



भारतीय वन्यजीव संस्थान
Wildlife Institute of India

37th ANNUAL RESEARCH SEMINAR

PROGRAMME & ABSTRACTS

21-22 SEP 2026



ARS | 2026



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ANNUAL RESEARCH SEMINAR — PROGRAMME —



DAY 1: 21 SEPTEMBER 2026

09:30 - 10:55	<i>Inaugural Session</i>	
09:30 - 09:40	<i>Welcome to ARS 2026</i>	<i>Dr. Bivash Pandav</i>
09:40 - 10:00	<i>WII Research Overview, 2026</i>	<i>Dr. Ruchi Badola</i>
10:00 - 10:10	<i>Director's Address</i>	<i>Dr. G.S. Bhardwaj</i>
10:10 - 10:20	<i>Release of publications</i>	
10:20 - 10:30	<i>Felicitation of Indian Navy & Air Force Officers</i>	
10:30 - 10:40	<i>Address by Seminar Chairperson</i>	<i>Dr. G.S. Rawat</i>
10:40 - 10:50	<i>Address by Chief Guest</i>	<i>Dr. S.P Yadav</i>
10:50 - 10:55	<i>Vote of Thanks</i>	<i>Dr. Vishnupriya Kolipakam</i>
10:55 - 11:20	<i>Group Photograph and High Tea</i>	
11:20 - 12:00	<i>Plenary Session - History of Nature Conservation in India: why and how it can help develop a holistic view</i>	<i>Dr. Mahesh Rangarajan</i>
12:00 - 13:00	Session 1: Recovery, Reintroduction and Population Resilience	
	<i>Chair: TBD</i> <i>Co-Chair I: TBD</i> <i>Co-Chair II: Dr. Parag Nigam</i> <i>Session Facilitator: Dr. Akanksha Saxena</i>	
12:00 - 12:10	<i>Racing ahead: Four years of cheetahs in India</i>	<i>Bilal Habib</i>
12:10 - 12:20	<i>From Reintroduction to Recovery: Insights from Long-term ecological monitoring of two tiger reserves</i>	<i>Rajrajeshwar Thakar</i>
12:20 - 12:30	<i>Clouds of the Northeast: Status and habitat-use patterns of clouded leopard and sympatric felids in select sites of Northeastern India</i>	<i>Tribhuvan Singh</i>
12:30 - 12:40	<i>Demographic Stochasticity, Founder Effects, and Inbreeding-Mediated Vulnerability: A Population Viability Framework for Adaptive Reintroduction and Supplementation of Gaur (<i>Bos gaurus</i>)</i>	<i>Ritesh Vishwakarma</i>
12:40 - 13:00	<i>Question Answer Session & Comments by Chair and Co-Chair</i>	
13:00 - 14:00	LUNCH BREAK	
14:00 - 15:10	Session 2: Species, Habitats and Emerging Conservation Challenges	
	<i>Chair: TBD</i> <i>Co-Chair I: TBD</i> <i>Co-Chair II: Dr. Bilal Habib</i> <i>Session Facilitator: Dr. Neeraj Mahar</i>	
14:00 - 14:10	<i>Developing a minimal-impact sampling protocol for subterranean biodiversity in Andaman Caves: A preliminary approach</i>	<i>Rima Sadhukhan</i>

14:10 - 14:20	Baby's day out: Where do our Gharials nest?	Gaurav Vashistha
14:20 - 14:30	Pattern of carrion utilisation in the Thar Desert and its implications for conservation of scavenging raptors	Varun Kher
14:30 - 14:40	Environmental influences of bird strikes in Indian Civil Airports	Mohammed Mubeen
14:40 - 14:50	Temporal grain reveals movement-regime transitions and scale-dependent habitat selection in tigers in central Indian landscape	Supratim Dutta
14:50 - 15:10	<i>Question Answer Session & Comments by Chair and Co-Chair</i>	

15:10 - 16:00	Session 3: Landscape Change, Connectivity and Development	
	<i>Chair: TBD</i> <i>Co-Chair I: TBD</i> <i>Co-Chair II: Dr. R. Suresh Kumar</i> <i>Session Facilitator: Dr. Ayan Sadhu</i>	
15:10 - 15:20	The Umbrella called Bustard	Sutirtha Dutta
15:20 - 15:30	Through the looking glass: Assessing wildlife persistence in semi-arid Karnataka	Manjari Roy
15:30 - 15:40	Beyond the Dams: Navigating Development, Biodiversity and Conservation in the Morand-Ganjel Landscape	Vivek Ranjan
15:40 - 15:50	Multi-Taxa Biodiversity Assessment for Identifying Ecologically Sensitive Landscape in the Northern Western Ghats, Karnataka	Shilpa Bevoor
15:50 - 16:10	<i>Question Answer Session & Comments by Chair and Co-Chair</i>	
16:10 - 16:30	TEA BREAK	

16:30 - 18:35	Session 4: Speed Talk Session (Mixed Bag)	
	<i>Chair: TBD</i> <i>Co-Chair I: TBD</i> <i>Co-Chair II: Dr. Gautam Talukdar</i> <i>Session Facilitator: Dr. Urjit Mahesh Bhatt</i>	
16:30 - 16:35	Coexistence not possible: addressing wildlife hazards at two Northern Indian Airports	R. Suresh Kumar
16:35 - 16:40	Suspended Solutions: Field Realities and Mitigation Lessons from Canopy Bridges over Railway Line in Hollongapar Gibbon Sanctuary, Assam	Rohit R S Jha
16:40 - 16:45	Tiger Recovery and Palamau: Connecting Tales	Shahzada Iqbal / Rohan Desai
16:45 - 16:50	Running on instinct: How fast and slow animals walk across wildlife crossing structures on the Samruddhi Expressway	Neha Yadav
16:50 - 16:55	Population density and habitat association of the globally threatened White-browed Bushchat Saxicola macrorhynchus in the Thar Desert of northwestern India	Mihir Jadhav
16:55 - 17:00	Comparative morphometric based study of scapula to differentiate three large sympatric Carnivore species (Tiger, Leopard, Hyena)	Kajal Kasare

17:00 - 17:05	Floristic composition and diversity patterns along the course of the Ganga River	Umama Khan
17:05 - 17:10	Connect, capacitate, conserve: Strengthening aquatic conservation through spearhead teams in the Ganga Basin	Mohd Danish Kaleem
17:10 - 17:15	Avian assemblage differentiation of proposed dam-submergence landscape in the Satpura-Melghat Corridor, Madhya Pradesh	Nonita Rana
17:15 - 17:20	Integrating In-situ and Ex-situ measures for the conservation of Batagur baska in the Sundarban Tiger Reserve	Swati Nawani
17:20 - 17:25	The Cats' Clock: How Seasons, moon-phase and people shape the diel activity of small cats in the Central Himalaya.	Meghna Limboo
17:25 - 17:30	The Missing Metric in Ecological Studies: Land tenure system of territorial carnivores	Kanishka
17:30 - 17:35	MSTrIPES: Technology-Enabled Law Enforcement and Evidence-Based Wildlife Conservation in India	Ashish Prasad
17:35 - 17:40	Decade of Tiger Demography at Kanha Tiger Reserve	Shravana Goswami
17:40 - 17:45	Conservation of Coconut crab in the Nicobar Archipelago	Krishnapriya M
17:45 - 17:50	Beneath the Brahmaputra: Assessing Ecological Responses to Underwater Tunnel Construction	Sunny Deori
17:50 - 17:55	A Sanctuary in the Sea: Understanding Seabird Diversity and Conservation Management of Pitti Island Lakshadweep	Santo A Raphael
17:55 - 18:00	Mainstreaming Ecosystems and Biodiversity in India's National Adaptation Plan: Transitioning from Co-Benefit to Core Sector	Deepali Bansal
18:00 - 18:05	Biodiversity Value of Rocky Outcrops, Hillocks, and Aquatic Habitats within selected Mining lease Landscapes of Tamil Nadu	Dej Vignesh K
18:05 - 18:10	UAV-Based Population Assessment of Dugongs in Tamil Nadu and the Andaman and Nicobar Islands, India	Sagar Rajpurkar
18:10 - 18:15	India's Wildlife Vision for Viksit Bharat@2047: A Whole-of-Government, Whole-of-Society Approach	Hitesh Ameta
18:15 - 18:35	Question Answer Session & Comments by Chair and Co-Chair	
END OF DAY 1		

19:00 - 20:00 Book launch followed by discussion on Dr. Asad R. Rahmani's book - "Where have all the Birds gone?" at the WII Auditorium. The discussion will be moderated by Dr. Mahesh Rangarajan.

20:00 - 21:30 GALA DINNER

DAY 2: 22 SEPTEMBER 2026

09:30 - 10:50	Session 5: Population Estimation: From Individuals to Social Populations	
	Chair: TBD Co-Chair I: TBD Co-Chair II: Dr. G.V. Gopi Session Facilitator: Dr. Harshvardhan Rathore	
09:30 - 09:40	Population estimation of elephants in Kaziranga Tiger Reserve: Testing scalability and efficacy of various methods	Anshuman Gogoi
09:40 - 09:50	Influence of resource-driven aggregation on fishing cat population estimation in a mangrove ecosystem	Aritra Roy
09:50 - 10:00	Counting the Collective: Application of novel methodologies into social carnivore population estimation	Bilal Habib
10:00 - 10:20	Question Answer Session & Comments by Chair and Co-Chair	
10:20 - 10:50	TEA BREAK	
10:50 - 12:10	Session 6: Biodiversity Under Environmental Change	
	Chair: TBD Co-Chair I: TBD Co-Chair II: Dr. J. A. Johnson Session Facilitator: Dr. Sohom Seal	
10:50 - 11:00	Baseline Assessment and Conservation Priorities of Coastal and Marine Biodiversity of Goa	Chinmaya Ghanekar
11:00 - 11:10	Biodiversity Responses to a Changing Himalaya: Long-Term Monitoring and Conservation Prioritization of Freshwater Fishes	Vineet K Dubey
11:10 - 11:20	Seasonal impact of invasive Lantana camara on the native vegetation and habitat suitability of Indian gaur in a southern tropical deciduous forest	Subhadra Barik
11:20 - 11:30	With More Birds Comes More Nutrients? Linking Colonial Waterbird Density to Nutrient Dynamics in Globally Important Wetlands of Tamil Nadu	Alex Jacob
11:30 - 11:40	Loss of breeding colonies of waterbirds to the decadal land use land cover transformations in southern India	Rachaveelpula Sreeja
11:40 - 12:00	Question Answer Session & Comments by Chair and Co-Chair	
12:00 - 13:30	POSTER SESSION	
13:30 - 14:30	LUNCH BREAK	

14:30 - 15:20		Session 7: Human-Wildlife Coexistence and Conflict	
		Chair: Sh. Ramesh Kumar Pandey, Addl. Director General (Wildlife) Co-Chair I: TBD Co-Chair II: Dr. C Ramesh Session Facilitator: Dr. Shaheer Khan	
14:30 - 14:40	Stable cores, shifting margins? Can human-elephant conflict be managed by Fences?		Mukesh Chand
14:40 - 14:50	An integrated strategy for managing human elephant conflict in transboundary landscape		Richard S. Sangma
14:50 - 15:00	Living on the Edge: Red Panda Habitat, Connectivity, and Threats across the Indian Himalaya		Pooja Kumari
15:00 - 15:20	Question Answer Session & Comments by Chair and Co-Chair		
15:20 - 16:40		Session 8: Speed Talk Session (Mixed Bag)	
		Chair: TBD Co - Chair I: TBD Co - Chair II: Dr. Abhijit Das Session Facilitator: Dr. Anoop Raj Singh	
15:20 - 15:25	Female mate sampling in a blackbuck lek		Akshay A J
15:25 - 15:30	Influence of Prey Availability on Habitat Utilization of Mugger Crocodile and Interactions with Fishermen in the Moyar-Bhavanisagar Landscape		Bryan Thompson
15:30 - 15:35	Density Estimation and Habitat Selection of Obligate Grassland species in D'Ering Memorial Wildlife Sanctuary, Arunachal Pradesh		Sunny Nama
15:35 - 15:40	Understanding Habitat Ecology and its Drivers for small carnivores in the Nilgiris		Rohan R
15:40 - 15:45	What can camera traps reveal about smooth-coated otters?		Pritham Balaji
15:45 - 15:50	Nutritional Ecology, Movement Patterns & Herd Dynamics of Nilgai in Kuno National Park		Tanya Vyas
15:50 - 15:55	Behavioural responses of rodents and reptiles to woody encroachment in the Thar desert		Himani Pawar
15:55 - 16:00	Breeding Biology and Diet of Tawny Eagles in Desert National Park, Rajasthan		Gayathri Varma
16:00 - 16:05	Comparing acoustic properties, diel activity pattern and social representation of Golden Jackal between two sites in Dehradun and Haridwar		Ashutosh Bajpai
16:05 - 16:10	Comparison of small carnivore detection rates between two different leopard density regimes in Kuno National Park		Srajal Namdev
16:10 - 16:15	Freshwater Diatoms in the Sky Islands of the Western Ghats.		Priyanjali Singh
16:15 - 16:20	Effect of Turbidity on Prey-predator interaction: An Experimental Approach		Cherie Joby Achandy

16:20 - 16:40	Question Answer Session & Comments by Chair and Co-Chair	
16:40 - 17:00	TEA BREAK	
17:00 - 18:00	AWARDS AND CLOSING REMARKS	
	VOTE OF THANKS	Bivash Pandav
END OF DAY 2		

POSTER SESSION DETAILS

Posters shall be put up on the evening of the 20th and remain on display until the ARS concludes.

