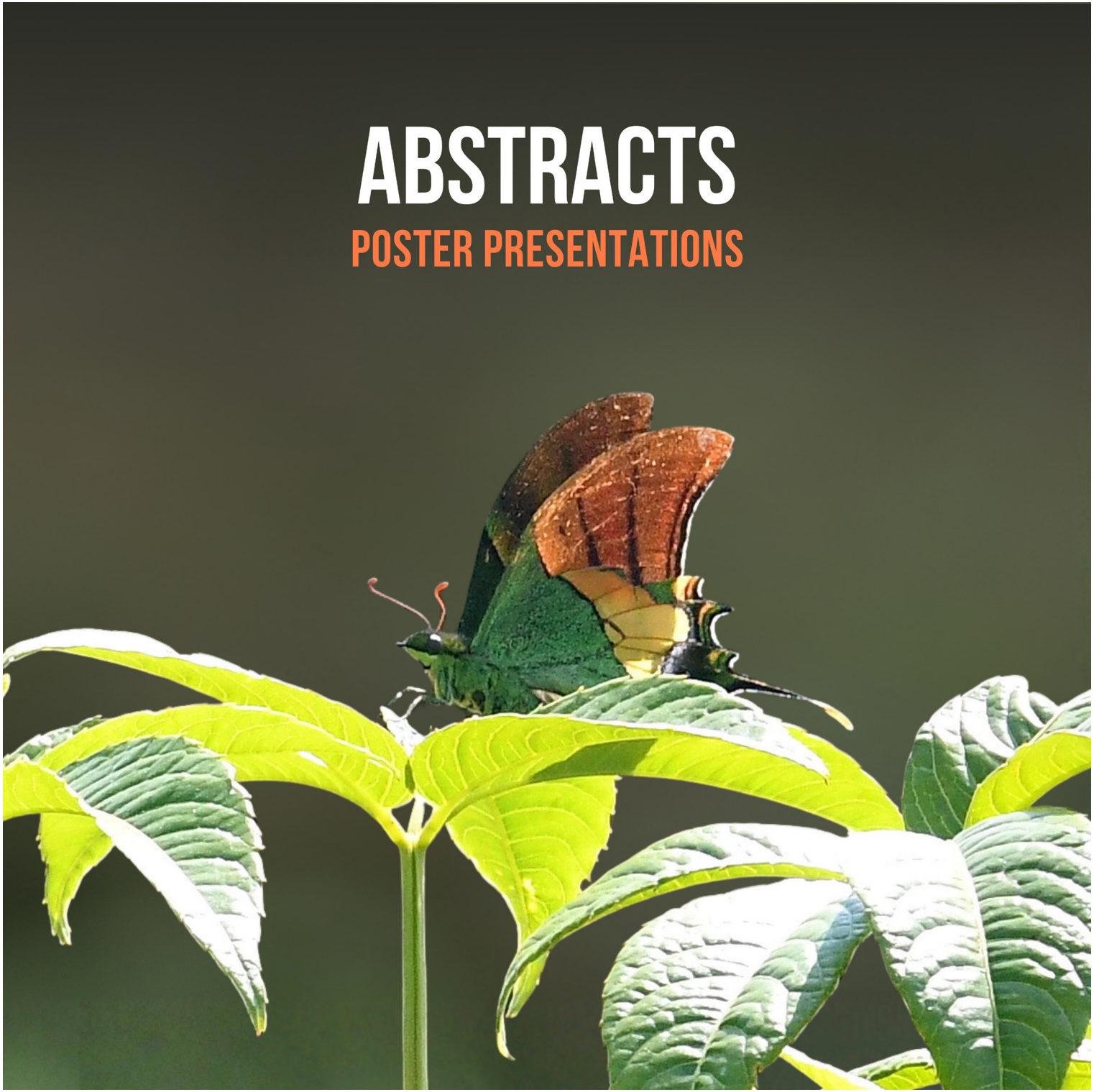
gauravsingh053

Instagram Handles

birdtrovert, awdeeti, edible_nest

ABSTRACTS

POSTER PRESENTATIONS



Contamination Pattern and Ecological Risks of Potentially Toxic Elements in Sundarbans Wetland

-Samridhi Gururani, Ruchika Sah, Soham Dutta, Pooja Chaudhary, Anjali Bhandari, Swati Negi, Deepak Panwar, Syed Ainul Hussain, Ruchi Badola

Wetlands sustain nearly half of all globally threatened species and provide essential services such as nutrient cycling, hydrological regulation, and high rates of carbon sequestration. Yet they are increasingly degraded by habitat loss and declining water quality. A major driver is contamination by Potentially Toxic Elements (PTEs), which at elevated concentrations compromise biodiversity, disrupt soil microbial communities, destabilize carbon-rich peat, and alter key biogeochemical processes. These pressures are especially acute in India's river systems, where intense human activity accelerates degradation.

The Sundarbans, India's largest Ramsar site, exemplifies this vulnerability. Despite its global recognition, it remains poorly studied with respect to PTE influxes. Here, we present the comprehensive contamination profile and ecological risk assessment of PTEs in Sundarbans water and sediments, providing a critical evidence base for conservation and management.

Sampling was conducted at 15 sites in March 2024, with surface water analyzed for nine heavy metals (Al, Co, Ni, Cu, Zn, As, Cd, Hg, and Pb) using Inductively Coupled Plasma–Mass Spectrometry. Heavy metal contamination varied moderately, with concentrations in water ranging from 17.656 to 472.735 µg/L (mean 97574 ± 34,540 ng/L) and in sediments from 13.652 to 120.895 µg/kg (mean 50574 ± 7,048 µg/kg), with several sites exhibiting high ecological risk.

These patterns reflect complex, multi-source inputs from upstream industrial discharges, agricultural runoff, and untreated domestic sewage transported through a dynamic river network, including the Hooghly, Bidyadhari, Matla, Dutta, and Ichamati. The tidal regime enhances pollutant dispersal and deposition across the delta, while elevated heavy metals highlight the need for source-specific mitigation and continuous monitoring to protect the Sundarbans' ecological integrity.

Text

Sundarbans wetlands face rising ecological risks from heavy metals. Our study highlights contamination patterns & calls for urgent source-specific mitigation to protect biodiversity. #Ecotoxicology #Sundarbans

Instagram Text

Our study shows heavy metal contamination in Sundarbans water & sediments, with several sites at high ecological risk. Multi-source inputs & tidal dispersal highlight urgent need for monitoring & mitigation in this Ramsar site."

Title of the Project

Planning and Management for Aquatic Species Conservation and Maintenance of Ecosystem Services in the Ganga River Basin for a Clean Ganga

Name of PI(s)

Dr. Ruchi Badola

Name of Co-PI(s)

NA

Funding Agency

NMCG

Project Duration

2017-2026

Keywords

Potentially Toxic Elements, Ecological Risk, Ramsar wetland

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NA

Title of the Project

Study the Impacts of Morand-Ganjal Irrigation Project on Wildlife and Preparation of Wildlife Mitigation Plan

Name of PI(s)

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Name of Co-PI(s)

NA

Funding Agency

Narmada Valley Development Authority, Government of Madhya Pradesh

Project Duration

2025-2027

Keywords

Bird Diversity, Citizen Science, Landscape Conservation, Ecological Corridor, Territorial Forest Divisions

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Beyond Protected Areas: Avian Assemblages in a Central Indian Corridor Compared with Melghat and Satpura Tiger Reserves

- Nonita Rana, Rohit R.S. Jha, Govindan Veeraswami Gopi

Protected areas (PAs) remain central to biodiversity conservation, but non-protected landscapes often sustain habitats of considerable ecological value. Avian assemblages, being responsive to habitat quality and disturbance, provide an effective lens to assess the role of such landscapes. Our study was undertaken in a part of the forested ecological corridor connecting Melghat and Satpura Tiger Reserves in central India. While these reserves themselves are recognised as biodiversity strongholds, the intervening forested landscape within Territorial Divisions are increasingly threatened by unmitigated developmental and other land-use pressures.

Two similarly-trained observers collected structured avian data during April 16-June 30, 2025, using point counts (n=273) at systematically randomly distributed sites, proportionate to broad forest types, within a representative part of the corridor (857.49 km^2), complemented by opportunistic data (765 minutes). For comparison, we obtained eBird records from Melghat and Satpura Tiger Reserves, and from the broader corridor, spanning the same season over the past five years. All eBird data were suitably filtered for season, protocol, and effort to maximise comparability.

This allowed us to contrast two complementary sampling pathways: short-term structured surveys by trained ecologists (high reliability of detection, within a single season) versus multi-year, large-volume citizen science records (greater cumulative detection of rare or less conspicuous species). We documented 113 species from our systematic surveys, with 82 species additionally detected from the broader corridor, while 5-year cumulative eBird data recorded 169 and 233 species, respectively, in Melghat and Satpura. Community-level analyses (species overlap and similarity indices) indicate substantial assemblage similarity between non-PAs and PAs, alongside the presence of distinct species.

Our findings imply that while structured surveys provide robust, temporally precise baselines, citizen-science data broaden spatial and temporal coverage, together highlighting the ecological value of non-PAs. Acknowledging methodological asymmetries, we argue for integrative approaches that extend conservation attention beyond PAs to multi-use landscapes.

Text

Birds don't read maps; they flock where the habitat's good! Despite methodological limitations, a combination of structured and citizen science data highlights the importance of non-protected landscapes from a conservation point of view.

Instagram Text

Non-protected ≠ non-important :) Turns out the #EcologicalCorridor between #Satpura and #Melghat is more than a filler! Our study, using a combination of structured surveys and #CitizenScience reveals the importance of non-protected areas from a conservation point of view.

Tracking Progress, Shaping the Future: India's Experience with CBD National Reporting

-Upma Manral, Parthav Mistry, Anoop Raj Singh, Kanishka Mehta, S Deepan Chakaravarthy, K Ramesh, S.K. Gupta, Amit Kumar, J.A. Johnson, Chinmaya G, Ruchi Badola, Tanveer Ahamed, Gautam Talukdar, Bilal Habib, S. Babu, Govindan Veeraswami Gopi, C Ramesh

Climate change and biodiversity loss are among the most pressing issues of the Anthropocene. To address these, the United Nations established the Convention on Biological Diversity (CBD) at the 1992 Rio Earth Summit. The CBD requires countries to conserve biodiversity, ensure its sustainable use, and share its benefits fairly, guided by the Global Biodiversity Framework (GBF) and supported by the National Biodiversity Strategies and Action Plan (NBSAP).

India became a party to the CBD in 1994 and has since implemented several measures to meet global biodiversity targets, reporting progress through periodic National Reports. Country is currently preparing its Seventh National Report (NR7), the first under the post-2020 GBF. The NBSAP provides a comprehensive monitoring framework with 23 National Biodiversity Targets (NBTs) and 142 National Biodiversity Indicators (NBIs), and designated agencies responsible for data provision.

This work highlights India's progress in biodiversity conservation since ratifying the CBD and examines mechanisms, strengths, and challenges of the reporting process. The Wildlife Institute of India, as a key stakeholder in NR7 process, is documenting progress on eight NBTs. The reporting process is structured and consultative, involving data collection, validation, and stakeholders' feedback. The NBIs are further disaggregated into data points with data being collected between 2020 and 2024 from annual reports, national statistics, budgets, and other official sources. In line with CBD's emphasis, India's NR7 follows a 'Whole-of-Government, Whole-of-Society' approach, involving over 30 agencies providing precise, evidence-based data through a dedicated micro-site.

The integrated, participatory, and data-driven framework developed for NR7 strengthens accountability, transparency, and adaptive planning for conservation. It offers valuable lessons and lays a strong foundation for future reporting processes. The preliminary insights indicate that India has achieved notable progress in i) expanding Protected Areas, ii) sustainable resource use, and iii) integrating biodiversity concerns into sectors like agriculture, animal husbandry, and fisheries.

Text

Tracking progress, shaping the future - India's 7th National Report to the CBD showcases country's efforts in biodiversity conservation, sustainable use, and integrating nature into key sectors. Evidence-based, participatory and data-driven! #BiodiversityConservation #India #CBD

Instagram Text

India is making strides in Biodiversity Conservation! The 7th National Report to CBD highlights Protected Area expansion, sustainable use, and integrating nature into key sectors. Evidence-based, participatory and data-driven! #Biodiversity #CBD #Conservation #Sustainability

Title of the Project

Preparation of India's Seventh National Report to the Convention on Biological Diversity (CBD)

Name of PI(s)

Dr. C Ramesh

Name of Co-PI(s)

Dr. Ruchi Badola, Dr. J.A. Johnson, Dr. S. Babu, Dr. Gautam Talukdar, Dr. Bilal Habib, Dr. G.V. Gopi, Dr. K Ramesh, Dr. S.K. Gupta, Dr. Amit Kumar, Dr. Chinmaya G, Dr. Tanveer Ahmed

Funding Agency

UNDP India

Project Duration

2025-2026

Keywords

Convention on Biological Diversity, National Biodiversity Strategies and Action Plan, Global Biodiversity Framework, Seventh National Report (NR7), Biodiversity mainstreaming

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Title of the Project
Bringing Back the Cheetah in India

Name of PI(s)
Dr. Bilal Habib

Name of Co-PI(s)
Dr. Vishnupriya Kolipakam

Funding Agency
NTCA

Project Duration
2024-2025

Keywords
Leopard, Predator–prey dynamics, Habitat suitability, Anthropogenic pressures, MaxEnt modeling, Kuno National Park, Conservation planning, Cheetah introduction

Potential Shifts in Predator-Prey Habitat under Climate Change: A Case Study of Leopards and Selected Ungulates in Kuno National Park, Madhya Pradesh

-Khushbu Kaushik, Bipin CM, Vishnupriya Kolipakam, Bilal Habib

Anthropogenic activities are increasingly recognized as major drivers of biodiversity loss, exerting both direct and indirect influences on species distributions, community structure, and ecological interactions. Predators and their prey are particularly sensitive to such changes due to their strong ecological linkages. This study examines the impacts of anthropogenic pressures and projected climate change on the apex predator, the leopard, and 3 key prey species: nilgai, chital, and sambar in Kuno NP (area~748 km^2), Madhya Pradesh, India. We employed Maximum Entropy (MaxEnt) modeling using presence data derived from a camera-trap survey (136 locations) conducted between December 2024 and January 2025 to predict species-specific habitat suitability under current (2024) and future (2090) climate scenarios. Climatic and topographic variables were incorporated to generate distribution models for each focal species.

Our projections indicate heterogeneous responses across species. Suitable habitat for leopards and sambar is predicted to increase by approximately 43 km^2 and 20 km^2, respectively. In contrast, nilgai and chital are projected to lose significant portions of their suitable habitat, with reductions of 25 km^2 and 11 km^2, respectively. This spatial redistribution of prey species could alter predator–prey dynamics; however, the overall increase in leopard habitat suggests that Kuno NP will continue to provide a viable landscape for sustaining a healthy leopard population in the future.

These findings highlight the complexity of species-specific responses to climate change and their potential consequences for ecosystem stability and trophic interactions. Importantly, our study provides a baseline for conservation planning in Kuno NP, the first site of cheetah reintroduction in India. By identifying future scenarios of habitat suitability, the results can inform adaptive management strategies aimed at mitigating the impacts of climate change, enhancing prey availability, and ensuring the long-term persistence of large carnivore populations.

Handles
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Instagram Handles
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& Instagram Text
How will climate change reshape predator–prey dynamics in India's Kuno National Park? Using MaxEnt modeling, our study predicts habitat gains for leopards & sambar, but losses for chital & nilgai by 2090. Conservation must adapt to shifting landscapes & species responses

Assessment of Wildlife Values along National Chambal Gharial Sanctuary Falling under Mukundra Hills Tiger Reserve, Rajasthan, India

-Oindrila Paul, Akash Kumar Sai, Ranjit Satrusallya, Govindan Veeraswami Gopi, Abhijit Das

Mukundra Hills Tiger Reserve (MHTR), situated in the Hadoti Plateau System of the Vindhyan range, is characterised by tropical dry deciduous forests interspersed with grasslands, scrublands, and riparian habitats.

The study was conducted along 36 km stretch of Chambal River from Kota Barrage to Karap ki khaal with 1 km buffer area on both the sides of the river. The primary objective of this study is to document wildlife species of the area and determine the habitat use patterns of major wildlife.

Field surveys were conducted from January to October (2025) across three seasons, using sign surveys and camera trapping for mammal survey, systematic point counts for birds and visual encounter surveys and random surveys for herpetofauna.

Extensive field surveys throughout three seasons have resulted in 31 mammal species, 212 bird species and 50 herpetofauna species, out of which 19 mammals, 33 birds and 15 herpetofauna species which are categorised as Schedule-I under Wildlife (protection) Act, 1972. This mammalian survey established a baseline assessment of mammalian diversity and activity patterns in MHTR, which is essential for monitoring ecosystem health. Our comprehensive avifaunal study has included riparian, riverine and terrestrial species thereby focusing more towards their ecological importance. For herpetofauna, as this survey has been the first of its kind, new locality and species records contributes towards the ecological impact of these species by targeting the species richness, abundance and habitat-use patterns of the lesser-known species which dedicates towards their environmental heterogeneity.

This comprehensive faunal survey provides a crucial baseline for long-term biodiversity monitoring in MHTR. It highlights the ecological significance of both well-studied and lesser-known species, guiding effective conservation planning and habitat management.

Title of the Project

Assessment of Wildlife Values along one km segment upstream of the National Chambal Gharial Sanctuary from Kota Barrage to Hanging Bridge, Rajasthan

Name of PI(s)

Dr. Abhijit Das

Name of Co-PI(s)

Dr. Gopi G.V.

Funding Agency

Rajasthan Forest Department

Project Duration

2025-2025

Keywords

Species, Faunal diversity, Wildlife Values, Abundance, Sustainability, Efficiency, Lesser-known species

& Instagram Text

Our latest survey in MHTR along the Chambal river has revealed rich biodiversity: 31 mammals, 212 birds and 50 herpetofauna species. From caracal to lesser known herpetofauna, this study reveals a vital baseline for long-term monitoring & conservation.

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Title of the Project

Connecting the Dots: Finding dispersal corridors for Tiger in Kaziranga-Karbi Anglong Landscape

Name of PI(s)

Dr. Ruchi Badola

Name of Co-PI(s)

Dr. S. A. Hussain

Funding Agency

National Tiger Conservation Authority (NTCA)

Project Duration

2019-2025

Keywords

Relative Abundance Index, Activity pattern, Temporal overlap, Carnivores, Herbivores, Birds and Anthropogenic pressure.

Assessing of Kaziranga-Itanagar Riverine Corridor in the Brahmaputra River, Northeast India

-Mujahid Ahamad, Syed Ainul Hussain, Ruchi Badola

Riverine islands serve as critical habitats and stepping stones maintaining ecological connectivity across fragmented landscapes. Despite their importance, these islands remain largely unexplored regarding wildlife presence, species composition, and activity patterns.