Poster Evaluation and Exclusive Poster Session

Date: 22nd September 2026

12:00 - 13:30 Evaluation

Moderators: Dr. Samrat Mondol, Dr. C. Ramesh and Dr. Sutirtha Dutta

Poster No.	Poster Title	Presenter
01	Asan Landscape: A River of Biodiversity and Ecosystem Services	Amlan Das
02	Youth for Wildlife Alliance (YUWA): A National Programme for Involving Local Youth in Wildlife Conservation	Brawin Kumar
03	Testing scenarios for estimating the carrying capacity of pilgrimage tracks in Uttarakhand	Rajat Singh Rana
04	Land use changes in the Asian Elephant Habitat in the central Indian landscape	Shivam Sharma
05	Islands, Genes & Giant: Genetic Diversity and Population Structure of the Reticulated Python (<i>Malayopython reticulatus</i>) in the Nicobar Archipelago	Kodeeswaran Velmurugan
06	A Comprehensive Framework for Assessing the Ecological Effectiveness of Mangrove Restoration Interventions	Mayur Fulmali
07	When and Where Carnivores Overlap: Integrating Spatial Co-occurrence and Temporal Overlap in Balpakram National Park, Meghalaya	Supratik Roy
08	Assessment of Flood Risk and Ecological Vulnerability in the Paisuni (Mandakini) River Basin Using Multi-sensor Geospatial Data	Arpita Bairagi
09	Understanding human-sloth bear interactions and community perspectives from species' westernmost range in India	Utkarsh Prajapati
10	Can we monitor snakes in our protected areas - A case study from Madhya Pradesh	Isaac Rayen
11	What lies inside predicted range? Habitat composition of the clouded leopard (<i>Neofelis nebulosa</i>) across North East India	Sneha Pandey

12	Glance from the Eastern Ghats: Establishing a Biodiversity Baseline for Sijimali, Odisha	Saibal Ghosh
13	“Little Guardians of the Ganga: Basin-Scale Conservation Education through the Bal Ganga Prahari Initiative”	Anshul Bhawsar
14	Conservation Challenges of Critically Endangered Bengal Florican (<i>Houbaropsis bengalensis</i> , J.F. Gmelin, 1789) in Multi-use Landscape of North-East India	Saurav Das
15	Status of blackbuck and its associated conflict in and around the Kaimoor Wildlife Sanctuary (KWLS), Mirzapur, Uttar Pradesh, India	Roshan Yadav
16	Landscape scale above-ground biomass and carbon stock assessment of Saranda Forest Division using field inventory, canopy height models and GEDI data	Abhishek Gupta
17	Rangewide Estimation of Riverine and Estuarine Dolphins-2 nd Cycle: Progress and Plan	Hiyashri Sarma
18	The Conservation Legacy - Sixth Cycle of All India Tiger Monitoring	Tiger Cell Team
19	Characterising Functional Strategies and Trait Space of Freshwater Macroinvertebrates Across Streams of the Eastern Himalaya	Meghavi Purohit
20	Metal and Feathers: Assessing potential bird hazard risk to aviation in Great Nicobar Island	Swethakrishna V K
21	Elevational Patterns in Fish Assemblages and Seasonal Life-History Dynamics of Snow Trout (<i>Schizothorax richardsonii</i>) in the Eastern Himalaya	Himangshu Borah
22	DNA Detective: Tracking rhino poaching through genetics	Megha Mehta
23	Hydropeaking and Riverine Ecology: A Geospatial Assessment of the Lohit River Basin	Foram Jadeja
24	In Search of the Elusive: Habitat Suitability Modelling of Critically Endangered White-bellied Heron in India	Partha Pratim Das
25	From Survival to Recruitment: Understanding Leopard Population Dynamics in Kuno National Park, Madhya Pradesh	Nibedita Basu
26	Seasonal Variation in Activity Patterns and Group Structure of Chital in Kuno National Park, Madhya Pradesh	Shrestha Singh
27	Preliminary Ecological Assessment of Critical Reaches of the Chambal and Tons (Tamsa) Rivers with reference to Environmental Flow Management	Sumit Kumar
28	Transcending Boundaries: Habitat Suitability of the Indian Grey Wolf (<i>Canis lupus pallipes</i>) in the Gandhi Sagar Landscape of Central India	Prayas Auddy
29	Bridging the gap: Evaluating community attitude towards tiger translocation in Sahyadri Tiger Reserve	Harshita Prajapati
30	Decoding India's captive elephants: A centralized genetic and digital database	Swati Gairola
31	Mind the Gap: Emerging Conservation Priorities of India	Kanishka Mehta
32	Assessment of Outstanding Universal Value and Preparation of a UNESCO World Heritage Nomination Dossier for Kanger Valley National Park	Sudhir Ranjan Choudhury

33	A lake in motion: Seasonal dynamics of the waterbirds of India's largest freshwater lake	Inamul Haq
34	Preliminary Assessment of Wild Bee Diversity in the Eastern Himalaya, with Observations on Ctenoplectra-Dendrobium Interactions	Anand Sharma
35	Preliminary Assessment of Animal-Vehicle Collisions along the Tiger Corridors and Road Networks in the Satpura-Pench-Melghat Landscape	Gopianan G
36	THE RIVER OF LIFE: Assessing Wildlife Values in and around the Yamuna River under Changing Water Regimes in the Sadrapur Region, Auraiya	Shantam Ojha
37	Water for People, Space for Wildlife: A Preliminary Ecological Assessment and Mitigation Approach for the Yettinahole Project	Priya Ooti
38	Spatial Patterns of Leopard Use and Human-Leopard Interactions in the Tirumala-Tirupati Devasthanam Area, Andhra Pradesh	Ankita Sharma
39	Local Community Perceptions of Small Wild Cat Conservation: Preliminary Insights from Pakke-Eaglenest and Dudhwa Landscapes	Bablin Huidrom & Avril Amanna
40	Elephant Conservation in India: Status, Challenges and Strategies	Sadhana Yadav
41	Active Recovery of Tigers and Prey in Sahyadri Tiger Reserve: A New Beginning	Susmita Patil

ABSTRACTS

ORAL PRESENTATIONS

DAY 1



Racing ahead: Four years of cheetahs in India

Bipin C.M., Bilal Habib , Vishnupriya Kolipakam, Sanath Krishna Muliya

The establishment of the cheetah (*Acinonyx jubatus*) in India represents one of the most ambitious conservation translocation initiatives undertaken globally in recent decades. Conceived as a flagship effort to restore Open Natural Ecosystems (ONEs), Project Cheetah seeks to re-establish viable cheetah metapopulation within its historical range and catalyze the ecological revival of India's grassland and savanna landscapes.

India currently has a total of 52 cheetahs (Kuno National Park-49, Gandhisagar Wildlife Sanctuary-3). In February 2026, nine cheetahs were translocated from Botswana. Multiple individuals were sequentially released into free-ranging conditions at Kuno NP. Chital (*Axis axis*) and Nilgai (*Boselaphus tragocamelus*) accounted for the majority of detected kills in Kuno and Gandhisagar respectively. Kill rates varied among individuals and social configurations ranging from 2.5-7.5 days per kill. Spatial analyses using Minimum Convex Polygon and Kernel Density Estimation revealed ranging from ~50-7000 km². Resource Selection Function to evaluate their habitat preferences indicate positive selection for open grassland and savanna mosaics interspersed with moderate woodland cover. Hormonal profiling, dietary studies and disease surveillance were conducted. Co-predators' monitoring using camera trap-based capture-recapture and distance sampling were used to estimate density. Prey assessments using line transects in Kuno and Gandhisagar demonstrate relatively robust ungulate populations and vegetation mapping in Kuno was carried out.

Recognizing that long-term success depends on socio-ecological integration and inclusive approach, project emphasizes community engagement and participatory conservation. Outreach activities, awareness campaigns, and livelihood-linked initiatives are being implemented in the landscape. Pilot surveys of surrounding villages provided insights into socio-economic transitions and perceptions regarding wildlife restoration. The management plan of Kuno-Gandhisagar landscape is being operationalized for assisted metapopulation framework, with future plans to incorporate additional sites. Continued international collaboration with African cheetah range countries such as Namibia, South Africa, Botswana etc., for reinforcement for genetic health and fitness.

Project Cheetah represents more than species revival. It is a landscape restoration initiative with cascading ecological, climatic, and socio-economic benefits. By restoring a top predator to India's ONEs, the programme aspires to re-establish ecological functionality, enhance biodiversity resilience, and demonstrate a globally relevant model for large carnivore recovery in human-dominated landscapes.

Keywords: *Cheetah monitoring, Metapopulation management, Co-predator & prey assessments, Vegetation mapping, Landscape planning, Inclusive approach*

✉ & 📧 Text

Project Cheetah is more than bringing back the cheetah—it's about restoring India's grasslands & savannas. With 52 cheetahs, scientific monitoring, community engagement & global partnerships, the initiative aims to revive biodiversity, resilience & ecological balance. # Project Cheetah # Ecosystem restoration

Project Cheetah is restoring nation's natural heritage and reviving India's Open Natural Ecosystems. With 52 cheetahs, science-led monitoring, habitat restoration and community participation are shaping a resilient metapopulation and a global model for carnivore recovery.

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 Authority

Project Duration

2020-2027

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Title of the Project

Long term ecological monitoring of Mukundara Hills and Ramgarh Vishdhari Tiger Reserves

Name of PI(s)

Dr. Bilal Habib

Name of Co-PI(s)

Dr. Ayan Sadhu
Dr. Vishnupriya Kolipakam
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Funding Agency

Rajasthan Forest Department

Project Duration

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From Reintroduction to Recovery: Insights from Long-term ecological monitoring of two tiger reserves

Rajrajeshwar Thakar, Mohit Kumar Patra, Vaishnavi Gusain, Ayan Sadhu, Vishnupriya Kolipakam, Lallianpuii Kawni, Bilal Habib

Reintroducing tigers into landscapes where they have been locally extinct is an important step towards restoring tiger populations. However, successful reintroduction extends beyond the establishment of individual animals. Our multi-session camera-trap monitoring across Mukundara Hills Tiger Reserve (MHTR) and Ramgarh Vishdhari Tiger Reserve (RVTR) provides insights into this transition from reintroduction towards population recovery.

Tigers were reintroduced in 2018 and 2022 in MHTR and RVTR and their population have grown to 7 and 8 individuals respectively. The establishment of reintroduced tigers represents an important demographic milestone. Tigers in both reserves have established territories, reproduced successfully, and produced offspring that have survived to maturity. These outcomes demonstrate that the reintroduced populations have moved beyond initial establishment and are now showing evidence of demographic recruitment.

Leopard density increased from 2.8 ± 0.7 to $8.6 \pm 1.5/100\text{km}^2$ and from 4.6 ± 0.7 to $7.2 \pm 0.8/100\text{km}^2$ in RVTR and MHTR, respectively. Line transect derived prey densities have shown a slight increasing trend. Nilgai showed the highest density (MHTR- $7.14 \pm 1.83/\text{km}^2$, RVTR- $20.14 \pm 5.8/\text{km}^2$) followed by Wildpig (MHTR- $4.5 \pm 1.38/\text{km}^2$, RVTR- $7.5 \pm 2.7/\text{km}^2$). Sambar and Chital detections were too few to estimate population, however, their capture rates were stable across the sessions. Mesocarnivores have also shown an overall increase in their relative abundance.

We use habitat suitability models to identify potential areas in the larger landscape contiguous to the present tiger distribution, with the modelled landscape potentially supporting approximately 15 tigers per Reserve, subject to strategic voluntary village relocation, timely habitat and prey augmentation.

The results indicate that recovery following reintroduction of large carnivores is a gradual, multidimensional process. While the establishment and breeding of tigers provide clear evidence of progress, the long-term trajectory of recovery will depend on the interaction between prey availability, habitat quality and connectivity, and human disturbance. Continued long-term ecological monitoring will therefore be important for detecting emerging constraints, evaluating population growth and guiding adaptive management. For MHTR and RVTR, the next phase of conservation should focus not merely on maintaining reintroduced tigers, but on creating the ecological and landscape conditions necessary for their populations to expand, reproduce and ultimately become self-sustaining.

Keywords: *Tiger reintroduction, Carnivore community, Population recovery, Camera-trap monitoring, Habitat management*

✉ & 📧 Text

From reintroduction to recovery. In Mukundara Hills & Ramgarh Vishdhari, reintroduced tigers have established territories, bred and produced surviving offspring. Our monitoring tracks how prey, leopards and mesocarnivores are responding as tigers return.

Tigers are back. But is that enough? In Mukundara Hills & Ramgarh Vishdhari, reintroduced tigers are breeding and raising surviving offspring. Now the bigger question: can these landscapes support their continued growth into self-sustaining populations?

Clouds of the Northeast: Status and habitat-use patterns of clouded leopard and sympatric felids in select sites of Northeastern India

Tribhuwan Singh, Daniel Miranda, Gopi G.V., Bilal Habib

Context: Secretive forest felids are difficult to monitor due to their elusive nature. Understanding their distribution provides critical insights into their habitat use and interspecific interactions. We assessed these patterns for clouded leopard *Neofelis nebulosa*, and its sympatric felids including Asian golden cat *Catopuma temminckii*, marbled cat *Pardofelis marmorata* and leopard cat *Prionailurus bengalensis* examining the covariates that influence their habitat-use patterns in the study region.

Location: Our study was conducted across eight sites in four landscapes viz., Sikkim-Darjeeling, Dehing Patkai, Garo Hills and Dampa TR in northeastern India.

Methods: We obtained detection histories from systematic grid survey using 700 camera stations between April 2024 and March 2026. The data were further analysed under the occupancy framework, to examine patterns of site use and co-occurrence among the four focal felids using the R package ‘spOccupancy’. We evaluated ecological, climatic, and anthropogenic covariates as potential predictors of site use. We also analysed temporal and spatial overlaps between all sympatric felids.