We conducted a reconnaissance survey and, based on its findings, employed the first systematic camera-trap study in the Kaziranga–Itanagar riverine islands corridor, Assam, India. From December 2021 to November 2022, we deployed 28 camera traps across 13 islands, accumulating 3,198 trap-nights and capturing 5,522 independent photographs.

We documented 9 mammalian species, 14 bird species, and 3 types of anthropogenic threats. Flagship mammals recorded included Bengal tiger (*Panthera tigris tigris*), Asian elephant (*Elephas maximus*), one-horned rhinoceros (*Rhinoceros unicornis*), and hog deer (*Axis porcinus*). Among mammals, hog deer showed the highest Relative Abundance Index (RAI = 3.75). We found intense anthropogenic threats including livestock (RAI = 800.50), human activity (RAI = 198.81), and free-ranging dogs (RAI = 0.09). Large carnivores Bengal tiger and smaller felids exhibited primarily crepuscular and nocturnal activity, while Asian elephant, one-horned rhinoceros, and smaller herbivores showed activity patterns influenced by foraging requirements, thermoregulation, and human disturbance avoidance. Temporal overlap analysis indicated significant interactions among predators, prey, and humans, with highest activity overlap between tigers and livestock. This overlap underscores major conservation concerns due to heightened disease transmission risks.

Our findings highlight the ecological importance of riverine corridors as critical landscapes sustaining wildlife movement and diversity, emphasizing urgent need for targeted management interventions to mitigate human–wildlife conflict and preserve corridor functionality.

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Text

Wildlife on the Move: Kaziranga–Itanagar Riverine Corridor: Our year-long camera-trap study along the Brahmaputra River islands reveals the crucial role these dynamic corridors play in connecting wildlife between Kaziranga and Itanagar. #Kaziranga #Itanagar #Brahmaputra #WildlifeCorridors

Instagram Text

Wildlife on Move: Kaziranga–Itanagar Riverine Corridor: Year-long camera-trap study along the Brahmaputra riverine islands reveals the crucial role these dynamic corridors play in connecting wildlife between Kaziranga and Itanagar. #Kaziranga #Itanagar #Brahmaputra #WildlifeCorridors

Monitoring in Motion: Freshwater Fish and Long-Term Ecological Observation (LTEO)

-Rakshit Rayal, Nanda Prasad, Vidhyadhar Atkore, J. A. Johnson

Freshwater ecosystems are among the most vulnerable to climate change and anthropogenic pressures, yet they remain poorly monitored at large spatial and temporal scales in India. To address this gap, the Ministry of Environment, Forest and Climate Change (MoEF&CC) initiated the Long-Term Ecological Observatories (LTEO) programme. The freshwater fish component of LTEO specifically aims to generate baseline data on freshwater fish populations in selected landscapes for long-term monitoring of aquatic habitats under changing climate conditions. Five key landscapes are covered under this initiative: the Western Himalayas, Eastern Himalayas, streams of the South Andaman Islands, Central India, and the Nilgiri landscape in the Western Ghats. River basins within these landscapes were identified to establish ecological monitoring sites, representing a broad spectrum of freshwater habitats across the country.

The monitoring framework follows three approaches: physical attributes such as depth, velocity, substrate composition, in-stream cover, and riparian vegetation; chemical parameters including dissolved oxygen, productivity, alkalinity, turbidity, water temperature, pH, TDS, EC, and salinity; and biological components such as fish diversity and abundance, benthic invertebrate assemblages, and algal and diatom communities.

Sampling sites have been established in Mandal and Chopta (Western Himalaya); Eaglenest, Chaku, and Sissni (Eastern Himalaya); Silent Valley NP to Mukurthi NP (Western Ghats); Satpura Tiger Reserve (Central India); and Genchi Nala, Ghass Nala, and Kaumara Nala (Andaman). Two training programmes were conducted to build capacity for Rudraprayag Forest Division, researchers, and frontline staff of the Forest Department, and standardized protocols were developed for data collection. Temporal monitoring has generated baseline data on fish populations and associated environmental variables. From Western Himalayas, 10 fish species were recorded, and from Central India, 15 fish species were recorded from a total of 14 study sites on average.

Text

Freshwater ecosystems face rising climate pressures but remain under-monitored in India. The LTEO programme tracks fish, water quality & river health across 5 landscapes, building baseline data to guide long-term conservation. #Freshwater #ClimateChange #LTEO

Instagram Text

Indian rivers and streams are changing with the climate, and the Long-Term Ecological Observation (LTEO) programme is stepping in to track the story. From Himalayas to the Andamans, we are monitoring fish diversity, water quality and river health, building a long term baseline data to understand and conserve freshwater biota.

Title of the Project

Monitoring Freshwater Fish population in selected landscape of selected Indian landscapes with reference to the changing climate variables under LTEO

Name of PI(s)

Dr. J. A. Johnson

Name of Co-PI(s)

Dr. Nanda Prasad,
Dr. Anuradha Bhat,
Dr. Vidhyadhar Atkore

Funding Agency

MoEFCC

Project Duration

2021-2026

Keywords

Freshwater ecosystems, Climate change, Long-Term Ecological Observatories (LTEO), Fish diversity, Baseline monitoring

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Title of the Project
Assessment of the ecological status of select Indian rivers for conservation planning

Name of PI(s)
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Name of Co-PI(s)
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Funding Agency
National River Conservation Directorate (NRCD), Ministry of Jal Shakti

Project Duration
2021-2025

Keywords
Freshwater, Wallago attu, microsatellite markers, inbreeding, Habitat fragmentation.

Handles
NA

Instagram Handles
NA

Assessment of Genetic Diversity and Gene Glow in *Wallago attu* Populations of the Godavari River

-Anshu Panwar, Surya Prasad Sharma, Shivani Bahukhandi, Aakash Maurya, Ruchi Badola, Syed Ainul Hussain

The Godavari River, spanning 1,465 km, is the longest river in Peninsular India and is highly contested due to escalating and competing anthropogenic demands. Among the most significant impacts are habitat degradation and fragmentation, primarily driven by the construction of dams and barrages. These hydrological modifications can disrupt gene flow and reduce genetic diversity within aquatic populations, thereby elevating extinction risk. This study investigates the genetic status of selected key vulnerable species *Wallago attu* within the mainstem Godavari River.

The study was conducted in Upper, Middle and Lower zones of the Godavari River, India
A total of 76 samples were collected using gill nets and cast nets, along with additional samples from local fish markets. Genomic DNA was subsequently isolated from these samples. A total of thirteen microsatellite markers were used to assess the genetic diversity and gene flow of the species. The level of polymorphism, structure pattern, number of K, similarity between observed clusters, and the phylogenetic tree were analyzed using GenAlEx v6.5, STRUCTURE v2.3, STRUCTURE SELECTOR, the R dapc() function, and POPTREE2, respectively.

We observed that mean observed heterozygosity (0.41 ± 0.04) was lower than expected heterozygosity (0.53 ± 0.04), indicating possible inbreeding and deviation from Hardy-Weinberg equilibrium. Three genetic clusters (K=3) were observed in the whole populations. Moreover, it was observed that middle and lower zone populations were partially connected, clustering together, while the upper zone population was genetically distinct. Overall genetic differentiation was low (mean Fst = 0.03), but gene flow between upper and middle zones was reduced, likely due to habitat fragmentation and poor water quality in the industrialized upper zone. This may restrict fish movement and lead to genetic isolation.

The findings provide valuable information for the management of W. attu populations in the Godavari River, highlighting the need to address habitat fragmentation and water quality issues.

& Instagram Text
NA

Rising Seas, Deep Trouble- Shifts in Dugong Habitat-use Patterns in Future Inundation Scenario in the Gulf of Kachchh

-Sameeha Pathan, Kuppusamy Sivakumar, J.A. Johnson

Accelerating sea level rise (SLR) along India's west coast approximately 4mm/year) poses unprecedented threats to the macrotidal Gulf of Kachchh (tidal range: 3.4–6 mts from mouth to head of the GoK). The impact and shifts in habitat brought about by SLR warrants to be understood for effective management of the endangered dugongs that inhabit these tidally influenced habitats.

Our previous research revealed broad-scale habitat-specific foraging patterns in dugongs are determined by tidal amplitude, sediment texture and distance to tidal refugia. This indicated that ease of forage removal and tidal refugia proximity underpin current optimal foraging, thereby, restricting foraging activities exclusively at edge microhabitats near deep-water refugia to minimize stranding risk. To predict SLR effects on critical edge habitats, we mapped foraging areas and bathymetry (2021-2022) across high-elevation intertidal meadows and offset spring-neap tidal surfaces by 1.5 ft (SSP5-8.5 IPCC AR6 projection for Okha port, representing 2080 scenario for Total Sea Level Change). Inundation modeling assessed impacts on seagrass availability and dugong habitat accessibility.

Under +0.6 m inundation, high-biomass intertidal meadows remain submerged even at low tide, intensifying light limitation and risking shoot thinning through chronic photosynthetic stress. Projected SLR will substantially decrease biomass, alter sediment composition, and increase distances between productive meadows and essential refugia, disrupting established foraging efficiency of intertidal habitats. Our projections indicate fundamental habitat reorganization under accelerating SLR on ~ 70% of the mapped intertidal meadows due to prolonged low-tide inundation, and imminent shallow-water migration of intertidal meadows will increase the distance from safety if tidal refugias.

Immediate and adaptive conservation priorities include: (1) monitoring and protecting existing tidal refugia essential for mitigating spatial bottleneck effects, (2) restoring refugia networks to maintain connectivity under changing tidal regimes via planned dredging.