Findings: With an effort of ~40,000 trap nights, we identified a total of 44 individuals of clouded leopards across the study region. Clouded leopard’s occupancy estimates differed substantially between landscapes, ranging from 0.129 (95% CI:0.043-0.264) in Sikkim-Darjeeling landscape to 0.597 (0.375-0.796) in Dampa Tiger Reserve. Its occupancy was influenced by prey activity and soil moisture. The leopard cat exhibited the highest naïve occupancy across all sites, followed by the clouded leopard, marbled cat, and golden cat. Across the sympatric felid assemblage, forest structure and prey availability were important correlates of site use. We observed strong temporal avoidance between marbled and leopard cats ($\Delta=0.37$), whereas clouded leopards and leopard cats exhibited high temporal overlap ($\Delta=0.84$). These temporal patterns are likely shaped by dietary preferences alongside interspecific interactions.

Conclusion: We found that small-felid distributions and habitat relationships are likely landscape-dependent indicating that species respond differently to local ecological conditions despite broad geographical sympatry. These findings highlight the importance of considering both species-specific habitat relationships and community-level interactions when designing monitoring and conservation strategies for clouded leopard and sympatric small felids.

Keywords: occupancy, site use, elusive felids, co-occurrence, smaller cats

✉ & 📧Text

Across northeastern India, clouded leopard and sympatric felids showed landscape-dependent patterns in site use. Prey, forest structure and local ecological conditions shaped responses differently, highlighting the need for landscape-specific conservation strategies. #cloudedleopard #smallcats #northeasternIndia

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

Project Duration

2022-2027

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Title of the Project

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

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Project Duration

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Demographic Stochasticity, Founder Effects, and Inbreeding-Mediated Vulnerability: A Population Viability Framework for Adaptive Reintroduction and Supplementation of Gaur (*Bos gaurus*)

Ritesh Vishwakarma

Reintroduction and population supplementation are increasingly used to restore large herbivores, but populations founded by few individuals may remain vulnerable to demographic stochasticity, genetic erosion, disease, and isolation. We evaluated the long-term viability and management requirements of reintroduced and prospective gaur (*Bos gaurus*) populations in Bandhavgarh, Ratapani, Veerangana Durgavati and Sanjay Tiger Reserves in Madhya Pradesh, and Nagarjunasagar-Srisailem Tiger Reserve in south-central India. We quantified demographic and genetic determinants of persistence and evaluated conditions under which supplementation could improve population viability.

We developed age- and sex-structured population viability models parameterized using founder size and composition, age-specific survival (S_x), fecundity (F_x), recruitment, mortality, carrying capacity, and demographic and environmental stochasticity. Alternative scenarios varied founder size and reproductive female representation, survival and recruitment rates, mortality, carrying capacity, inbreeding effects, and supplementation with unrelated individuals. Population trajectories were evaluated using finite population growth rate, stochastic population growth, projected abundance, probability of population decline/extinction, and persistence across simulation replicates. Scenario and sensitivity analyses were used to identify demographic parameters exerting the greatest influence on long-term viability.

Model projections identified founder size, reproductive female representation, adult survival, and genetic status as major determinants of population persistence. Small founder populations exhibited greater variance in projected abundance and increased sensitivity to stochastic mortality, whereas larger, demographically balanced founder groups produced higher growth and more stable trajectories. Reductions in adult survival strongly decreased λ and long-term persistence, while lower juvenile survival restricted recruitment and population expansion. Genetic monitoring of the established Bandhavgarh population indicated inbreeding despite numerical population growth, demonstrating that demographic recovery did not necessarily ensure genetic viability. Simulated supplementation with unrelated individuals from a differentiated gene pool reduced risks with continued isolation and improved projected demographic stability and persistence relative to other scenarios.

Our results demonstrate that gaur restoration should integrate demographic optimization with genetic management. PVA provides a quantitative framework for optimizing founder composition, evaluating extinction risk, and determining when genetic supplementation is required. Population viability analysis can guide founder selection, supplementation, and adaptive demographic, genetic, disease, and habitat management.

Keywords: *founder population, demographic stochasticity, genetic diversity, population persistence, adaptive management*

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From reintroduction to resilience: Ritesh Vishwakarma presented research work at ARS 2026 on the gaur reintroduction programme in Madhya Pradesh, focusing on how demographic processes, genetic status, founder effects, and adaptive supplementation influence long-term population viability and conservation planning.

Developing a minimal-impact sampling protocol for subterranean biodiversity in Andaman Caves: A preliminary approach

Rima Sadhukhan, Dhanusha Kawalkar, Avimanyu J. Mukherjee, Pranali Trivedi, Jaishree Sanwal Bhatt, Manchi Shirish S.

We aimed to determine the sampling effort required to assess the invertebrate diversity in the limestone caves of the Andaman Islands and to identify indicators of the health of the habitat. Caves, which are fragile habitats, remain largely understudied and experience various anthropogenic pressures, including multi-season sampling and large-scale collection of cave invertebrates for scientific purposes. As a dominant component of cave fauna, invertebrates play a crucial role in maintaining this oligotrophic habitat. Using seasonal belt transect surveys ($n=361 \times 3$ transects) inside 13 caves in the North and Middle Andaman Islands, we estimated the richness and abundance of different invertebrate taxa in pre-monsoon, monsoon and post-monsoon. All 31 taxonomic orders identified across the seasons were encountered during pre-monsoon, whereas fewer orders were recorded during monsoon ($n=27$) and post-monsoon ($n=30$). With significant seasonal variation (Kruskal-Wallis $\chi^2 = 34.87$, $p < 0.001$), invertebrate abundance was highest during pre-monsoon. Isopoda, Stylommatophora, Coleoptera, and Orthoptera were most abundant during pre-monsoon; Hymenoptera and Lepidoptera during monsoon; and Scutigeromorpha and Archaeognatha during post-monsoon. Ten orders maintained stable abundances across seasons. However, 21 (67.7%) orders showed significant seasonal fluctuations ($p < 0.001$; 14 with high and 7 with moderate fluctuations). Indicator species analysis (IndVal range: 0.129–0.551) identified five orders as exclusive indicators of pre-monsoon (Polydesmida, Sphaerotheriida, Zygentoma, Trombidiformes, and Hirudinida) and six indicating combined pre- and post-monsoon (Stylommatophora, Amblypygi, Spirobolida, Haplotaenidia, Geophilomorpha, and Neuroptera). The lack of exclusive indicators for monsoon and post-monsoon may be because monsoon water flushes these cave-invertebrate habitats, and the post-monsoon season allows them to resettle. The study highlights that a single systematic sampling of cave invertebrates in the limestone caves of the Andaman Islands during pre-monsoon can depict maximum richness. The study recommends 11 key orders as bio-monitoring proxies for cave health. However, the dynamic nature of these unique habitats requires seasonal sampling to assess cave invertebrate abundance. The findings allow avoiding multiple invertebrate collections and frequent survey visits to this unique subterranean ecosystem, thereby reducing anthropogenic pressure.

Keywords: *Subterranean biodiversity, Belt Transect sampling, Minimal-impact monitoring, Baseline assessment*

✕ & 📄 Text

A single pre-monsoon survey reveals maximum invertebrate richness (31 orders) in Andaman limestone caves, resulting in fewer visits, less sampling and disturbance, with the same insight. However, order-wise abundance still fluctuates between seasons. 11 orders are identified as the cave-habitat health indicators.

Caves hide more than darkness. Our seasonal survey of 13 limestone caves in the Andaman Islands found that the pre-monsoon season alone unveils an invertebrate diversity of 31 orders! 11 orders serve as indicators of habitat health. Small creatures, big clues.

Title of the Project

Conserving the Overlooked Subterranean Cave Habitat: A Sustainability Approach

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The Habitats Trust

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Title of the Project

Conservation and Management of the Critically Endangered Gharial (*Gavialis gangeticus*) in India.

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Baby's day out: Where do our Gharials nest?

Gaurav Vashistha, Harushi Sambyal, Jeswin Stephen, Bivash Pandav, Abhijit Das

The Critically Endangered gharial (*Gavialis gangeticus*) has experienced a >95% decline in its population and habitat, which is currently restricted to India and Nepal. To address this, the MoEF&CC launched the National Gharial Project funded by the National CAMPA, to streamline gharial monitoring and conservation through range wide synchronized ecological monitoring, stakeholder collaboration and threat mitigation. Under this initiative, the first synchronized, multi-state hatching survey was conducted by WII, state forest departments and NGOs, from 24 May to 27 June 2026, to establish a baseline for standardized, long-term monitoring.

Boat-based surveys assessed eight rivers across five range states, utilizing evidence such as hatched eggshells and hatchling sightings. A total of 510 nests and 9,449 hatchlings were recorded across four states: Madhya Pradesh (240 nests, 4,566 hatchlings), Rajasthan (170 nests, 3,362 hatchlings), Uttar Pradesh (98 nests, 1,502 hatchlings), and Odisha (2 nests, 19 hatchlings). River-wise, the Chambal supported the highest nesting activity (470 nests, 8,661 hatchlings), followed by the Girwa (26 nests, 501 hatchlings), Kuno (12 nests, 268 hatchlings), and Mahanadi (2 nests, 19 hatchlings). Threats like sand mining, cattle disturbance, and nest predation were observed inside the surveyed protected and unprotected areas, and needs immediate attention for management interventions.

Keywords: Gavialis gangeticus, Critically endangered, Riverine habitat, breeding ecology, freshwater

✉ & 📧 Text

Baby's Day Out: Where Do Gharials Nest? The Critically Endangered gharial has suffered a >95% decline in population. In the National Gharial Project, a synchronized, multi-state hatching survey was conducted during May-June 2026 by WII, Dehradun with support of State Forest Departments and NGOs. #Gharial

Pattern of carrion utilisation in the Thar Desert and its implications for conservation of scavenging raptors

Varun Kher, Manas Shukla, David Phinehas, Devendra Dutta Pandey, Sutirtha Dutta

Scavenging is a key ecological process with far-reaching effects on the structure and stability of terrestrial food webs. In India's arid ecosystems, carrion availability is high, while native apex predators are virtually absent. Thus, the native scavenger community is dominated by raptors (both migratory and resident) and small-bodied mammals. In recent decades, however, the region has witnessed a decline in vulture populations alongside a near-concurrent rise in populations of two synanthropic scavengers - free-ranging dogs and pigs. Against this backdrop, we examined patterns of carrion utilisation in the Thar Desert by deploying camera traps on carcasses (n = 110) of varying sizes and at varying distances from human settlements, to characterise patterns of carcass visitation and utilisation. Time-lapse images, motion-triggered captures, and videos were analysed to quantify feeding efficiency and displacement interactions among scavenger guilds. We found that synanthropic scavengers dominated carcass visitation near villages, whereas avian scavengers showed higher visitation rates on smaller carcasses located farther from settlements. Behavioural analyses further revealed that mammalian scavengers and larger migratory raptors achieved greater feeding efficiency and displacement success than resident raptors, suggestive of both exploitative and interference competition shaping access to carrion. These findings indicate that the growing dominance of synanthropic scavengers near human settlements, coupled with competitive exclusion of resident raptors by larger and dominant species, may be reshaping carrion partitioning across the landscape.

Keywords: Competition, vulture, eagle, dogs, pigs

✖ & 📷Text

Presented at WII's Annual Research Seminar: as vultures decline in the Thar Desert, free-ranging dogs & pigs are taking over carcasses near villages - while raptors hold on to smaller, more remote carrion. Camera-trap data reveal shifting competition among scavengers, with important implications for raptor conservation.

Title of the Project

Ecology of avian scavengers in Thar desert: Understanding resource utilization and canine interaction of avian scavengers in the Thar desert

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Title of the Project

Bird/Wildlife Hazard mitigation in Indian Civil airports

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Funding Agency

Airports Authority of India

Project Duration

2017-2025

Environmental influences of bird strikes in Indian Civil Airports

Mohammed Mubeen, Prateek Dey, Anoop Raj P.N, Babu S, Pramod P

An airport is a unique anthropocentric location that has a profound influence on avian assemblages of the respective landscape. Birds in airports and their vicinity pose significant challenges to aviation safety. Though civil Indian airports record bird strike incidents, the environmental conditions prevalent during such hazard events remain poorly understood. This study attempts to shed light on this gap by analysing bird strike data from seven Indian civil airports.

Six standardized environmental parameters *viz.*, humidity, pressure, visibility, windspeed, temperature and precipitation were integrated with bird strike incidents secondary data collected from Airport authorities and DGCA records. Principal component analysis (PCA), k-means clustering, and classification and regression trees (CART) were employed to characterize these factors during bird strike incidents ($n = 629$).

Out of the total wildlife strikes analysed (634 hits), 45% occurred during monsoon seasons (288 hits) followed by 29% in pre-monsoon (184 hits) and 25% during post-monsoon (162 hits). Of these, 629 hits were by birds and the rest by small mammals and reptiles. Month-wise, June to October witnessed the most hits. Most hits occurred during the landing (372 hits). Among the species involved Lapwings formed the major group (30%), followed by Raptors (16%), Bats (10%) and Egret & Heron species (8%).

PCA revealed bird strikes occur within the space (51.2% variance) defined by temperature-precipitation (PC1, 30.1%) and visibility-humidity (PC2, 21.1%) with distinct seasonal patterns. Cluster analysis identified two environmental regimes: moderate warm, low-precipitation environment (96.3%; 27.0°C, 0.33mm precipitation) and cold, high-precipitation environment (3.7%; 6.1°C, 27.7mm precipitation). CART analysis established operational thresholds: humidity $\geq 89.5\%$ for monsoon discrimination, temperature $\geq 31.6^\circ\text{C}$ for pre-monsoon classification and humidity $< 89.5\%$ for post-monsoon classification, achieving 82.3% seasonal prediction accuracy.

Most incidents were associated with moderate warm temperature, low-precipitation conditions indicating bird strikes occur within these select combinations, confirming our hypothesis of environmental constraint. These specific environmental variables, like temperature and humidity, are mostly associated with the typical monsoon season in peninsular India. Our study demonstrates a data-driven approach to identify environmental factors, airport operational variables, diel periods and seasonality linked to elevated bird strikes.