Title of the Project

Recovery of Dugongs and their habitats in India- an integrated participatory

Name of PI(s)

Dr. J. A. Johnson

Name of Co-PI(s)

Dr. Nehru Prabakaran
Ms. Chinmaya Ghanekar

Funding Agency

MoEFCC-CAMPA

Project Duration

2016-2025

Keywords

Marine herbivory, Optimal foraging, Sea-Level Rise, Arabian Sea

& Instagram Text

Sea level rise along India's west coast is rising at 4 mm/yr, enough to completely alter the dugongs of the Gulf of Kachchh's seagrass habitats.
We can still turn the tide: safeguard deep-water refugia and restore new ones today. #SaveDugongs #SeagrassSOS #GulfOfKachchh #ClimateAction #OceanConservation

Handles

NA

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Title of the Project
CAMPA-Recovery of Dugongs and their habitats in India: An Integrated Participatory Approach

Name of PI(s)
Dr. J. A. Johnson

Name of Co-PI(s)
Dr. Nehru Prabakaran, Ms. Chinmaya Ghanekar

Funding Agency
National CAMPA

Project Duration
2016-2025

Keywords
Marine vegetation, Human-nature interactions, coastal livelihood, resource utilization, socio-economy

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People and the Sea: Understanding Seagrass Ecosystems through the Human Perspective

-Sumit Prajapati, Swapnali Gole, Ashish Kumar Jangid, Himansu Das, Chinmaya Ghanekar, Nehru Prabakaran, Kuppusamy Sivakumar, J.A. Johnson

Seagrass meadows are vital ecosystems, that support biodiversity, fisheries, and livelihoods; yet studies on human-nature connections to these ecosystem remains understudied in Indian waters. Our study addressed community-level attributes (seagrass awareness, usage and, perception) through a fine-scale socio-ecological assessment of fishers from the ethnographically unique Andaman and Nicobar Islands (ANI), India.

Through 212 semi-structured questionnaire surveys across 60 fishing villages, we focused to understand the a) awareness, b) usage, c) perception of fishers on seagrass habitats. We report a moderate level of seagrass awareness amongst fishers (~ 47.2 %) in ANI. Out of an array of variables tested that influence seagrass awareness, island category, crafts-gears used, and ethnicity were the best predictors (CART analysis; model accuracy- 69.81 %). Fishers from the remote North Andaman, Little Andaman, and Nicobar were highly aware of seagrass habitats compared to those from market driven, commercial fishing hubs. Non-motorized users were more sensitized, while, the long liners (35.7 %) and spear fishers (33.3 %) were the least aware, compared to other gear practitioners. Amongst ethnicities, the Nicobarese (88.9 %) were highly aware of seagrasses, followed by Karens (46.7 %), Telugu (46.3%), and Bengali (44.1 %) fishers. Community dependency on seagrass habitats was found to be very limited (28.3 %), with opportunistic use for bait fishing or gleaning activities. Indian Ocean Tsunami (2004) was considered to be a major perceived reason for seagrass decline (> 70 %).

We suggest that fishers value system in ANI is comparatively new, and is a product of socio-demographic, ethnicity, and geographic factors. Although the findings indicate a low seagrass value system in local fisheries, it warrants a socio-economic evaluation of seagrass-generated fisheries in ANI. We present the first socio-ecological insights on seagrass ecosystems from ANI, offering a critical baseline for future research, conservation, and management.

Text
Exploring socio-ecological links that defines human relationships with seagrass ecosystem.

Instagram Text
People and Sea: Understanding seagrass ecosystem through people lens
#Peopleandthesea #seagrass #coastalcommunities

Listening to the forest: Documenting Biodiversity through Bioacoustics

-Burney Rosetta, Amirtha Balan R, Abhijit Das

Animal vocalizations, ranging from infrasound in elephants to ultrasound in bats and odontocetes, serve functions such as mate attraction, territorial defense, group cohesion and navigation. Acoustic monitoring, which records and analyses these vocalizations, was used in this study to track the vocally active species, including birds, bats, anurans, and insects. Despite diverse functions, animal vocalization studies in the Western Ghats remain understudied.

The study was conducted in the Uttar Kannada district of Karnataka, covering three forest divisions: Dharwad, Yellapur, and Karwar.

Main Objectives were 1. To understand the soundscape pattern across different forest types using the Acoustic Complexity Index. 2. To identify animal species from vocalizations recorded from the acoustic units. 3. To compare the effectiveness of Passive Acoustic Monitoring (PAM) with Visual Encounter Survey (VES) for anurans.

We deployed PAM devices in post- and pre-monsoon seasons using stratified random sampling proportional to forest type area. In the monsoon, we placed devices across different amphibian habitats. We surveyed bats along transects using Echometer Touch 2 Pro.

We collected a total of 2,730 hours of acoustic data. The Acoustic Complexity Index (ACItf) revealed spectral energy peaks between 0–1 kHz, corresponding to anthropophony and geophony, and between 2–9 kHz, corresponding to biophony. So far, we have analyzed 178 hours of recordings for vocal detection across different taxa, detecting 92 bird species, 13 anuran species, and 11 mammal species, including 7 bat species. A paired t-test indicated no significant difference in anuran species richness between Passive Acoustic Monitoring (PAM) and Visual Encounter Surveys (VES) ($p > 0.1$).

Analyzing the remaining recordings will improve understanding of seasonal soundscape patterns and assess PAM versus VES effectiveness across taxa.

& Instagram Text

Using bioacoustics as a tool to study the diversity of avifauna, anuran, and Chiroptera (bat) in the Western Ghats (biodiversity hotspot)

Title of the Project

Cumulative impact assessment and preparation of Mitigation plan for the proposed Hubballi Ankola Railway Line

Name of PI(s)

Dr. Abhijit Das

Name of Co-PI(s)

Dr. J.A. Johnson

Funding Agency

South Western Railway

Project Duration

2024-2026

Keywords

Acoustic Complexity Index, Soundscape, Acoustics, Avifauna, Anuran, Bat

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Title of the Project
Conservation Action Plan for Manipur's Brow-antlered Deer or Sangai: An Integrated Approach

Name of PI(s)
Dr. Ruchi Badola

Name of Co-PI(s)
NA

Funding Agency
National Compensatory Afforestation Fund Management and Planning Authority

Project Duration
2016-2025

Keywords
Eld's deer, freshwater ecosystem, deer species, Northeast India, conservation breeding

A Deer in Peril: Socio-Ecological Impacts and Conservation Planning of Endangered Manipur's Brow Antlered Deer or Sangai

-Mirza Ghazanfarullah Ghazi, Syed Ainul Hussain, Ruchi Badola

Manipur, a land known for its indigenous reliance on the waters of Loktak Lake for centuries, holds the last surviving population of endangered Manipur's Brow-antlered Deer or Sangai (*Rucervus eldii eldii*). The social dynamics of Manipur have played a crucial role in the conservation of Sangai. This study emphasizes understanding the socio-ecological impacts and ongoing conservation efforts to bring the species back from the brink of extinction.

The Wildlife Institute of India is implementing a species recovery programme for Sangai at the Keibul Lamjao National Park in Manipur focusing on species recovery through conservation breeding and establishing a metapopulation complex within Manipur. The findings emphasized on the impact of anthropogenic pressures driving the species toward extinction due to prioritization of developmental projects and associated degradation of the floating meadows and the fragmentation of viable habitats. Assessment of habitat conditions indicates loss of habitat availability and significant reduction in the extent of thick phumdi areas, particularly due to consistent unsustainable high-water levels inside the park. Decades of unregulated changes in land-use patterns in Loktak Lake have also caused a significant degradation of surrounding viable habitats. The major milestone is the development of conservation breeding facility for Sangai which will ensure the long-term sustenance of this threatened species in the wild and boost the captive stock across the country to maintain genetic viability. Moreover, continued engagement of local communities in the conservation process has assisted in developing a sense of inclusiveness.

Understanding the socio-ecological aspects of Sangai conservation will contribute to improved formulation and implementation of species recovery strategies and effectively guiding the conservation breeding programme and management planning of the landscape. These findings will also aid in ceasing and regulating any further ecological damage within this unique ecosystem and ensure the long-term survival of Sangai—the Pride of Manipur.

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Instagram Handles
campasangai, ruchiwii

& Instagram Text
Bridging the gaps: Integrated conservation efforts combining scientific research and community engagement to restore habitat and secure a wild future for the iconic Sangai-The Pride of Manipur. #NationalCAMPA #SangaiConservation #Manipur

Mainstreaming biodiversity conservation in village level planning

-Mukesh Deorari, Hemlata Khanduri, Mansi Bijalwan, Amanat Kaur Gill, Abhimanyu Anand Singh, Sakshi Rana, Mohit Payal, Piyush Kumar Anuj, Vinita Sagar, Syed Ainul Hussain, Ruchi Badola

Stakeholders' participation and integration of their concerns are essential for effective conservation and sustainable management of river ecosystems. This study presents a participatory approach for village-level microplanning in the Ganga River Basin, emphasizing decentralized, conservation sensitive, bottom-up strategies that enable informed decision-making and efficient implementation.

The primary objective of this study was to develop village-level microplans that mainstream the biodiversity conservation into village level development planning, covering the following states: Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, West Bengal, Himachal Pradesh, Haryana, and Madhya Pradesh.

A total of 34 village-level microplans were prepared for ecologically sensitive areas in the Ganga River Basin. Villages were selected based on ecological importance, threats and the dependence of local communities on river resources. To identify site-specific socio-ecological issues, "problem and solution tree" approach was used and data were collected through socio-economic surveys, Participatory Rural Appraisal (PRA), social mapping, and focus group discussions (FGD).