Keywords: *Airfields, bird diversity, birdstrike, mitigation*

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The environmental conditions prevalent during wildlife hazard events in the Indian civil airports were studied to shed light on their influences on the wildlife strikes to aircraft. Environmental variables associated with Monsoon appears to be significant and linked to elevated bird/wildlife strikes.

Temporal grain reveals movement-regime transitions and scale-dependent habitat selection in tigers in central Indian landscape

Supratim Dutta

Animal movement and habitat selection are inherently scale dependent, yet telemetry studies commonly analyse trajectories at a single sampling interval, potentially obscuring changes in the movement process itself and altering inference about environmental selection. We used long-term GPS telemetry from 14 tigers (*Panthera tigris*) in Panna Tiger Reserve, central India, to evaluate how movement dynamics and habitat selection change across seven temporal grains (1, 2, 3, 4, 6, 8 and 12 h). Continuous-time movement models were used to characterise positional and velocity autocorrelation, while segmented regressions of mean-squared displacement quantified temporal transitions in diffusion scaling. Integrated step-selection analyses were then fitted independently at each grain to estimate selection for vegetation greenness, distance to water and villages, topographic position, canopy height, diel period and movement characteristics. Diffusion exponents were consistently near unity at finer grains ($\beta = 0.894\text{--}0.930$), indicating near-diffusive movement, but declined to sub-diffusive values at broader grains ($\beta = 0.531\text{--}0.729$), with sex- and season-specific movement-regime transitions occurring between 3.59 and 7.72 h. Males generally exhibited higher diffusion rates and greater seasonal variation in transition timing, whereas female transitions were comparatively stable across seasons. Sex*season cohorts also differed significantly in multivariate movement-parameter space, while individual identity explained substantial additional variation in the magnitude of post-transition constraint. Habitat selection was strongly grain dependent. Across most scales, tigers selected greener areas, taller canopy and lower relative topographic positions and avoided areas closer to villages; females showed consistently stronger association with water, particularly during summer. The magnitude, significance and diel expression of these responses changed across temporal grains, and fitted step-length and turn-angle kernels also reorganised with grain. These findings demonstrate that temporal grain is not merely a sampling attribute of telemetry data but a biologically meaningful dimension of movement ecology: it determines both the movement regime represented by a trajectory and the environmental relationships recovered by step-selection analysis. Explicit evaluation of multiple temporal grains can therefore improve ecological interpretation of space use and strengthen movement-based inference for conservation and management of large carnivores.

Keywords: Diffusion rate, Habitat selection, Integrated step selection function, Segmented regression analysis, Temporal breakpoint

Title of the Project

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

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Telemetry interval is not just a technical choice; it can change the ecology we infer. In tigers, movement shifted from near-diffusive to constrained regimes across hours, while habitat selection and diel responses also reorganised. Scale matters for conservation.

Title of the Project

Project Great Indian Bustard

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The Umbrella called Bustard

Sutirtha Dutta

Nature conservation has moved along two dichotomous directions of landscape vs focal species approaches; their differences often masking their shared goals. Although conservation efforts targeting surrogate species can benefit associated taxa, the mechanism of shared benefits are rarely examined. India's Open Natural Ecosystems - vital for biodiversity and pastoral livelihoods, yet marginalized - are garnering recent conservation attention. Much of it revolves around recovering the flagship and Critically Endangered Great Indian Bustard, offering a case study to evaluate its umbrella effect. We identified the following umbrella functions and examined their influence on other taxa.

Benefit sharing of habitat restoration: A network of fenced closures have been established in Desert National Park, to secure breeding habitats for GIB from unregulated agriculture and grazing that has facilitated grassland recovery. Tagged GIBs show high usage and selectivity of these areas. Biodiversity assessment of these reserves show more heterogeneous vegetation structure, higher species richness and density of grasshopper and spider assemblages, densities of native mammals, and usage of other conservation-dependent birds compared to adjoining unprotected habitats.

Benefit sharing of mitigation measures for common threats: Habitat displacement and mortality of GIB due to energy infrastructure also impacts several threatened raptors such as Laggar Falcon, Egyptian Vulture and Tawny Eagle, according to our carcass surveys. Thus, the Hon'ble Supreme Court Judgement curtailing new energy infrastructure within the Priority GIB Area of ~15000 sqkm area will reduce this additive mortality of these threatened taxa.

Mobilization of conservation resources:

The successful conservation breeding of GIB in Rajasthan has enabled reinforcing 'doomed' populations in other range states, mobilizing considerable administrative and financial support for reclaiming degraded habitats. The case in point is the restoration of Lala and Naliya grasslands in Kutch through fencing, grazing regulation, and invasive removal, wherein infertile wild eggs are being replaced with viable captive-laid eggs, resulting in successful recruitment after a decade. This symbolic intervention has mobilised substantial resources for ONE conservation that earlier received scanty funds.

Together, these findings demonstrate that GIB conservation can serve as an umbrella, delivering broader biodiversity gains while catalysing the recovery of India's neglected ONEs.

Keywords: Open natural ecosystem, Ardeotis nigriceps, habitat restoration, threat mitigation, jumpstart, conservation surrogate

✉ & 📧 Text

Dr. Sutirtha Dutta gave an insightful talk-"The Umbrella called Bustards". He synthesized how years of meticulous research and conservation efforts demonstrate how GIB conservation has served as an umbrella, delivering broader biodiversity gains while catalysing the recovery of India's neglected Open Natural Ecosystems.

Through the looking glass: Assessing wildlife persistence in semi-arid Karnataka

Manjari Roy

Evaluating wildlife occurrence across vast human-dominated landscapes outside protected areas presents severe logistical challenges. Across the 67,000 sq km semi-arid Deccan Plateau region of eastern Karnataka, wildlife survives within a matrix of farmlands, small reserve forests, and isolated scrub-rocky outcrops. Standard field surveys are unfeasible across such expansive terrain, forcing reliance on local ecological knowledge and opportunistic records. However, viewing wildlife through the looking glass of media and community sources offers a vital reflection of persistence, yet remains susceptible to distortion from human memory, perception, and fear. We present an ongoing study evaluating wildlife occurrence across 10 districts, using key focal carnivores as case studies to compare media-derived reporting against community-based ecological knowledge. First, we generate MaxEnt species distribution models parameterized by media reports, direct/indirect sighting data, and forest department ex-gratia claims, using nightlight intensity as a bias file to explicitly control for human reporting effort. Second, using semi-structured community interviews, we fit single-season occupancy models to estimate baseline species occurrence while accounting for imperfect detection. Third, using the same interview dataset, we apply a multi-state occupancy framework to model ground-level conflict severity across occupied sites. We expect this multi-tiered comparison to reveal where species coexist versus where media attention and human fear magnify perceived conflict. Furthermore, we anticipate identifying unprotected rocky outcrops and grassland patches as critical refugia for semi-arid carnivores. Ultimately, this framework offers a cost-effective template to account for human perceptual bias and harness community knowledge for landscape conservation in non-protected ecosystems.

Keywords: Media reporting, local ecological knowledge, occupancy survey, conflict perception, scrub-rocky matrix

✕ & @Text

Mapping wildlife across 67,000 km² of non-protected landscape presents severe limits. Local knowledge offer a looking glass into persistence, but reporting bias skews the picture. We pair spatial models & community interviews to evaluate species occurrence.

Title of the Project

Ecology & Conservation of major carnivores and ungulates of semi arid grasslands -scrub-agro systems in Karnataka

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Title of the Project

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

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Beyond the Dams: Navigating Development, Biodiversity and Conservation in the Morand-Ganjal Landscape

Vivek Ranjan, Rohit R.S. Jha, A. D. Udhyaraj, Arti Adhikari, Ashik C. S., Nonita Rana, Prajjwal Ray, Rakshith Gowda H. N., G. V. Gopi

Reconciling development and biodiversity conservation remains a critical challenge in contemporary conservation planning. Impact assessment and mitigation planning play a pivotal role in the execution and offsetting of the impacts of any developmental activities. Morand Ganjal Irrigation Project (MGIP), a twin dam project on the Morand and Ganjal rivers, tributaries of the Narmada River, aimed at supplementing irrigation and drinking water supply for the south-central region of Madhya Pradesh, particularly Narmadapuram, Harda and Khandwa districts. The study area covered around 1247 sq. km, encompassing a 10 km radial buffer around the proposed dam submergence area in Narmadapuram, Harda, North and West Betul forest divisions, within the Satpura-Melghat Corridor (SMC) landscape.

Baseline biodiversity assessments were conducted for multiple taxa using standard ecological sampling protocols for mammals, birds, herpetofauna, butterflies, and vegetation from April 2025 to May 2026. Taxa-specific distribution heat maps were generated based on species richness using kernel density estimation and subsequently integrated through weighted overlay analysis for spatial prioritisation. We documented 37 mammal, 205 bird, 27 reptile, 11 amphibian, 81 butterfly, 33 odonate, and 227 plant (trees-83, shrubs-35, herbs-97, grasses & sedges-12) species. The findings suggest that the landscape is rich in biodiversity, supporting population dispersal and long-term persistence of species, primarily large mammals. Based on priority species, including threatened, Near Threatened, and Wild Life (Protection) Act, 1972 Schedule I species, and overall multi-taxa species richness, approximately 106 km² was delineated as a conservation-priority area representing critical wildlife habitat. The mitigation planning will prioritise the protection and conservation of such areas while adopting the mitigation hierarchy principle in practice, which is essential for maintaining contiguity of forest in an already fragmented corridor landscape for safeguarding the functionality of SMC.

Keywords: Impact Assessment, Mitigation Planning, Spatial Prioritisation, Biodiversity, Wildlife Corridor, Dams

✉ & 📧Text

Development with responsibility. Conservation with science. Assessing the ecological impacts of the Morand-Ganjal Irrigation Project and shaping evidence-based mitigation to safeguard critical habitats and wildlife movement within the Satpura-Melghat Wildlife Corridor.

Multi-Taxa Biodiversity Assessment for Identifying Ecologically Sensitive Landscape in the Northern Western Ghats, Karnataka

Shilpa Bevoor, Beependra Singh, Bitupan Boruah, Avinash Yadav, Ekta Shekhawat, Burney Rosetta, Shilpa Bevoor, Amirtha Balan R, Aparna Ajith, Blessy Tereena D'Cruz, Arnab Dey Sarkar, J.A. Johnson, Abhijit Das

The Western Ghats, a global biodiversity hotspot, are highly sensitive to forest diversion and fragmentation, and even narrow linear infrastructure project can impose a significant threat to biodiversity and ecosystem. The proposed Hubballi-Ankola railway line Karnataka, traverses the Western Ghats across Dharwad, Yellapur and Karwar Forest Divisions of North Karnataka. A study was conducted from October 2024 - February 2026 to assess the cumulative biodiversity across taxonomic groups at multiple spatial scales to identify ecologically sensitive areas along the proposed alignment.

Along the alignment flora and fauna were assessed within 1km spatial sampling units. Vegetation was surveyed using transect walks and circular plots; fishes were sampled in 100-m stream reaches using drag and scoop nets; herpetofauna through visual encounter surveys, belt transects and quadrats; birds through point counts; and large terrestrial mammals using camera traps. Small mammals, including rodents and shrews, were assessed using Sherman trapping and drift fencing, while bats were assessed using acoustic monitoring.

In addition to the 1km grid surveys, camera trapping and point counts were conducted within a 5-km buffer of the proposed alignment to assess biodiversity in the surrounding landscape. For wide-ranging mammals, particularly for elephants and tigers, the assessment was extended to a 10km buffer. Opportunistic camera trapping and 225 questionnaire surveys were conducted across 97 beats to document their occurrence and habitat use.

Vegetation surveys recorded 439 plant species, including 38 endemic species. Fish assessment recorded 54 species, 16 endemic species. Herpetofauna recorded total 86 species, 44 were endemics. Avifaunal surveys documented 273 species, including 19 endemics. Mammal surveys recorded 56 species, including 11 rodents and 13 bats, with 2 endemics. Elephant presence was recorded in 43 beats, with an estimated 20-30 elephants using the landscape. Tiger surveys identified 255.2 km² of highly suitable habitat based on 49 records across 26 beats.

The findings highlight the critical pattern in biodiversity and habitat use across taxa which helps to provide a scientific basis for habitat and site-specific, species and group specific mitigation. The study demonstrates the importance of multi-taxa biodiversity assessments in informing decision-making for the planning of linear infrastructure projects.

Keywords: North Karnataka, Western Ghats, Multi-taxa biodiversity, Ecological sensitivity, Wildlife conservation, Railway line, Infrastructure project

✉ & 📧 Text

A multi-taxa biodiversity assessment in selected divisions of North Karnataka recorded 439 plant, 54 fish, 273 bird, and 56 mammal species, revealing remarkable biodiversity and ecologically sensitive habitats across the landscape.
#NorthKarnataka #WesternGhats #Biodiversity #WII #Infrastructureprojects

Title of the Project

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

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Dr. J.A. Johnson

Funding Agency

South Western Railways

Project Duration

2024-2026

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ABSTRACTS

SPEED TALKS

———— DAY 1



Coexistence not possible: addressing wildlife hazards at two Northern Indian Airports

R. Suresh Kumar

Airports are increasingly exposed to wildlife-aircraft interactions as expanding infrastructure intersects with diverse and modified landscapes. We compared avian and mammalian hazard patterns at Jolly Grant Airport in Dehradun, in the Himalayan foothills, and Amritsar Airport in the Punjab plains. Grid-based surveys within airport premises and adjoining 1-km surroundings captured seasonal and temporal variation in bird species, and we classified recorded birds into risk categories by body size, flock size, and mean abundance. The two airports, Jolly Grant and Amritsar, supported 57 (13 high-risk) and 50 (8 high-risk) bird species, respectively. At Jolly Grant, high-risk species mean abundance was highest for Red-wattled Lapwing (2.88), Black Kite (2.16) and Rock Pigeon (1.27), while in Amritsar, it was Eastern Cattle Egret (1.61), Common Myna (1.19), Red-wattled Lapwing (0.70) and Rock Pigeon (0.67). However, high-risk bird activity was spatially concentrated in select parts within the two airports. The strongest contrast in avian species, however, occurred in the surrounding 1-km landscape. Jolly Grant's mosaic of agricultural, scrubland and built-up areas supported substantial bird activity, with four high-risk species - Rock Pigeon, Rose-ringed and Plum-headed Parakeets, and House Crow accounting for ~30% of all sightings, and the same contributed to the bird activity within the airport. Conversely, bird activity outside Amritsar airport was very low, reflecting the homogeneous agricultural habitat that was fallow during the study. Mammalian activity recorded through photo-captures also differed between the two airports: Golden Jackal, Indian Crested Porcupine, and Black-naped Hare occurred occasionally at Jolly Grant, whereas Amritsar had a relatively high presence of Golden Jackal and Indian Crested Porcupine, and uniquely, the endangered Indian Pangolin was also detected. The influence of the contrasting landscape further underscores the need to extend wildlife-hazard assessment beyond airport boundaries to capture ecological processes shaping wildlife use of airfields. These findings show that wildlife hazards at airports are location-dependent, driven by species-specific dominance resulting from habitat management in and around the airport, seasonal dynamics, and landscape connectivity.

Keywords: airport ecology, avian-commensals, bird strikes, urban planning

✉ & 📧 Text

NA

Title of the Project

Assessment of wildlife hazards at Indian airports and suggest mitigation measures

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Funding Agency

NA

Project Duration

2023 - 2026

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Title of the Project

Designing Canopy Bridge over Railway Line inside Hollongapar Gibbon Sanctuary, Assam

Name of PI(s)

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Funding Agency

Department of Forest, Environment and Climate Change, Government of Assam

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Suspended Solutions: Field Realities and Mitigation Lessons from Canopy Bridges over Railway Line in Hollongapar Gibbon Sanctuary, Assam

Rohit R.S. Jha, G.V. Gopi

Linear transport infrastructure and high-voltage (25kV) railway-electrification represent severe, compounding threats to tropical arboreal wildlife, particularly obligate brachiators like the endangered Western Hoolock Gibbon (Hoolock hoolock). Although spatial avoidance, following the mitigation hierarchy, is the primary scientific recommendation for wildlife-rich areas, infrastructure agencies frequently prefer engineered solutions as mitigation strategy. Such interventions, however, are rarely scrutinised through an interdisciplinary lens combining ecological understanding with theories of public administration and institutional behaviour.

We evaluated the conceptualisation, deployment, and operational realities of five twin-rope Artificial Canopy Bridges (ACBs) fitted with underslung nylon safety nets in February-March 2025 across the recently electrified 1.65-km broad-gauge single-track railway through the ~21-sq.km Hollongapar Gibbon Sanctuary (HGS). Using observational field data from standardised monitoring schedule designed for frontline forest staff, we analysed species-wise ACB approach and crossing events, alongside post-installation management and decision-making trajectories vis-à-vis recommendations.

The dataset revealed noticeable taxonomic divergence. Quadrupedal generalists (macaques and langurs) exhibited high behavioral plasticity, habituating rapidly and accounting for regular crossings across sites. Conversely, the target brachiator exhibited pronounced habituation latency (>1 year). Documented gibbon crossings (in May-June 2026) were limited to two isolated events at a single ACB site. Crucially, on neither occasion was the primary overhead twin-rope bridges used, ostensibly most suitable for brachiation kinetics, instead the gibbons crawled quadrupedally across the underslung safety net. Concurrently, mandatory right-of-way tree-pruning for overhead traction lines severed historical natural pathways, likely precipitating the fatal electrocution of an adult male gibbon on a traction mast approximately 30 metres from an installed ACB in February 2026.

Integrating these empirical patterns with sociological and policy frameworks illustrates the pitfalls of the “technological fix” and institutional “symbolic compliance”. While popular discourse celebrated gibbon crossing events as ‘definitive’ conservation success, the operational reality indicates a systemic “project lifecycle trap”. While capital expenditure has delivered physical structures, routine operational upkeep and monitoring rigour may have slackened. Seen in this context, ACBs at HGS function as a tenuous behavioral crutch rather than an evolutionary substitute for canopy contiguity. Engineered crossings must not become administrative alibis to bypass spatial avoidance in linear infrastructure planning across critical habitats.

Keywords: *mitigation hierarchy, primate conservation, linear infrastructure, railway ecology, forest fragmentation*

✉ & 📧 Text

#WIICAPCell research evaluates Artificial Canopy Bridges across Hollongapar’s recently electrified railway track. Beyond celebrated crossings, empirical data reveals why engineered mitigations cannot substitute spatial avoidance for endangered #WesternHoolockGibbon. #LinearInfrastructure #MitigationHierarchy

Tiger Recovery and Palamau: Connecting Tales

Shahzada Iqbal

Tiger recovery in fragmented landscapes depends not only on effective protection within reserves but also on maintaining connectivity among suitable habitats. Palamau Tiger Reserve (PTR), one of India's first 9 tiger reserves established under Project Tiger, has a long history of tiger conservation and occupies an important position in eastern India, linking forested landscapes towards central India. Prolonged Left-Wing Extremism from the 1980s until recent years constrained field protection and monitoring, alongside persistent anthropogenic pressures. Understanding the ecological potential of PTR and its surrounding linkages is therefore important for assessing its role in long-term tiger recovery. We assessed potential tiger habitat and connectivity across Jharkhand, with particular emphasis on PTR and its wider landscape.

We compiled 280 verified tiger occurrence records from sign surveys and opportunistic camera trapping and modelled habitat suitability using maximum entropy with 7 environmental predictors. Circuit-theory modelling was used to identify potential movement pathways and areas of restricted connectivity. Habitat suitability was highly heterogeneous, with major suitable areas across western and southern Jharkhand and additional suitable areas outside protected-area boundaries. Distance to agricultural land and built-up areas were the strongest contributors to model predictions, while road density and land-surface temperature also influenced suitability. Potential connectivity was concentrated along forested linkages, with PTR forming a central component of the network. Important linkages extended towards the Latehar-Chatra-Hazaribagh and southern Jharkhand landscapes, while the Latehar-Chatra-Hazaribagh and Khunti-Saraikela-Kharsawan sectors emerged as areas of relatively restricted connectivity.

Our findings highlight PTR as an important eastern component of a broader landscape supporting tiger recovery. Maintaining suitable habitat and functional linkages around PTR will be important for sustaining connectivity and supporting long-term tiger persistence across eastern and central India. The identified linkages and potential bottlenecks provide spatial priorities for conservation planning beyond protected-area boundaries.

Keywords: tiger recovery; Project Tiger; habitat suitability; movement pathways; Jharkhand

Title of the Project

Identification of tiger corridor in and around Palamau Tiger Reserve, Jharkhand

Name of PI(s)

Dr. Bilal Habib

Name of Co-PI(s)

Dr. Vishnupriya Kolipakam

Funding Agency

Jharkhand Forest Department

Project Duration

2022-2026

17

✉ & 📧 Text

From one of India's first 9 tiger reserves to a landscape with renewed recovery potential, Palamau's story reflects the resilience of tiger conservation. We assess its position, habitat and connectivity across Jharkhand to identify pathways for recovery.

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Title of the Project

Monitoring wildlife overpasses and underpasses of Samruddhi expressway.

Name of PI(s)

Dr. Bilal Habib

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Funding Agency

Maharashtra State Road Development Corporation Limited (MSRDC)

Project Duration

2023-2028

Running on instinct: How fast and slow animals walk across wildlife crossing structures on the Samruddhi Expressway

Neha Yadav, Mohd Belal, Belal Habib

Linear infrastructure such as highways and expressways is a major driver of habitat fragmentation, disrupting wildlife movement and raising the risk of vehicle collisions. The Nagpur-Mumbai (Samruddhi) Expressway, a 701-km access-controlled expressway connecting 11 districts of Maharashtra, passes through eco-sensitive zones and near a few wildlife sanctuaries. It is a green-field project, and wildlife crossing structures (WCS), such as wildlife overpasses (WOPs) and underpasses (WUPs), were incorporated from the early stages of its design. The monitoring of these structures started in December 2023 and has continued to the present. While such structures aim to help animals cross safely, most monitoring so far has only asked whether animals use them, not how they move once inside. Our study looked at crossing speed: how fast animals moved through these structures, for chital, nilgai, wild pig, and leopard at a WOP and WUP, with a nearby forest trail monitored as a natural comparison for speed.

Cameras were placed at both ends of each structure, and speed was calculated as the distance between cameras divided by the time between the first and last photograph of each crossing. On the trail, four cameras were placed along a 99 m stretch, and speed was calculated similarly to WCS. A total of 220 crossing events were recorded, 195 of single animals and 25 of groups, with cumulative effort of 3453 camera days.

Chital, nilgai, and wild pig all moved faster on the crossing structures than on the natural trail, while leopard kept a similar, unhurried pace everywhere. Wild pig showed a statistically significant difference (Kruskal-Wallis test, $p = 0.002$): it crossed the overpass markedly faster than the trail (median 1.4 vs. 0.6 m/s; $p = 0.003$). The same trend appeared in chital and nilgai but was not statistically significant at p -value 0.05.

The variation in speed may be owing to the use of these structures by predators and hence the increased perceived risk of predation by the prey species, or due to the openness of the overpass. The results are preliminary and need to be interpreted with caution.

Keywords: Linear infrastructure, Wildlife crossing structures, Speed, Wildlife

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✉ & 📧 Text

Between two forests lies a road. Between safety and danger, a crossing. On the Samruddhi Expressway, we're studying those moments when chital, nilgai, wild pig and leopard cross from one side to another-not just if they cross, but how they move while crossing. Every crossing tells a story.

Population density and habitat association of the globally threatened White-browed Bushchat *Saxicola macrorhynchus* in the Thar Desert of northwestern India

Mihir Jadhav, Varun Kher, Mihir Jadhav, David Phinehas N, Maxim Rodrigues K, Brihadeesh S, Anand Krishnan, Sutirtha Dutta

The White-browed Bushchat *Saxicola macrorhynchus* is a globally threatened muscicapid known only from northwestern India and neighboring areas of Pakistan. Here, we present the first systematic surveys to quantitatively assess the population status of this chronically understudied bird in the Thar Desert Landscape of northwestern India.

We randomly surveyed ~25 grids of 1 sq.km each within an intensive study area of 180 sq.km for four winters between 2021-22 and 2024-25, and estimated density, occupancy, persistence and habitat association across two dominant land covers, grasslands and seasonal agricultural plots.

The data highlighted that the density of the White-browed Bushchat was almost threefold higher in grasslands (3.29 birds/km² [95% CI : 2.11-5.14]) compared to fallow agriculture (0.99 birds/km² [95 % CI : 0.50-1.95]). Similarly, occupancy and persistence of the species was also higher in grasslands ($\psi_g = 0.78$, 95% CrI: 0.56-0.97 and persistence 0.82, 0.65-1.00) than fallow agriculture ($\psi_a = 0.50$, 0.25-0.80 and persistence 0.39, 0-0.79). A finer-scale habitat association analysis found that the species occurred in areas with a moderate and heterogeneous understory, preferring regenerating grasslands with low grazing pressure, followed by protected old-growth grasslands with absolute grazing regulation. The species was almost completely absent from heavily grazed community rangelands and occurrence within agriculture, although substantial, was closely tied to hedges and remnant patches of natural vegetation along the borders of fields.

Finally, we present evidence that the White-browed Bushchat is a winter migrant to the Indian Thar Desert and occurs at low densities even within suitable habitats. Our study highlights the importance of restored grasslands for conservation of this threatened species, and validates the benevolent umbrella effect of ongoing flagship-species centric restoration activities on this species.

Keywords: Open natural ecosystems, Population ecology, Occupancy modelling, Grasslands.

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Our study reveals that grasslands support higher densities and offer a more stable habitat for the White-browed Bushchat. Highlighting the importance of restored grasslands for conservation of this threatened species, and validates the benevolent umbrella effect of ongoing flagship-species centric restoration activities

Title of the Project

Assessing effects of Great Indian Bustard centric habitat restoration on associated avifauna of the Thar desert

Name of PI(s)

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Name of Co-PI(s)

Dr. Sutirtha Dutta

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Rufford Foundation

Project Duration

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Title of the Project

Wildlife Forensic and Conservation Genetic Cell

Name of PI(s)

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Funding Agency

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Project Duration

2026-2027

Comparative Morphometric based study of scapula to differentiate three large sympatric Carnivore species (Tiger, Leopard, Hyena)

Kajal Kasare, S. K. Gupta

Illegal wildlife trade poses a serious threat to global biodiversity, and accurate species identification is fundamental to wildlife forensics and conservation. Identification in wildlife crime investigations is particularly challenging when only fragmented skeletal remains or mixed bones are recovered, especially post-cranial bones. The scapula, a durable and species-specific bone, exhibits distinct morphological features that vary among closely related taxa and can aid forensic investigations. This study aimed to assess the utility of scapular morphometry for species identification among three large sympatric carnivores :- tiger (*Panthera tigris tigris*), leopard (*Panthera pardus fusca*), and striped hyena (*Hyaena hyaena*) and to evaluate inter- and intra-specific variation to establish diagnostic criteria. A total of 43 scapulae (tiger n=19, leopard n=16, hyena n=8) were examined from the repository of the Wildlife Forensic and Conservation Genetics Cell (WFCGC), Wildlife Institute of India, Dehradun. 14 morphometric parameters were recorded from lateral, medial, and anterior views using metric rulers, digital vernier calipers (Mitutoyo CD-P20S, resolution:0.01mm, accuracy: +0.02 mm), an osteometric board, threads, and dividers. Data were analyzed by descriptive statistics, one-way ANOVA with Tukey's post-hoc test and Principal Component Analysis (PCA) using Microsoft Excel 2010 and R software (v4.1). One-way ANOVA revealed highly significant interspecific differences in mean scapular measurements ($p < 0.001$). Mean maximum height full space (MHFS) values were highest in tiger (25.19 cm), followed by hyena (17.24 cm) and leopard (15.33 cm). PCA showed that the first two principal components explained 87.2% of total variance, resulting in clear species separation. Low standard deviation values indicated minimal intra-species variation in the measured traits. The Coracoid Process (CP) was absent in hyena and present in tiger and leopard scapula. Scapular morphometry provides a valuable, cost-effective, and reliable tool for differentiating sympatric carnivore species such as tiger, leopard, and hyena in fragmented skeletal evidence or mixed bone samples recovered during wildlife crimes when only post-cranial remains are available. It also reflects ecological and locomotor adaptations related to body size and predatory behavior, which contribute both to wildlife forensic identification and their interpretations.