The main challenges identified included unregulated riverine resource extraction such as fishing and mining, unsustainable riverbed farming, lack of awareness among stakeholders regarding vulnerabilities of river ecosystems, and poor waste management practices. To address these challenges, the microplans suggested site- and issue-specific replicable and scalable strategies i.e., integrated and inclusive stakeholder engagement, capacity building, participatory monitoring to improve biodiversity outcomes, strengthening of natural resource management, promotion of biodiversity positive livelihood frameworks to support socio-ecological resilience.

These plans were shared with implementing agencies, including the District Administration, Forest Department, and Panchayati Raj institutions, to ensure coordinated and integrated implementation and conservation sensitive development decisions.

& Instagram Text

Stakeholder-driven village-level microplans in the Ganga Basin link biodiversity with local development. Using PRA & FGDs, they propose inclusive, scalable strategies for resilient, conservation-sensitive livelihoods & river ecosystem management.

Voices of the Ganga Basin come together in 34 village microplans linking biodiversity with livelihoods. Through local wisdom & participatory action, communities shape resilient, conservation-sensitive futures. #SaveGanga #EcoLivelihoods #RiverConservation.

Title of the Project

Planning and Management for Aquatic Species Conservation and Maintenance of Ecosystem Services in the Ganga River Basin for a Clean Ganga

Name of PI(s)

Dr. Ruchi Badola

Name of Co-PI(s)

NA

Funding Agency

National Mission for Clean Ganga, Ministry of Jal Shakti

Project Duration

2020-2026

Keywords

Local community; stakeholders; bottom-up strategies; aquatic species conservation; sustainable development

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Title of the Project
Conservation and management plan of Saltwater Crocodile (*Crocodylus porosus*) in Great Nicobar Island

Name of PI(s)
Dr. Abhijit Das

Name of Co-PI(s)
Dr. C. Ramesh, Dr. J. A. Johnson

Funding Agency
ANIIDCO

Project Duration
2025-2026

Keywords
Distribution, Spotlight survey, Coexistence, Conflict, Nesting.

Handles
NA

Instagram Handles
NA

Population Status of Saltwater Crocodile (*Crocodylus porosus*) Schneider 1801 on the East Coast of Great Nicobar Island

-Baskaran, M, Jaykumar Arvindbhai Chaudhari, Peter Christopher, R., Sureshgopi D., Utkarsh Tak, Gaurav Vashistha, Abhijit Das

The saltwater crocodile (*Crocodylus porosus*) is the world's largest crocodile species. The remaining populations in India exhibit a patchy distribution on the mainland and the Andaman & Nicobar Islands. No detailed information exists on the population size, occupancy, nesting, and movement ecology of the saltwater crocodile in the Great Nicobar Island (GNI).

Our study site, GNI is the southernmost distribution range of saltwater crocodile in India. The preliminary study was conducted over a 4-month period (June-September 2025). We covered an area of 77 km on the East coast from Campbell Bay to Indira Point, conducting field surveys across 32 locations, including creeks, marshes, and estuaries. Our objectives were to assess the population status, distribution, and habitat use of saltwater crocodiles in GNI.

The presence/absence, relative count, and demography of crocodiles were determined via surveys using spotlight, boat and point counts, indirect signs, camera trapping, questionnaires, and opportunistic observations. During the study, we counted a total of 54 individuals: 6 hatchlings, 12 juveniles, 5 sub-adults, and 31 adults. The previous census in the Nicobar Group of Islands has recorded 99 individuals in 2016 and 19 in 2023. Four nesting sites were recorded: three through questionnaire surveys and one through the direct presence of hatchlings. Questionnaire surveys generally indicated positive perceptions of crocodiles; however, six cases of human-crocodile conflict were reported. Respondents also recalled the presence of larger individuals in higher densities along shorelines before the 2004 tsunami, suggesting subsequent mortality or upstream migration, which aligns with the present observations.

This pilot study was crucial in understanding their distribution pattern and their coexistence in a rapidly developing island. This work shows that crocodile presence in the GNI was always underestimated and brings about the need for a more in-depth survey to understand this large reptile.

& Instagram Text
NA

Influence of Invasive Plants on Native Tree Saplings in Tropical Dry Deciduous Forests of Kuno National Park, Madhya Pradesh

- Guna Sekaran M, Akash Rana

Invasive plant species pose a significant threat to forest regeneration in dry tropics, where natural recruitment is already constrained due to limited resource availability. As part of habitat consolidation and restoration of dry forest systems in central India under the Project Cheetah, understanding the factors/patterns of vegetation succession is crucial for management of the landscape.

We assessed the influence of invasive abundance on native tree sapling recruitment across six forest types: mixed deciduous, woody savannah, dhonk, salai, remja-khair, and riverine, using GLMM (negative binomial distribution) using 132 randomly selected 10×10m plots from the sampled 276 plots in Kuno NP (Area~748km^2) during March-May2025. We analyzed their relationships using sapling and invasive abundances through frequency distributions and correlations.

Results showed a strong overall negative effect of invasive abundance on sapling recruitment (Estimate = −0.0045, $p < 0.001$). Mixed-deciduous Forest had the highest baseline sapling count ~8 per plot, but reduced to <2 under heavy invasion. Riverine and Salai forests showed low regeneration regardless of invasive levels. Across all forest types, sapling abundance decreased exponentially as invasion increased. Overall, 34% of native species showed negative response, while 24% and 42% showed positive and mixed responses, respectively. Albezia lebbek was most suppressed (−38.89%), while Diospyros melanoxylon was facilitated by Lantana camara (+39.63%). Among invasive species, Ageratum conyzoides had the broadest negative impact, whereas Mesosphaerum suaveolens fostered growth of species like Z.xylopyrus, F. indica, and D.cinerea. D.latifolia, T.uliginosa, and S.oleosa were particularly vulnerable to invasive plants.

Our findings underscore both suppressive and facilitative roles of invasive plants, highlighting the importance of forest type and species-specific vulnerabilities. Effective management strategies need to focus on early invasive control, forest-type-specific restoration, etc., that mitigate harmful impacts while recognizing potential facilitative interactions to maintain ecosystem resilience in dry tropical forests.

& Instagram Text

Invasive plants are reshaping dry tropical forests, limiting native regeneration. Our study in Kuno NP shows sapling decline with invasion, though some species benefit. Results call for early invasive control & forest-type-specific restoration to sustain resilience.

Title of the Project

Bringing back the Cheetah to India

Name of PI(s)

Dr. Bilal Habib

Name of Co-PI(s)

Dr. Vishnupriya Kolipakam

Funding Agency

National Tiger Conservation Agency

Project Duration

2022-2030

Keywords

Invasive species, native tree regeneration, species-specific responses, generalized linear mixed-effects models, facilitation, Vegetation dynamics, Kuno National Park

Handles

NA

Instagram Handles

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Title of the Project

Reviving Batagur baska: A Strategic Conservation Approach for Ensuring Survival of the Critically Endangered Terrapins

Name of PI(s)

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Name of Co-PI(s)

Dr. Anukul Nath

Funding Agency

National Tiger Conservation Authority

Project Duration

2025-2028

Keywords

Estuarine turtle, Mangrove, Sundarbaner Katha, River Terrapin, Sundarban Tiger Reserve

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Bringing Back from the Brink: A Conservation Approach for Batagur baska in Sundarban Tiger Reserve

-Swati Nawani, Anukul Nath, Abhijit Das

Batagur baska (Gray, 1830) known to occur in mangroves of India, Bangladesh and Myanmar, with the wild population believed to be in a precarious state and largely unknown. Given this uncertainty, ex-situ conservation has emerged as a vital strategy to ensure the species' survival. However, these populations face severe threats from loss of genetic diversity, necessitating a comprehensive conservation strategy.

The primary aim was to assess the current status of wild and captive population of Batagur baska and propose a strategic conservation framework for its long-term survival both in-situ and ex-situ.

The study was carried out in Indian parts of Sundarbans Tiger Reserve (STR), West Bengal, covers an area of about 3,483 km^2.

Based on surveys conducted in 2023 and 2024, this study used a combination of methods to gather data. We conducted boat-based visual surveys, genetic sampling, and community-based surveys. We used ensemble modeling to predict the species' potential distribution. Blood samples were collected from captive Batagur baska for whole mitogenome sequencing. No direct evidence of the Batagur baska was found during boat and beach surveys. Our study suggests that the most suitable habitats for this species in India are in West Bengal, followed by parts of Odisha, Bhitarkanika National Park. While some nesting beaches within the STR show potential, their suitability is limited by threats from human disturbance, free-ranging dogs, and wild boars. The B. baska population within the STR also faces low genetic diversity, which puts it at a long-term risk of inbreeding

The current study emphasizes the immediate need for captive population management, reintroduction, monitoring released individuals, community engagement, habitat protection, and saving the species from extinction.

& Instagram Text

The study conducted on critically endangered estuarine turtle reveals key habitats in West Bengal and Odisha. Challenges remain from human disturbance and low genetic diversity. Urgent action is needed to protect this species. #BatagurBaska #WildlifeConservation #SundarbanTigerReserve #thinkbeyondthepond

Synchronized Drone Surveys for Dugong Population Estimation in Palk Bay and Gulf of Mannar, Tamil Nadu

-Akarsh Aggarwal, Sagar Rajpurkar, Chinmaya Ghanekar, Nehru Prabakaran, K. Sivakumar, J.A. Johnson

Effective conservation planning for India's threatened dugong population requires accurate and consistent population data. There is a critical need for standardized, modern survey methodology that can aid the researchers to come over the limitations in the conventional boat-based survey methods posed due to various feasibility constraints. We developed a scientifically robust and replicable protocol based on Unmanned Aerial Vehicles (UAVs) to estimate the dugong populations. This systematic approach of data collection and analysis, provide managers and researchers with a powerful tool for the effective conservation management of this flagship marine species.

Drone-based strip transect surveys were systematically conducted in three districts of Tamil Nadu covering 25 sites in Palk Bay (50 transects; 19.50 km^2 surveyed; 150 km total effort) and 23 sites in the Gulf of Mannar (46 transects; 17.94 km^2 surveyed; 138 km total effort). Pre-automated flights maintained a fixed altitude of 100 meters and speed of 35 km/hr with a 0.130 km transect width and 3 km transect length, Surveys were conducted by three drone pilots flying from three different locations simultaneously spaced 4 km apart and operated under optimal environmental conditions. Continuous aerial video recordings were taken at 60fps 1080 resolution and later analysed.

The preliminary results show 4 dugong sightings in Palk Bay, providing an encounter rate of 0.027 dugong/km from 150 km surveyed area. In the Gulf of Mannar, 5 dugongs were sighted, corresponding to an encounter rate of 0.036 dugongs/km from 138 km surveyed area. At present, these single period surveyed data serve the baseline for subsequent dugong population estimates in Tamil Nadu.

This study highlights the potential of UAVs as a cost-effective and high-resolution method for monitoring dugongs in India. UAV strip-transects provide the first large-scale population assessment, establish standardized protocols, and deliver baseline data that offer a replicable model for marine mammal research nationwide.

& Instagram Text

Synchronized UAV survey for dugong population estimation in Tamil Nadu. Standardized drone strip-transects in Palk Bay & Gulf of Mannar provide baseline data for population estimation of dugongs from Tamil Nadu,India. A replicable model for India's marine megafauna research. #ConservationTech

Title of the Project

Recovery of Dugongs and their Habitats in India: An Integrated Participatory Approach (CAMPA-Dugong)

Name of PI(s)

Dr. J.A. Johnson

Name of Co-PI(s)

Dr. Nehru Prabakaran, Ms. Chinmaya Ghanekar

Funding Agency

CAMPA

Project Duration

2016-2025

Keywords

Conservation Technology, Remote Sensing, Marine Megafauna Conservation

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Title of the Project

Planning and Management for Aquatic Species Conservation and Maintenance of Ecosystem services in the Ganga River Basin for a Clean Ganga

Name of PI(s)

Dr. Ruchi Badola

Name of Co-PI(s)

Dr. Syed Ainul Hussain

Funding Agency

National Mission for Clean Ganga, Ministry of Jal Shakti

Project Duration

2020-2026

Keywords

Estuarine turtle, Mangrove, Sundarbaner Katha, River Terrapin, Sundarban Tiger Reserve

Handles

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Ganga Praharis Guardians of the River- A Life Less Ordinary

-Sunidhi Mishra, Pariva Dobriyal, Deepika Dogra, Juhy Khan, Krishna P. Upadhyay, Priyanka Singh, Prabha Thapa, Shraddha Mahajan, Rahul Yadav, Syed Ainul Hussain, Ruchi Badola

The rejuvenation of rivers in India increasingly emphasises community participation as a foundation for ecological restoration and sustainability. Originating largely from river-dependent communities, trained and motivated Ganga Praharis serve as grassroots custodians, connecting local stewardship with national efforts for river rejuvenation.

The study area focuses on the states within the Ganga River basin. The objective of the study is to build and empower grassroots communities for sustainable stewardship and conservation. Ganga Praharis were identified through site-level consultative meetings and workshops, targeting individuals capable of mobilising communities and institutions for Ganga basin conservation. Local people were also approached via state forest departments, administrative bodies, NGOs, and community groups. To ensure fair representation of youth across socio-economic strata, individual assessments were conducted to understand their dependency on river resources. The primary selection criterion was a candidate's passion and commitment to safeguarding the Ganga and its tributaries, with emphasis on maintaining their cleanliness, ecological integrity, and biodiversity value.

More than 7000 trained Ganga Praharis have conducted 3654 conservation activities, including river and ecological monitoring, awareness campaigns, cleanliness drives, rescue and rehabilitation of animals in distress, plantation, habitat restoration, microplan preparation, socio-economic assessments, livelihood development and stakeholder mobilisation. Beyond ecological outcomes, the study highlights a progressive shift in their mindset and behaviour. They have developed into a cadre actively supporting Ganga conservation across the basin. Many now serve as community leaders and influencers, including village pradhans. Their contributions are recognised nationally and internationally, inspiring collective appreciation for sustainable management of natural resources.

The Ganga Prahari network is integral to the rejuvenation of the Ganga and plays a vital role in river conservation, fostering ownership and responsibility. Their involvement illustrates the effectiveness of gender-inclusive, community-led models in river conservation, transforming policy efforts into participatory, people-driven movements replicable across other river systems in India.

& Instagram Text

Ganga Praharis, from river-dependent communities, serve as grassroots custodians bridging local stewardship with national river rejuvenation. Their efforts show the effectiveness of community-led, people-driven models, replicable across India's river systems.

Strengthening Human Capital for Effective Conservation Actions

-Uttaran Bandyopadhyay, Sandhya Joshi, Sunita Rawat, Ekta Sharma, Prashant Tariyal, Rashmi Das, Hema Pant, Priya Prajapati, Rajsekhar Kisku, Syed Ainul Hussain, Ruchi Badola

Integrating livelihood development with natural resource management is essential for sustaining conservation efforts. This study documents the livelihood development interventions in the Ganga River basin, which are designed in accordance with site-specific socio-cultural and ecological values. These interventions are targeted to harbour the stewardship among stakeholders, mainly local communities, by encouraging their participation in river conservation efforts.

To identify the site-specific livelihood interventions, we conducted need assessments by evaluating natural and agricultural resources, existing skill sets, community interests, and market availability and demands. Collaborations were established with government and non-government agencies to ensure effectiveness of the interventions.

We organized a total of 266 training programmes across 44 districts in 7 states *viz.*, Haryana, Himachal Pradesh, Uttarakhand, Uttar Pradesh, Bihar, Jharkhand and West Bengal, engaging approximately 7,200 participants. To ensure the sustainability of the trainings, linkages were established with markets, through Jalaj network. Post-training assessments revealed improved household incomes, diversification of livelihood options, adoption of eco-friendly practices, entrepreneurial activities as well as self-initiated conservation activities. The tailored trainings ensured active participation from various socio-economic strata of the society. Trained groups of youth and women were registered into formal institutions such as self-help groups and civil societies for enabling them to avail various financial and technical benefits of livelihood development schemes.

The findings highlight that aligning local livelihoods with the Ganga Basin's socio-cultural and ecological values advanced participation in conservation activities. The interventions improved the employability of the local youth and women and provided them platforms for their social mobility. This approach strengthened human capital, ensuring sustainable conservation practices and community-driven stewardship of the river ecosystem.

& Instagram Text

Livelihood training in Ganga basin boosts conservation! 266 programs across 44 districts engaged 7,200 people. SHGs empowered youth & women, linked skills to markets via Jalaj, and drove eco-friendly practices for sustainable river conservation.

Empowering Ganga basin communities! 7,200 trained in 266 programs across 44 districts. SHGs boost incomes, eco-practices & conservation. Jalaj links skills to markets, fostering youth & women's mobility.

Title of the Project

Planning and Management for Aquatic Species Conservation and Maintenance of Ecosystem Services in the Ganga River Basin for a Clean Ganga

Name of PI(s)

Dr. Ruchi Badola

Name of Co-PI(s)

NA

Funding Agency

National Mission for Clean Ganga, Ministry of Jal Shakti

Project Duration

2020-2026

Keywords

Site specific Livelihood Strategies; Local Community; Stakeholder Participation; Skill Development, Market Linkages

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The Wild Side of the Rocks: Understanding the Wildlife Usage of Rock Shelters in a Human-dominated Forest Landscape

-C S Ashik, Vivek Ranjan, Arti Adhikari, Govindan Veeraswami Gopi

Rock shelters provide a subterranean refuge for wildlife; a habitat feature prominent in plateau and highland landscapes. These sites have been formed through geological processes and have been utilized by both humans and wildlife, signifying their co-existence.

This study focuses on the use of rock shelters by wildlife species. Here, we present the preliminary findings of our study on one rock shelter site in Madhya Pradesh. The study site lies in the Satpura-Melghat wildlife corridor, dominated by tropical dry deciduous forest.

A total of 17 species, including 10 species of birds and 7 mammal species, were recorded at the shelter. Birds were mostly active during mid-day to afternoon, engaging in foraging behaviour with interspecies and intraspecies interactions. Mammals used the shelter for resting, salt licking, territory marking, and socialization. We performed NMDS and cluster analysis to analyze the composition of species assemblages of the rock shelters and surrounding habitats; the rock shelter assemblages were found to be unique and distinct.

The study highlights the importance of rock shelter habitats in areas with high anthropogenic pressure as a safe refuge for wildlife and as a critical component in maintaining habitat heterogeneity in the human-modified landscape.

Title of the Project
Study the Impacts of Morand-Ganjal Irrigation Project on Wildlife and Preparation of Wildlife Mitigation Plan

Name of PI(s)
Dr. G. V. Gopi

Name of Co-PI(s)
NA

Funding Agency
Narmada Valley Development Authority

Project Duration
2025-2027

Keywords
Co-existence, micro-habitat, cave, habitat-use pattern, wildlife behaviour

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& Instagram Text
The wild side of the rocks: Understanding the wildlife usage of rock shelters in a human-dominated forest landscape. In ancient times, the rock shelters/ caves which were used by humans are now being used by wildlife. The rock paintings at these shelters elaborates the human-wildlife interactions and cultural significance.