Keywords: *Wildlife Crime, Wildlife Forensics, Scapula, Morphology, Morphometry*

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✉ & 📧Text

Scapular morphometry for species differentiation in three sympatric carnivores-Tiger, Leopard and Striped Hyena. Analysis of 43 scapulae using 14 parameters demonstrated clear species separation, with PCA explaining 87.2% of total variance. #WildlifeForensics #Wildlifecrime #ScapulaOsteology #WildlifeConservation

Comparative scapular morphometry of Tiger, Leopard & Striped Hyena demonstrates clear species differentiation. Analysis of 43 scapulae using 14 parameters showed significant variation, It is a cost-effective and reliable approach for species identification in wildlife crime investigations #Wildlifeforensic

Floristic composition and diversity patterns along the course of the Ganga River

Umama Khan, Ruchi Badola, Revan Y. Chaudhari, Monal Jadhav, Satyam Saumya

Our study evaluated the composition, diversity, and spatial distribution of riparian vegetation along the mainstream of Ganga River to identify conservation priorities and understand the influence of natural and anthropogenic drivers.

From the upper Himalayan reaches to the deltaic region of the country, the study surveyed vegetation across 35 Biodiversity Evaluation Units (BEUs) between April 2023 and June 2025. Line and belt transects were laid on both riverbanks, and nested vegetation plots were sampled at 1 m, 500 m, and 1000 m from the riverbank. Species richness, Shannon diversity index, and Important Value Index were used to analyse vegetation structure (dominant plant communities) and diversity. As a result, a total of 747 taxa belonging to 459 genera and 119 families, comprising 735 angiosperms, 7 gymnosperms, and 5 pteridophytes were recorded. Herbaceous species dominated the flora, while Poaceae, Fabaceae, and Asteraceae represented the most species-rich families. Native species accounted for 84% of the recorded flora, whereas non-native species constituted 16%, indicating increasing biotic mixing along the river continuum. Species richness increased from the upper reaches towards the middle and lower stretches, reflecting greater habitat heterogeneity. Vegetation near the riverbank supported dynamic flood-tolerant communities, whereas agriculture, settlements, and plantations increasingly replaced native vegetation farther from the river, reducing ecological integrity.

Our study provides the first basin-scale assessment of riparian vegetation along the Ganga River and establishes a baseline for long-term monitoring. The findings highlight the need to conserve remnant riparian habitats, manage invasive species, and restore native vegetation to sustain biodiversity and ecosystem services across the river landscape.

Keywords: Riparian vegetation, Species richness, Habitat heterogeneity, Invasive species

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The first basin-scale assessment of Ganga riparian vegetation recorded 747 plant taxa across 35 BEUs from the Himalaya to the delta. We recorded increasing species richness downstream but declining ecological integrity away from riverbanks due to human pressures and habitat modification.

From the Himalaya to the Bay of Bengal, the Ganga supports remarkable plant diversity. We recorded 747 plant taxa and uncovered patterns of riparian vegetation change, highlighting the importance of conserving native habitats and restoring degraded river landscapes.

Title of the Project

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

Name of PI(s)

Dr. Ruchi Badola

Name of Co-PI(s)

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Funding Agency

This study was funded through the projects “Biodiversity Conservation and Ganga Rejuvenation” No. B-

Project Duration

2018-2026

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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)

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Funding Agency

NMCG

Project Duration

2019-2026

Connect, capacitate, conserve: Strengthening aquatic conservation through spearhead teams in the Ganga Basin

Mohd Danish Kaleem, Sangeeta Angom, Rohit Kumar, Ruchi Badola, S.A.Hussain

Conserving aquatic biodiversity across a large river basin requires people with the knowledge, skills, and institutional understanding to respond to conservation needs within their landscapes. Recognizing this need, the Wildlife Institute of India-National Mission for Clean Ganga (WII-NMCG) project, “Planning and Management for Aquatic Species Conservation and Maintenance of Ecosystem Services in the Ganga River Basin for a Clean Ganga,” developed Spearhead Teams as a network of trained stakeholders to support aquatic biodiversity conservation and river ecosystem management across the Ganga Basin.

From 2020 to 2025, the initiative covered 11 Ganga Basin states and conducted 24 training programmes involving 1,150 participants. Members represented Forest, Fisheries and Irrigation Departments; research and academic institutions; veterinary services; non-governmental organizations (NGOs); volunteer groups; local communities; and the Eco-Task Force (ETF) and Ganga Task Force (GTF). Training covered aquatic biodiversity monitoring, wetland conservation and river management, rescue and rehabilitation, participatory management, and conservation education.

After training, Spearhead Team members continued building capacity through their institutional and community networks. Through 48 additional training programmes, workshops and outreach activities, they trained or sensitized 3,437 individuals on aquatic biodiversity conservation and river ecosystem management. The cascade ratio was 2.0, while the participant multiplication factor was 2.99, and the cascading contribution accounted for 74.93% of overall participant reach.

The results demonstrate that trained stakeholders acted as knowledge multipliers, substantially extending conservation capacity beyond the initial training programmes. The approach also promoted interaction among government departments, academic and research institutions, field practitioners, NGOs, volunteers, and local communities, strengthening coordination around shared conservation priorities. The Spearhead Team model demonstrates the potential of a network-based cascade approach to strengthen local preparedness, institutional collaboration, and coordinated action for aquatic biodiversity conservation and river ecosystem management across the Ganga Basin.

Keywords: Capacity building, stakeholder networks, aquatic biodiversity, inter-agency collaboration

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✉ & 📧 Text

Mr. Mohd Danish Kaleem delivered a speed talk on “Connect, Capacitate, Conserve,” highlighting how spearhead teams strengthen capacity, stakeholder collaboration, and coordinated action for aquatic biodiversity conservation across the Ganga Basin.

Avian assemblage differentiation of proposed dam-submergence landscape in the Satpura-Melghat Corridor, Madhya Pradesh

Nonita Rana, Rohit R.S. Jha, G.V. Gopi

The Central Indian Highlands is a mosaic of human dominated and forested landscapes. Development of large water infrastructure in fragmented forest-agriculture mosaics are known to alter habitat configuration thereby leading to biodiversity redistribution, but local species richness alone may obscure assemblage differences. We assessed avian assemblage differentiation associated with the proposed Morand-Ganjal Irrigation Project within a section of the Satpura-Melghat ecological corridor landscape, to help inform biodiversity-sensitive planning.

Standardised 10-minute unlimited-radius point counts (PCs) were conducted in summer and winter seasons across proposed submergence and adjacent non-submergence areas within a defined 10 km-radius Project Impact Zone (PIZ) during 2025-26. The quantitative dataset comprised 576 visits (46 submergence; 530 non-submergence) across 313 stations. Season-matched Sørensen dissimilarity was partitioned into turnover and nestedness-resultant components. Given the unequal sample sizes, balanced resampling was used as a sensitivity analysis.

While 205 species were recorded during the entire study, 91 and 135 species were recorded from PCs in the proposed submergence and comparison/non-submergence zones, respectively, within PIZ. Mean observed richness per visit was significantly higher in the submergence area (13.22 ± 3.86) than in the non-submergence area (10.99 ± 3.78). Despite substantial overlap in species pools, season-matched Sørensen dissimilarity between the zones was 0.696, with turnover accounting for 0.612 and nestedness-resultant dissimilarity for 0.084. Turnover accounted for 87.9% of between-zone Sørensen dissimilarity when summer and winter were weighted equally, with similar proportions in summer (88.2%) and winter (87.6%). Comparable turnover dominance occurred among sites within both zones, indicating substantial landscape heterogeneity. Season-specific PERMANOVA detected between-zone differences, but explained little variation (Jaccard $R^2 = 0.006-0.007$; Bray-Curtis $R^2 = 0.007-0.011$), while balanced sensitivity analyses did not show stable statistical significance.

The proposed submergence area contains a compositionally distinctive component of the wider avifauna, but conservation significance cannot be inferred from richness alone. The predominance of turnover indicates that biodiversity assessment and mitigation should retain complementary habitats across the wider project landscape rather than prioritise only locally species-rich sites. These findings provide a baseline for spatially explicit mitigation and for evaluating potential biodiversity consequences, while recognising that single visits per station-season cannot separate true absences from imperfect detection.

Keywords: *beta diversity, biodiversity assessment, Central India, inundation projects, species turnover*

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“Beyond numbers, lies the story.” Species richness tells us how many species are present, but understanding which species make up a community can reveal a much deeper ecological story. The talk explores avian assemblage differentiation across a proposed dam-submergence landscape in the Satpura-Melghat ecological corridor.

What’s at stake when the water inundates? The answer may lie beyond species richness alone, in the unique assemblages. This presentation explores avian community differentiation across a proposed dam-submergence landscape in the Satpura-Melghat ecological corridor.

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, Government of Madhya Pradesh

Project Duration

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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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Funding Agency

National Tiger Conservation Authority

Project Duration

2025-2028

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Integrating In-situ and Ex-situ measures for the conservation of Batagur baska in the Sundarban Tiger Reserve

Swati Nawani

Batagur baska (Gray, 1830) is a critically endangered turtle found in mangroves of India, Bangladesh, and Myanmar. With the wild population in a precarious and largely unknown state, ex-situ conservation is a crucial resort for the species' survival. A conservation project was initiated with three objectives: movement ecology, captive population management, and genetic health monitoring. The Wildlife Institute of India (WII) handles field-based and genetic components, while captive population management is led by the West Bengal Forest Department. This study assesses the wild population of Batagur baska at selected nesting beaches within the Sundarbans Tiger Reserve (STR), evaluates population demographics of naturally and artificially incubated individuals, and examines the genetic diversity of sampled individuals. To determine the presence and activity of wild Batagur baska, 10 camera traps were deployed at each of three potential nesting beaches, i.e., Bagmara, Garangati, and Chaimari, from March to May 2026. Morphometric assessment was conducted on both artificially and naturally incubated juveniles (n = 209) from the 2026 batch, recording standard morphometric measurements (curved carapace length, curved carapace width, straight carapace length, straight carapace width, plastron length, and plastron width) and weight to determine age class, growth patterns, and population structure. Genetic diversity indices were calculated in DnaSP 5.10 using complete mitochondrial genomes of eight individuals. Camera trapping recorded 15 species but no Batagur baska at any of the three nesting beaches. Body weight ranged from ~59 to 118 g in naturally hatched and 57 to 122 g in artificially hatched juveniles, with considerable overlap and largely similar morphometric measurements between groups. Mitogenome analysis (16,522 sites) identified 23 polymorphic sites defining 6 haplotypes, with a haplotype diversity of 0.93 and low nucleotide diversity ($\pi = 0.00059$). Despite the limited sample size, the use of complete mitogenomes revealed low genetic diversity. Comparable morphometrics between naturally and incubated juveniles suggest that later practice produces viable offspring. Given the absence of individuals at beaches and low genetic diversity, preserving the existing genetic diversity in captive populations will be critical for the species' long-term recovery.

Keywords: Endangered species, Estuarine turtle, Mangrove, Genetic diversity, Population management

✉ & 📧 Text

The study on Batagur baska in the Sundarbans finds no signs of wild population at surveyed beaches and low genetic diversity, highlighting the urgent need for conservation action. #Conservation #Sundarban #Mangroves #Batagurbaska #EsturineTurtle

The Cats' Clock: How Seasons, moon-phase and people shape the diel activity of small cats in the Central Himalaya.

Meghna Limboo, G. V. Gopi

Effective conservation depends on understanding species' chronobiological adaptations and how these shift in response to environmental cues and stressors. Small felids, as elusive, often nocturnal mesopredators, are sensitive indicators of such shifts, yet their temporal responses to environmental variation and human disturbance remain poorly documented in biodiversity-rich, human-adjacent landscapes. Understanding these dynamics is essential for designing conservation strategies that account for both natural environmental variability and anthropogenic pressure. This study investigated activity patterns of the small cat guild in Neora Valley National Park, within the Central Himalaya biodiversity hotspot, asking whether activity varies across lunar and seasonal cycles and whether human disturbance drives shifts in activity. Using multi-season camera trap data (2023-2025), we compared activity rhythms across lunar phase and seasonal cycle to assess behavioral plasticity and tested the effect of human disturbance on diel activity. Data were analyzed using trigonometric generalized linear mixed models and kernel density estimation to characterize the drivers. Only marbled cats (MC) showed significant diel shifts linked to moonlight illumination, with activity strictly concentrated during daytime hours on darker lunar phases. MC shifted from unimodal to bimodal activity during the wet season, without any change in activity level, while Golden cats (GC) showed a comparable unimodal to bimodal shift in the dry season. Leopard cats (LC) displayed a more complex activity pattern, with seasonal shifts in their bimodal activity peaks accompanied by significantly higher overall activity in the wet season. Human disturbance affected activity patterns differently across species; LC and MC showed significant declines in overall activity alongside shifts in daily activity timing in more disturbed areas, while GC maintained similar activity levels but still showed a shift in peak activity timing. These species-specific responses highlight the need for conservation strategies that account for differential behavioral plasticity across sympatric felids, rather than assuming uniform resilience to disturbance.