From Challenges to Conservation Solutions: The Story of Asola Bhatti Wildlife Sanctuary (ABWS)

-Rashi Nautiyal, Feba K S, Ruchi Badola, Parag Nigam, Bilal Habib, Gautam Talukdar, Salvador Lyngdoh, Abhijit Das, Ritesh Kumar Gautam, B S Adhikari

ABWS located on the northernmost tip of the Aravalli Hills, is a critical biodiversity refuge in the rapidly urbanizing Delhi-Haryana landscape. The sanctuary holds immense geological, ecological and social values, making its conservation essential. The study was conducted across ABWS (32.71 km^2), covering diverse habitats including grasslands, forests, rocky terrains, waterbodies and plantations.

The main objective of the study was to develop a science-based management plan for ABWS by integrating biological and social elements, and to identify key conservation challenges and solutions. A multi-dimensional and traditional approach was used, covering eight components: birds, mammals, vegetation, herpetofauna, insects, soil, water and social aspects. Biodiversity surveys were complemented by soil and water quality analysis, while social surveys captured community perceptions, resource use and awareness levels.

The ABWS exhibits rich biodiversity across taxa but faces major threats, including invasive species (*Prosopis juliflora*), human disturbance, habitat fragmentation, and water scarcity. Land use analysis showed *Prosopis juliflora* as the dominant cover (18.41 sq. km) with human-habitation spanning 4.08 km^2, indicating ecological stress. Soil analyses revealed high salinity and nutrient levels in Prosopis sites, whereas plantations showed higher moisture and fertility. Water quality varied, with some ponds showing high salinity and nutrient enrichment, while Neeli Jheel and borewell water were suitable for use. Effective soil and forest management is vital for ecosystem health and stability.

The integration of ecological and social findings informed practical management interventions, including invasive species control, habitat restoration, waterbody rejuvenation and community-based outreach. This framework demonstrates how scientific research can guide effective conservation strategies for urban-edge protected areas like ABWS.

Title of the Project

Developing Integrated Management Plan of Asola Bhatti Wildlife Sanctuary (ABWS), Delhi

Name of PI(s)

Dr. B S Adhikari

Name of Co-PI(s)

Dr. Ruchi Badola, Dr. Parag Nigam, Dr. Bilal Habib, Dr. Gautam Talukdar, Dr. Salvador Lyngdoh, Dr. Abhijit Das, Mr. Ritesh Kumar Gautam

Funding Agency

Delhi Forest and Wildlife Department

Project Duration

2024-2025

Keywords

Protected areas, Conservation planning, Ecological stress, Biodiversity management, Urban ecology

& Instagram Text

At Delhi's urban edge, Asola Bhatti WLS is a vital refuge of the Aravallis . Our study spans wildlife, habitats & people - revealing rich biodiversity but rising threats. Solutions: invasive control, habitat & water restoration, community-led conservation. #AsolaBhatti

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Title of the Project

Augmentation and long-term monitoring of tiger in Buxa Tiger Reserve, West Bengal

Name of PI(s)

Dr. Ramesh Krishnamurthy

Name of Co-PI(s)

Dr S.K. Gupta

Funding Agency

West Bengal Forest Department (WBFD)

Project Duration

2018-2026

Keywords

Protected Area Management, Population Dynamics, Rewilding, Reintroduction.

Status of Predators, Prey and Habitat in Buxa Tiger Reserve, West Bengal in the context of Tiger Recovery

-Palak Thakur, S.K. Gupta, Ramesh Krishnamurthy

Population augmentation through conservation translocation is an important tool for restoring populations from the verge of local extinction. This approach is particularly critical for large carnivores, which play a key role in regulating trophic cascades and maintaining ecosystem stability. In this context, a dedicated tiger augmentation and recovery program was initiated in Buxa Tiger Reserve (BTR), West Bengal. BTR is located in north Bengal and maintains strong connectivity with the transboundary forests of Bhutan and Assam. This study was commissioned to evaluate the status of prey, predators and habitat quality in BTR before the translocation of the apex predator so as to guide landscape-level planning and management. A total of ~200 camera traps per year for five years (2021-2025) were deployed in 2 km^2 grids, accompanied by 78 line transects to assess prey density and habitat condition. Camera trap data were used to calculate the Relative Abundance Index (RAI) for the predator and prey species. Distance 7.5 software and 'unmarked' package in R were used for abundance estimations.

The results showed positive trends in population of key prey species over the study period. Barking deer density (± sd) increased from 5.38 (± 3.7) to 6.68 (± 1.19) individuals/km^2 in the last five years, while sambar density improved from 1.68 (± 1.19) to 2.07 (± 0.85). Chital also showed marginal increase, from 2.9 (± 3.4) to 3.8 (± 2.68) individuals/km^2. In contrast, wild pig density showed decline from 2.21 (± 1.34) to 0.92 (± 0.6) individuals/km^2. Among co-predators, relative abundance of leopards increased from 6.93 to 8.65.

Enhanced prey density with positive population trends, increasing co-predators, and reduced anthropogenic pressure indicate the improvement of basic habitat conditions in BTR, providing a strong foundation for tiger augmentation and recovery efforts. However, human presence and emerging connectivity challenges need to be addressed carefully.

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& Instagram Text

Status of Predators, Prey and Habitat in Buxa Tiger Reserve, West Bengal in the context of Tiger Recovery. #BuxaTigerReserve #ARS2025

Habitat Mapping of Caracal in Kachchh, Gujarat

-Himani Singh Khati, Sneha Pandey, Varun Kher, Gautam Talukdar

The Caracal (*Caracal caracal*), a medium-sized and elusive wild cat, is listed under Schedule I of the Wildlife (Protection) Act, 1972. In India, it inhabits arid and semi-arid regions characterized by sparse vegetation. Agricultural expansion, infrastructure development, and invasive species are major threats to its native habitat. This is the first account of land use–land cover (LULC) mapping in the habitat outside PAs in Kachchh, Gujarat.

This study was conducted in the Kachchh landscape of Gujarat (11,035 km^2), encompassing Narayan Sarovar and parts of Kachchh Desert Wildlife Sanctuary. The objective of the study was to classify and map the LULC associated with the caracal habitats using remote sensing and geospatial techniques. Cloud-free Landsat imagery (30 m resolution) was classified using the Maximum Likelihood Algorithm (MLA) in ArcGIS Pro. Seven LULC categories were mapped and validated using field observations and high-resolution satellite imagery.

The LULC map comprised of agriculture (5,542 km^2, 50.22%), woodland (2,130 km^2, 19.31%), scrubland/grassland (1,737 km^2, 15.74%), prosopis invasion (788 km^2, 7.14%), settlements (293 km^2, 2.65%), waterbodies (285 km^2, 2.58%) and others (257 km^2, 2.33%). Agriculture dominated the landscape, covering half of the study area. Nearly 19% of the landscape was classified as woodlands, dominated by Acacia nilotica, Zizyphus mauritiana, and Euphorbia granulata, forming a key habitat for Caracals. The invasive species Prosopis juliflora and P. cineraria were prominent near streambeds. The classification achieved an overall accuracy of 81% (Kappa = 0.815), with Producer's Accuracy ranging from 75–94%, indicating robust habitat mapping. The dominance of agriculture indicates the human pressure on natural habitats, while the spread of invasive Prosopis sp. poses additional threats through habitat fragmentation.

The study highlights the ecological importance of heterogeneous habitats outside PAs for the caracal population and provides a baseline for habitat monitoring and conservation planning in Kachchh.

& Instagram Text

Mapping the habitat of the elusive Caracal in Kachchh, Gujarat. Our poster highlights habitat types and shows how RS & GIS-based mapping provides a vital baseline for conservation planning of this rare wild cat.
#ARS2025 #WildCats #GIS #Conservation

Title of the Project

PAN India Assessment and Monitoring of endangered species covered under the Development of Wildlife Habitats Scheme of MoEFCC: Habitat monitoring of select IDWH species

Name of PI(s)

Dr. Gautam Talukdar

Name of Co-PI(s)

Dr. Amit Kumar,
Dr. Nehru Prabakaran,
Sh.Varun Kher

Funding Agency

Ministry of Environment, Forest and Climate Change (MoEFCC)

Project Duration

2022-2025

Keywords

Wild cat, Arid Region, Remote Sensing & GIS, LULC Classification, Habitat Monitoring

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Assessing the Seasonal Variation in Behavior and Physiological Stresses in Captive Himalayan Goral at Delhi Zoo: A Preliminary Study

-Mohit Singh, Krishna Sharma, Nirjesh Gautam, Anshika Sharma, Samrat Mondol, Suresh R Kumar

Zoological parks are vital institutions for conserving biodiversity. A successful ex situ conservation program relies on appropriate, species-specific husbandry and enrichment practices. However, anthropogenic disturbances, nutrition, and visitor presence can influence the behaviour and physiological responses of captive animals. Therefore, it is crucial to investigate these responses to understand and improve animal health and welfare.

The National Zoological Park is located in New Delhi, designed by the Government of India as a centre for awareness and education for the urban population. It was created to provide a natural habitat for the conservation breeding of rare and endangered species. We conducted this baseline study to investigate the behavior and physiological stress of the Himalayan goral (*Naemorhedus goral*) at the Delhi Zoo.

Behavioral data were collected through instantaneous scan sampling on a group of 18 Himalayan goral individuals. Physiological stress was assessed using non-invasive faecal sampling and faecal glucocorticoid hormone analysis via ELISA. Observations and sample collection took place from May 2024 to February 2025.

Over 114 hours of observation across four seasons (summer, monsoon, autumn, and winter), the greatest variation in relaxed state was recorded (31% during the monsoon and 46% in winter). Feeding behaviour remained consistent throughout all seasons. Locomotion (9.3%) and social behaviours (4.5%) showed minimal fluctuations, indicating a low impact of seasonality on movement. However, the decrease in other behaviours (12.3%) during winter suggests reduced behavioural diversity, likely reflecting energy conservation during harsh conditions. The fGCM analysis revealed lower GC levels (log10) in summer (3.7), an increase during the monsoon (4), and peaks in autumn and winter (4.3).