Keywords: Small Carnivore, Himalaya, Temporal niche, Camera trapping, Chronobiology

Title of the Project

Status and habitat requirements of Marbled cat and its spatiotemporal patterns of interaction with sympatric small felids in the Neora Valley National Park, India

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Meghna Limboo presented her research, "The Cats' Clock: How Seasons, moon phase and People Shape the Diel Activity of Small Cats in the Central Himalaya." This study highlights the behavioural plasticity of small cats in a landscape where wildlife and human activity increasingly intersect.

Title of the Project

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

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Project Duration

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The Missing Metric in Ecological Studies: Land tenure system of territorial carnivores

Kanishka, Suman Koley, Shaheer Khan, Zehidul Hussain, S. Sathyakumar, Bilal Habib

Understanding how territorial carnivores (social & solitary) maintain their space and which factors influence changes in their space is fundamental to effective management of any species. Land tenure is a significant ecological process as it reflects how individuals establish and maintain access to space and resources, and it provides a link between the spatial behaviour of individuals with population mediated processes. However, this critical aspect of interpreting the stability, predictability, and exclusivity of a population is rarely evaluated. To date, there has been no clear ecological definition of the land tenure system.

To understand this concept, we reviewed more than 50 years of ecological studies on territorial carnivores by focusing on studies that evaluated or yielded evidence relative to land tenure systems. We systematically synthesised literature based on how tenure has been conceptualised, measured, and related to ecological and anthropogenic variables. Literature-based evidence was then used to formulate a definition, a framework for evaluating land tenure, and four hypotheses for interpreting land tenure in various landscape scenarios.

We procured tenure of eleven species across four genera from 15 countries and tested the relationship between population density and land tenure; individuals occurring in low densities showed high tenure, which facilitates determining the demographic and reproductive stability in an endangered carnivore population. Our synthesis revealed that tenure can be assessed through a multi-dimensional approach, including camera trapping, radio telemetry, genetic analysis, and animal tracking. Across the literature, 75.4% of long-term studies with relevant data did not explicitly address land tenure, and it remains unevenly evaluated across species and methodologies.

Disturbed long-term territorial organisation and high turnover may indicate changing demographic patterns, resource constraints, or anthropogenic pressures; limited integration of land tenure into ecological studies remains concerning despite advances in population ecology and monitoring technologies. We propose land tenure as a core principle capable of identifying core habitats with stable territories and areas requiring management intervention, such as management of critical habitats and conflict mitigation.

Keywords: *Site fidelity, Territory, Spatial Organisation, Population Ecology, Stability*

✉ & 📧Text

From territory to conservation: exploring how land tenure reveals population dynamics and environmental pressures in territorial carnivores. Our framework highlights how land tenure can inform population stability, habitat protection, and conservation management.

MSTrIPES: Technology-Enabled Law Enforcement and Evidence-Based Wildlife Conservation in India

Ashish Prasad

Protected area management increasingly demands systems that convert routine field effort into timely, evidence-based decisions. Frontline foot patrolling remains the backbone of tiger reserve protection, yet conventional patrol records, voluminous, dispersed, and slow to analyse, have long limited managers' ability to detect threats and respond in real time. Law Enforcement Monitoring (LEM) has emerged globally to address this gap through standardized data capture, spatial analysis, and structured feedback for evidence-based decision making for management action. The Monitoring System for Tigers-Intensive Protection and Ecological Status (MSTrIPES), conceptualized by the National Tiger Conservation Authority (NTCA), in collaboration with the Wildlife Institute of India (WII) operationalizes LEM within India's administrative and field realities. Evolving from an early GPS/PDA design to a mobile, GIS-enabled, centrally archived platform, M-STrIPES now integrates patrol data, ecological observations, and human-disturbance records on a single interface, replacing fragmented, delayed reporting with near-real-time visibility. This has ensured transparent, standardized data collection for ecological monitoring and for the All India Tiger Estimation, the country's nationwide quadrennial survey. The latest upgrade introduces hierarchy-based patrol visualization, allowing beat, range, division, and reserve level officers to view coverage and compliance at the resolution relevant to their supervisory role, sharpening accountability and enabling faster, tier-appropriate decisions. Coupled with User Live Tracking for personnel safety and deployment optimization, the system now closes the loop from field observation to adaptive management.

Drawing on over a decade of spatial and temporal protection data across India's 58 tiger reserves, M-STrIPES demonstrates how digitally structured LEM can strengthen enforcement, support adaptive management, and advance the goals of India's National Wildlife Action Plan 2017-2031.

Keywords: MSTrIPES, Patrol Monitoring, Biodiversity Protection, Digital Transformation, Wildlife Management

✕ & 📍Text

MSTrIPES transforms frontline patrol data into real-time intelligence, strengthening law enforcement, tiger conservation, accountability, safety, and evidence-based adaptive management. #MSTrIPES #TigerConservation #WildlifeProtection #LawEnforcement #DigitalConservation

Title of the Project

Monitoring System for Tigers- Intensive Protection and Ecological Status (MSTrIPES)

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Name of Co-PI(s)

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Funding Agency

National Tiger Conservation authority (NTCA)

Project Duration

2015-2027

27

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Title of the Project

Intensive population monitoring and study of tiger dispersal in Kanha Tiger Reserve, Madhya Pradesh (Phase IV)

Name of PI(s)

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Project Duration

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Decade of Tiger Demography at Kanha Tiger Reserve

Shravana Goswami

Long-term demographic monitoring is critical for understanding population viability and guiding site-specific conservation action. We present a decadal synthesis of tiger demography in Kanha Tiger Reserve, drawing on camera trap-based capture-recapture in an open population robust design. Spatially explicit capture-recapture models were used to estimate tiger densities, while distance sampling provided ungulate prey densities. We calculated sex- and age-specific survival estimates, and reproductive parameters including age at first parturition, inter-birth interval, and litter size were derived from intensive individual monitoring. Tiger density in Kanha fluctuate between 3.86 to 8.94 individuals/100 km², with an intrinsic growth rate at 6.7% per annum. Female age at first reproduction was 3.4 ± 0.19 years, cub survival averaged 59% ± 6%. Sex-specific survivorship patterns differed by cohort, with implications for source population dynamics. These decadal findings refine our understanding of population resilience in a well-protected central Indian reserve, and continue to inform the core-buffer strategy and source-population framework adopted by the National Tiger Conservation Authority for landscape-level tiger management.

Keywords: Survivorship, Density, Growth rate

✉ & 📧Text

A decade of monitoring in Kanha Tiger Reserve reveals key insights into tiger resilience and source dynamics. Crucial data guiding NTCA's landscape-level strategies.

Conservation of Coconut crab in the Nicobar Archipelago

Krishnapriya M, Shikha Mahesh Goswami, Sagar Maharana, Hariprasath R, Babu. S, Kumara H.N. Pramod P

The coconut crab (*Birgus latro*) is the largest terrestrial crab and is listed in Schedule I of the Wild Life (Protection) Act (1972) in India. Indian populations in the Nicobar Archipelago reported to be the most affected by the 2004 tsunami. Despite its conservation importance and vulnerability, baseline information on its occurrence and ecology remains limited. This study was thus undertaken to address the lack of baseline data on coconut crab distribution and ecology that can inform management strategies for the species' continued persistence in the archipelago.

An open-ended, semi-structured questionnaire survey was conducted among 148 respondents in Katchal, Kamorta, Nancowry, and Great Nicobar to document local ecological knowledge of the species. The protocol involved grid-based surveys conducted in the late afternoon using roving transects to search potential microhabitats. Baits were placed outside potential microhabitats and rechecked later in the evening. Direct encounters and indirect evidence, such as burrows with signs of crab presence were recorded. In Katchal, stratified surveys were conducted at locations identified through questionnaire responses.

A total of 51 grids were surveyed, covering 30.63 km over 58.15 survey hours. In Great Nicobar, stratified and random grid surveys were conducted across 84 grids, covering 54.76 km over 61.27 survey hours.

Thirty-two crabs were recorded in Katchal, mostly inside or near karst-like rock formations. Thirty burrows in these rock formations were identified through direct observations and indirect signs of presence. Coconut crab presence was significantly associated with karst-like rock formations (Fisher's exact test, $p = 0.002$). However, within grids containing karst-like rock formations, coconut crab encounters were not significantly associated with the major vegetation types. Similarly, encounters were not significantly associated with distance to the shore, temperature, precipitation, and lunar phase.

Coconut crabs were not encountered during field surveys in Great Nicobar, although photographic evidence of their presence was obtained from the local community. This survey protocol recorded more coconut crabs in Katchal than previous studies, demonstrating the importance of integrating local ecological knowledge with systematic field surveys for studying elusive species.

Keywords: *Birgus latro*, coconut crab, Nicobar Archipelago, local ecological knowledge, field surveys, habitat association.

Title of the Project

Comprehensive conservation plan for Coconut crab in the Nicobar Archipelago

Name of PI(s)

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DR. H.N.Kumara
Dr. S Babu

Funding Agency

ANIIDCO

Project Duration

2024-2026

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Integrated local ecological knowledge and field surveys to develop a standardized monitoring protocol to detect and study coconut crabs. Recorded 32 individual crabs in Katchal, however, no crabs were directly recorded in Great Nicobar with the same method.

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Title of the Project

Impact assessment of vibrations on aquatic life and biodiversity due to underwater tunnel construction under Brahmaputra River

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Beneath the Brahmaputra: Assessing Ecological Responses to Underwater Tunnel Construction

Sunny Deori, Vineet Singh

The Brahmaputra River supports rich aquatic biodiversity, including the endangered Ganges River dolphin (*Platanista gangetica*), diverse fish assemblages, plankton and other aquatic fauna. The proposed four-lane underwater tunnel connecting Gohpur (North Bank) and Numaligarh (South Bank) is a major infrastructure development expected to reduce travel time between the two locations from approximately eight hours to 30 minutes. However, construction-generated underwater vibration and noise, sediment disturbance, turbidity and changes in water quality may affect the river ecosystem. The proposed study will assess these impacts across pre-construction, construction and post-construction phases using a nested spatial monitoring framework. A 4-km Intensive Study Zone, extending 2 km upstream and downstream of the tunnel site, will undergo detailed ecological and environmental monitoring, while a 40-km Impact Zone, extending 20 km upstream and downstream, will assess broader ecological responses and potential displacement of mobile aquatic fauna. Establishing baseline conditions is essential for distinguishing construction-related effects from natural variability and evaluating changes in sensitive species and habitats. Baseline investigations will include visual and acoustic monitoring of Ganges River dolphins, assessment of fish and associated biodiversity, habitat and bathymetric mapping, water and sediment quality analyses, and measurement of underwater noise and vibration. Satellite tagging of dolphins will be undertaken to assess movement patterns and habitat use in relation to the tunnel site. During construction, underwater noise and vibration, turbidity, sediment resuspension, pollutants, habitat characteristics and biological responses will be monitored against baseline conditions. Integrating visual, acoustic and satellite-tagging data will help identify changes in dolphin distribution, movement and habitat use. Mitigation measures, including bubble curtains, will be evaluated for reducing construction-related acoustic disturbance. Post-construction monitoring will assess persistence of impacts and ecosystem recovery, providing an evidence-based framework for ecological risk assessment, mitigation and environmentally responsible infrastructure development in large tropical rivers.

Keywords: *Platanista gangetica*, acoustic monitoring, environmental impact, mitigation, turbidity

✉ & 📧Text

Beneath the Brahmaputra: A proposed study will assess how underwater tunnel construction may affect Ganges River dolphins and aquatic biodiversity through acoustic monitoring, habitat assessment and dolphin tagging, while evaluating mitigation measures for safer infrastructure development.

A Sanctuary in the Sea: Understanding Seabird Diversity and Conservation Management of Pitti Island Lakshadweep

Santo A Raphael

Pitti island or Dr. Salim Ali Pitti Bird Sanctuary, is an uninhabited coral sandbank located approximately 24-25 km from Kavaratti Island in the Lakshadweep archipelago. Pitti island is the only protected area in the Lakshadweep archipelago and one of the most important breeding sites for pelagic birds including Brown Noddy (*Anous stolidus*), Sooty Tern (*Onychoprion fuscatus*), Bridled Tern (*Onychoprion anaethetus*) and Great Crested Tern (*Thalasseus bergii*).

Despite its ecological importance, comprehensive and systematic documentation of the bird population of Pitti Sanctuary is limited. The very remoteness that makes this island unique comes with its own challenges. For example, fishermen from Lakshadweep visit Pitti for fishing and collecting eggs, posing a severe threat to the seabird colony throughout the year except during monsoon when adverse sea condition render the island inaccessible.

In this context, the present study was carried out to generate quantitative baseline data on the avifaunal composition, abundance of the Island. Four field visits were conducted, with survey effort strongly influenced by the sea conditions and accessibility. Avifaunal abundance was assessed using point-count surveys, with three counts conducted per visit whenever conditions permitted, resulting in a total of 12 completed point counts. Point-count locations were not identical between visits but were selected within approximately 5-10 m of previous sampling locations. Nesting activity was assessed using 44 grid cells, with egg counts conducted during one survey period till now.

In collaboration with the Forest Department, three camera traps and one camera were deployed across Pitti Island as a deterrents against human intrusion and egg collection by fishermen. One camera trap and the dummy camera were placed at the only island entrance, while two were camouflaged near breeding colonies. The cameras operated between field visits, with memory cards and batteries replaced as required. Following camera deployment, subsequent surveys indicated an increase in bird abundance and nesting activity, although the magnitude varied among species, providing valuable baseline information on avifaunal composition and breeding activity to strengthen future monitoring and conservation strategies for seabirds in Pitti Wildlife Sanctuary.