This study suggests the need for seasonal husbandry adjustments, particularly enhancing environmental enrichments during the winter, to reduce stress. Consistent nutrition and minimizing human disturbance year-round can support better welfare and stable physiological responses in captive Himalayan goral.

Title of the Project

Assessing the impacts on wildlife in captivity at the National Zoological Park, New Delhi, due to the proposed Delhi- Gurugram-Rewari-Alwar regional rapid transport system tunnelling work

Name of PI(s)

Dr. Samrat Mondol

Name of Co-PI(s)

Dr. Suresh R Kumear

Funding Agency

NCRTC

Project Duration

2023-2026

Keywords

Animal Behavior, Stress physiology, Zoo research, Animal welfare

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Text

At Delhi Zoo, the Himalayan Goral shows the lowest stress (GC) in summer, with peaks in autumn/winter. Winter brings more resting—likely energy conservation. Seasonal rhythms persist in captivity! #ZooScience #AnimalWelfare

Instagram Text

Himalayan Goral at Delhi Zoo shows strong seasonal changes: low stress in summer, peaks in autumn/winter, and more resting in winter. Even in zoos, their natural rhythms persist! #WildlifeResearch #ZooLife #Goral

Outstanding Universal Values of Satpura Tiger Reserve, Madhya Pradesh

-Deepika Saire

Satpura Tiger Reserve (STR), situated in the central Indian highlands of Madhya Pradesh, represents one of the most intact tropical deciduous forest systems in India. Tropical deciduous forests remain under-represented on the World Heritage List despite their global ecological and evolutionary significance.

This study evaluates STR's Outstanding Universal Values (OUVs) in relation to UNESCO's natural criteria. The STR reserve spans 2,133 km^2 and includes Satpura National Park, Bori, and Pachmarhi Wildlife Sanctuaries. The landscape features sandstone escarpments, gorges, valleys, waterfalls, and the Sal-dominated Pachmarhi Plateau, juxtaposed with teak-rich lowlands. This unique setting forms a biogeographic corridor linking the Himalayas and Western Ghats.

The primary objective was to investigate and document the ecological, geological, biological, and cultural attributes of STR to assess its OUVs. The study involved a comprehensive literature review and historical data analysis, complemented by field surveys since 2021. These surveys, combined with consultation and capacity-building workshops, focused on biodiversity documentation, ecological processes, and cultural heritage assessment. STR demonstrates superlative natural beauty through its rugged terrain, perennial rivers, and seasonal transformations, aligning with UNESCO criterion (vii). It exemplifies ongoing ecological and evolutionary processes (criterion ix), harbouring over 1,300 plant species and 400+ vertebrate species, including Bengal tiger, Indian giant squirrel, sloth bear, and Malabar pied hornbill. As a source population of tigers, STR maintains critical connectivity with adjoining reserves. More than 50 prehistoric rock shelters with paintings (1,500–10,000 years old) reflect long-standing human–nature interactions, adding cultural significance.

STR embodies Outstanding Universal Value through its dramatic landscapes, biodiversity, and unique ecological processes. Its integration of natural and cultural elements highlights its global significance, emphasizing the need for sustained conservation and its recognition under UNESCO World Heritage criteria (vii), (ix), and (x).

Text

Satpura Tiger Reserve, MP, showcases dramatic landscapes, rich biodiversity & prehistoric rock art. A living corridor of ecological & cultural heritage, highlighting OUVs under UNESCO criteria (vii), (ix), (x). #ARS2025 #WorldHeritage @MPTourism

Instagram Text

Satpura Tiger Reserve, Madhya Pradesh – where dramatic sandstone landscapes meet rich biodiversity & ancient rock art. A living corridor of nature & culture, showcasing global heritage values. #IARS2025 #SatpuraTigerReserve #WorldHeritage #Biodiversity #MPTourism

Title of the Project

Preparation of nomination dossier for Satpura Tiger Reserve, Madhya Pradesh- MPTB

Name of PI(s)

Dr. Gautam Talukdar

Name of Co-PI(s)

NA

Funding Agency

MPTB

Project Duration

2021-2026

Keywords

Pachmarhi plateau, tiger conservation, biodiversity, Outstanding Universal Values, biogeographic corridor, prehistoric paintings

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Title of the Project

Implementing Rhino DNA Indexing System (RhoDIS) to counter Rhino poaching threat and aid Rhino population management in India- Phase II

Name of PI(s)

Dr. Samrat Mondol

Name of Co-PI(s)

NA

Funding Agency

MoEFCC

Project Duration

2021-2025

Keywords

Indian rhinoceros, Illegal Wildlife Trade (IWT), translocation, genetic health, genetic database

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Safeguarding the Indian Rhinoceros: Using Genetic Database to Combat Poaching and Aid Conservation Management

-Jyoti Soun, Megha Mehta, Shrewshree Kumar, Tista Ghosh, Amit Sharma, Samrat Mondol

The Indian rhinoceros is a flagship species whose recovery is considered a major conservation success, yet it faces persistent threat from habitat isolation and illegal wildlife trade. To address these challenges, we developed a nation-wide genetic database to assess population genetic diversity and health, identify source populations of confiscated rhino contrabands and propose evidence-based management strategies.

To develop a population-level genetic database of Indian rhinoceros to guide long-term conservation strategies and trace the origin of seized rhino horns. Major rhino-bearing parks across India, including locations in Assam, West Bengal, Uttar Pradesh, and Bihar were sampled.

The total of 2264 rhino biological samples were collected from each park across India. An allele frequency map was developed using microsatellite (STR) and multivariate Bayesian analysis was used to determine genetic subpopulations (or K). Genetic diversity and health of the rhino populations were assessed using genetic health indices. mtDNA data was generated for state-level genetic signals. A two-step assignment framework for seized contrabands was employed: mtDNA for state-level identification and STR-based clustering to determine genetic subpopulations (or K).

The genetic database identified 1343 unique rhino individuals. Bayesian clustering indicated six genetic subpopulations (k=6) in the Indian rhinoceros. Genetic health indices indicated that the rhino population in Kaziranga and Manas in Assam exhibited the best genetic health, whereas Gorumara and Jaldapara in West Bengal were poor. The database achieved approximately 98% accuracy in assigning seized rhino contraband to source populations. Mitogenomic analyses revealed state-specific diagnostic variations, achieving a 100% success rate for mtDNA-based state assignment of rhino contraband.

The study demonstrates the effectiveness of a genetic database as a tool for population management interventions and combating illegal wildlife trade. Beyond law enforcement, the genetic database offers critical insights for guiding translocations, enhancing genetic health, and supporting long-term population recovery.

& Instagram Text

The genetic database for Indian rhinos is a game changer! It helps conservationists monitor population health, trace illegal rhino horn back to its source, and protect this iconic species for future generations. Science is fighting back against poaching. #wildlifecrime #indianrhino

Developing a Conservation Action Plan Framework for elusive small and medium wild felids

- Urjit Bhatt, S P Goyal, Salvador Lyngdoh

India is home to 15 wild cat species, yet conservation focus has historically centred on large felids. The caracal (*Caracal caracal schmitzi*), fishing cat (Prionailurus viverrinus), and clouded leopard (*Neofelis nebulosa*), each occupying distinct arid, wetland, and forested ecosystems, remain under-represented in national conservation programmes. Their populations are fragmented and declining due to habitat loss, prey depletion, and human pressures, despite being protected as Schedule I under the Wildlife (Protection) Act 1972.

The study spans key landscapes across India, including the western arid and semi-arid zones for the caracal, the wetland mosaics of the Gangetic plains and coastal regions for the fishing cat, and the forested Himalayan foothills and Northeast India for the clouded leopard. The aim is to develop a practical and science-based Conservation Action Plan (CAP) for these three species, which will also incorporate climate resilience, local community participation, and policy linkages. The framework is being developed under the GOI–UNDP–GEF-7 project, which aims to strengthen wild cat landscapes.

To develop an integrated, science-based and climate-resilient Conservation Action Plan (CAP) framework for these three species, harmonising ecological knowledge with socio-environmental and policy dimensions under the GOI–UNDP–GEF-7 project. Priority landscapes and actions were identified: (i) Caracal—scrub and ravine restoration and metapopulation management in western India; (ii) Fishing Cat—wetland protection and mitigating conflict across floodplain and coastal systems; (iii) Clouded Leopard—transboundary forest connectivity and monitoring frameworks in the eastern Himalaya and northeast India.

The tri-species CAP establishes India's first coordinated framework for small and medium cat conservation, integrating ecological research, community participation, and policy instruments. Its implementation will guide adaptive management, climate resilience, and transboundary cooperation within India's emerging small-cat conservation agenda.

Title of the Project

Strengthening conservation and resilience of globally significant wild cat landscapes through a focus on small cat and leopard conservation.

Name of PI(s)

Dr Salvador Lyngdoh

Name of Co-PI(s)

Dr Bilal Habib

Funding Agency

Global Tiger Forum

Project Duration

May 2025-Oct 2025

Keywords

Caracal, Fishing Cat, Clouded Leopard, Landscape Connectivity, Small Cats

& Instagram Text

Urjit Bhatt presents "Developing a Conservation Action Plan Framework for Elusive Small and Medium Wild Felids" — integrating science, policy, and community action for India's caracal, fishing cat, and clouded leopard. Part of the GOI–UNDP–GEF-7 project "Strengthening Conservation and Resilience of Wild Cat Landscapes."

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