Keywords: *Pitti Island, Pelagic birds, Bird Diversity, Bird Abundance, Conservation Management*

✉ & 📧 Text

Pitti Island, Lakshadweep is a vital breeding site for seabirds, our study documents its seabird diversity, abundance and nesting activity, while exploring camera-based deterrence against human intrusion and egg collection to strengthen long-term seabird conservation

Title of the Project

Study of bird diversity and management of Pitti Wildlife Sanctuary, Lakshadweep Islands.

Name of PI(s)

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Funding Agency

Department of Environment and Forest, Lakshadweep India

Project Duration

2023-2028

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Title of the Project

Building climate resilience in India by initiating the national adaptation plan process and scaling up adaptation finance

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Funding Agency

UNDP

Project Duration

2025-2026

Mainstreaming Ecosystems and Biodiversity in India’s National Adaptation Plan: Transitioning from Co-Benefit to Core Sector

Deepali Bansal

India holds nearly 8% of global species diversity across 2.4% of world land area, supporting national ecological security, food systems, water resources, and cultural identity. Yet ecosystems and biodiversity drew only 0.2% of India’s adaptation-relevant public expenditure in 2022-23, having entered climate policy as a forestry co-benefit. India’s National Adaptation Plan restructures this narrative by establishing ecosystems and biodiversity as a standalone core sector. To establish an empirical baseline, a Climate Risk and Vulnerability Assessment evaluated 787 districts across 15 agroclimatic zones using the IPCC AR5 framework across 172 hazard, exposure, and vulnerability indicators. Ensemble CORDEX projections show composite climate risk escalating 69% by 2035, par with agriculture (+73%) and forests (+68%). This risk drives localized ecological disruptions, including coastal salinisation, Himalayan peatland drying, and grassland invasion across five priority zones: the Island Region, East Coast Plains, Lower Gangetic Plain, Eastern Himalaya, and West Coast Ghats. To protect ecosystem-dependent communities, the plan deploys 18 strategies across five Adaptation Levers through 2035 and beyond, directly integrating nature-based adaptation into broader development planning while aligning with India’s NDCs, National Biodiversity Targets, and Global Goal on Adaptation. Elevating biodiversity to core sectoral status successfully bridges empirical risk baselines with institutional governance and sustained adaptation financing.

Keywords: Climate finance, climate risk, vulnerability assessment, CORDEX regional downscaling, nature-based solutions

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India’s ecosystems face a projected 69% increase in climate risk by 2035, yet received only 0.2% of adaptation spending in 2022-23. This study establishes an empirical baseline across 787 districts to elevate ecosystems and biodiversity to a core sector in India’s National Adaptation Plan.

Biodiversity Value of Rocky Outcrops, Hillocks, and Aquatic Habitats within selected Mining lease Landscapes of Tamil Nadu

Dej Vignesh K., P. R. Arun, B. S. Babu

Introduction: Mining contributes substantially to economic development by providing essential mineral resources that support industrialization, infrastructure & technological advancement. Despite extensive landscape modification associated with mineral extraction, it can also support considerable biological diversity.

Location: The limestone mining site in the Kaveri Delta & 11 other granite mining sites along the Eastern Ghats of Tamil Nadu belongs to Tamil Nadu Minerals Ltd. were assessed from 2025 - 2026.

Objective: Documentation of the floral & faunal biodiversity value of the mining lease sites with emphasis on species composition & habitat characteristics.

Methods: The assessment were carried out through systematic sampling across the mining landscapes, for flora, the quadrats were established comprising 20 x 20 metres for trees & plants followed by 5 x 5 for shrubs & 1 x1 for herbs. Faunal surveys were conducted every month using fixed radius point count for birds, line transect for butterflies, odonata & nocturnal surveys for reptiles & amphibians followed by hand net sampling for fishes, direct sightings & sign surveys for mammals.

Results: From all the 12 mining sites, we documented a total of 692 plants, 108 birds, 58 butterflies, 24 odonates, 38 reptiles, 15 amphibians, 10 fishes & 8 mammals. Notably, certain plants, *Caralluma umbellata*, *Crotalaria fysonii* & animals *Burhinus indicus*, *Python molurus*, *Varanus bengalensis*, *Hystrix indica* & endemic species, *Sitana ponticeriana*, *Cnemaspis krishnagiriensis* are locally concentrated within these habitats & uncommon in the surrounding landscapes, highlighting the ecological significance of these mining areas.

Implication: The rocky outcrop dominated the mining lease areas acts as the local biodiversity refugia by providing distinct microhabitats which support specialized flora & fauna. Water bodies created during past mining operations present in most of these mines serves important ecological functions as well as for the human uses including irrigation source for nearby farming lands. We conclude that these heterogeneous environment of mining landscapes provide a range of ecological niches supporting diverse organisms. Recognizing the ecological value is therefore essential to develop effective landscape level biodiversity conservation including ecological restoration & sustainable mining strategies.

Keywords: *Biodiversity Management, Habitat mosaic, Heterogeneous environment, Mining sites*

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NA

Despite extensive landscape modification associated with mineral extraction, mining areas can also support considerable biological diversity. It act as the local biodiversity refugia where the distinct microhabitats supports specialized flora and fauna. It is therefore essential to develop effective strategies.

Title of the Project

Study of biodiversity at the proposed limestone mining site of TAMIN in Periyanaalur, Ariyalur, Tamil Nadu.

Name of PI(s)

Dr. P. R. Arun

Name of Co-PI(s)

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TAMIN - Tamil Nadu Minerals Ltd.

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2025-2026

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Title of the Project

CAMPA: Recovery of Dugongs and their habitats in India: An integrated Participatory Approach

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Dr. Nehru Prabakaran
Dr. K. Sivakumar

Funding Agency

CAMPA

Project Duration

2016-2026

UAV-Based Population Assessment of Dugongs in Tamil Nadu and Andaman Nicobar Islands, India

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

The dugong (*Dugong dugon*) persists in fragmented populations along the Indian coast, with Tamil Nadu (TN) and Andaman and Nicobar Islands (ANI) representing two major populations in the regions. Assessing the status of populations remain challenging because dugongs occur at low abundance in these two sites and dugong detections through conventional boat surveys are highly limited by the short surfacing duration of the animal. However, Unmanned Aerial Vehicles (UAVs) provide a robust non-invasive approach for assessing the elusive dugong populations.

UAV-based aerial surveys were conducted across major dugong habitats in ANI and TN. In ANI, 222 aerial transects covering 666 km and 49.9 km² were surveyed across occurrence hotspots and adjoining areas. Rani Jhansi Marine National Park recorded the highest encounter rate (0.066 dugongs km⁻¹) and availability-corrected density (1.78 dugongs km⁻²), followed by Mahatma Gandhi Marine National Park (0.023 km⁻¹; 0.62 km⁻²) and North and Middle Andaman (0.018 km⁻¹; 0.49 km⁻²). Overall encounter rate and corrected density were 0.026 dugongs km⁻¹ and 0.68 dugongs km⁻², respectively. No dugongs were detected in Central Nicobar or outside identified hotspots.

In TN, synchronized UAV surveys comprised 96 transects across 48 locations, covering 288 km and 37.44 km². The overall encounter rate was 0.031 dugongs km⁻¹. Following a 50% surface-availability correction, densities were estimated at 0.41 dugongs km⁻² in Palk Bay and 0.56 dugongs km⁻² in the Gulf of Mannar.

The surveys reveal contrasting patterns across the two seascapes. TN supports comparatively extensive and continuous seagrass meadows, whereas ANI is characterized by smaller, and widely separated meadows with limited connectivity; hence, the dugong occurrence is concentrated within discrete hotspots. These findings highlight the importance of seagrass extent, meadow configuration and habitat connectivity in shaping dugong distribution and demonstrate the utility of standardized UAV surveys for long-term monitoring and habitat-based conservation across two of India's most important dugong regions.

Keywords: NA

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What can UAVs reveal about India's dugong populations?
Sagar Rajpurkar shared findings from UAV-based surveys across Tamil Nadu and the Andaman & Nicobar Islands, estimating dugong abundance in occurrence hotspots
#Dugong #MarineConservation #Ecology #CAMPA-Dugong #MarineMammals

India's Wildlife Vision for Viksit Bharat@2047: A Whole-of-Government, Whole-of-Society Approach

Hitesh Ameta, Khushi Soni, Sohom Seal, Lynette Gomes, Karan Bharat Jain, Gautam Talukdar

India's vision of Viksit Bharat@2047 aims to transform the country into a 30 trillion-dollar developed economy while ensuring a secure and sustainable future for its people. As India progresses, safeguarding biodiversity, ecosystems and the services they provide will be essential to sustaining this development. Recognising ecological security as an integral part of national development, the Wildlife Vision Plan for Viksit Bharat@2047 will provide a long-term framework for conserving India's wildlife and natural ecosystems alongside development priorities.

The Vision Plan is being developed through a whole-of-government and whole-of-society approach, bringing together policy analysis, expert inputs and stakeholder consultations. It also draws on existing vision documents of States, Union Territories, Ministries and Departments and considers India's commitments under the Global Biodiversity Framework. The Plan identifies key priorities including strengthening protected and other conserved areas, restoring degraded ecosystems, building climate-resilient landscapes, advancing research and innovation, promoting human-wildlife coexistence, increasing biodiversity financing, strengthening community participation, promoting nature-based solutions and supporting green livelihoods.

The Wildlife Vision Plan for Viksit Bharat@2047 provides a common long-term direction for integrating wildlife and biodiversity conservation into India's development pathway. It emphasises that ecological security is fundamental to a prosperous, resilient and sustainable Viksit Bharat. The Plan therefore seeks to ensure that India's growth is accompanied by responsible stewardship of its natural heritage for present and future generations.

Keywords: conservation planning, nature-positive development, policy integration, biodiversity, ecosystem services, ecological security

Title of the Project

Wildlife Vision
Plan for Viksit
Bharat@2047

Name of PI(s)

Dr. Gautam Talukdar

Name of Co-PI(s)

Dr. Karan Bharat Jain

Funding Agency

MoEFCC

Project Duration

2026-2027

35

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At #ARS2026, Mr. Hitesh Ameta presented a talk on "India's Wildlife Vision for Viksit Bharat@2047: A Whole-of-Government, Whole-of-Society Approach." Aligning #wildlifeconservation with #ViksitBharat@2047 for a nature-positive and resilient India. #ViksitBharat #Biodiversity #Conservation @moefcc @NITIAayog

Speed talk presentation on "India's Wildlife Vision for Viksit Bharat@2047: A Whole-of-Government, Whole-of-Society Approach" by Mr. Hitesh Ameta. Co-creating a holistic, inclusive and forward-looking wildlife vision by consultations and multi-stakeholder engagement for a nature-positive #ViksitBharat@2047 @moefccgoi

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END OF DAY 1



ABSTRACTS

ORAL PRESENTATIONS

DAY 2



Title of the Project

Evaluation of Efficacy of Various Population Estimation Methods for Elephants to Develop Population Monitoring Protocol - Phase II

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Pandey

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Population estimation of elephants in Kaziranga Tiger Reserve: Testing scalability and efficacy of various methods

Anshuman Gogoi, Mukesh Chand

Population monitoring is important to assess if a species’ abundance is stable, declining, or recovering, and to objectively examine the effectiveness of conservation actions. Reliable estimation of Asian elephant (*Elephas maximus*) populations is difficult, as the species ranges widely, lives in complex social groups, and are not always easy to detect. As part of a larger effort to build a population monitoring protocol, we carried out a systematic, block-based photographic capture-recapture survey across a 482 km² area in Kaziranga National Park, Eastern Assam Wildlife Division, Assam. We divided the park into nine survey blocks, each surveyed by one field team. Each team drove through the block daily from 07:00 to 18:00 h for 15 continuous days from 1 February to 15 February 2026 and recorded the sighting locations, time, group size, age-sex composition, and photographs of each elephant sighting.

Our survey recorded 509 elephant sightings, comprising 234 sightings of solitary individuals, predominantly adult males, and 275 sightings of herds containing two or more individuals, with observed group sizes ranging from 2 to 50 elephants. Sightings varied considerably among survey blocks, ranging from 16 to 89, indicating substantial spatial variation in elephant encounters across the study area.

Elephant herds and solitary males identified from photographic records were used to construct separate capture histories for abundance estimation, following approaches applied in previous elephant studies. The study demonstrates the feasibility of a block-based photographic capture-recapture framework for examining patterns of elephant occurrence and detectability and provides a repeatable field protocol for long-term monitoring of elephants in Kaziranga and comparable landscapes.

Keywords: Photographic capture-recapture, Elephas maximus, Population density, Sex-age composition, Survey effort

✉ & 📧 Text

Across 482 km² of Kaziranga, nine teams recorded 509 elephant sightings over 15 days. Photographic capture-recapture surveys tracked herds and solitary males to support a repeatable population-monitoring protocol. #ElephantConservation

How do we estimate elephant populations? In Kaziranga, our teams covered 7,380 km and recorded 509 sightings in 15 days, using photographs to identify herds and solitary males and build capture histories for population estimation. #Kaziranga #Elephants

Influence of resource-driven aggregation on fishing cat population estimation in a mangrove ecosystem

Aritra Roy

The fishing cat (*Prionailurus viverrinus*) is a vulnerable wetland specialist whose declining global population is associated with habitat loss and degradation. Yet, there are very limited studies providing quantitative estimates of fishing cat abundance and density, particularly in mangrove ecosystems. Coringa Wildlife Sanctuary in Andhra Pradesh provides a unique opportunity to study the species within a mangrove landscape where prey resources are concentrated along tidal creeks and channels. We deployed camera traps at 53 locations within 1 km² grids across a 113 km² study area and obtained 1,206 fishing cat captures. Fishing cats were detected at 88.67% of stations, with two to six individuals recorded at a station. Telemetry data from three collared individuals indicated that space use extended 200-500 m beyond stream corridors, while camera placement was restricted near streams.

We used three complementary approaches to estimate abundance and density. Conventional capture-mark-recapture (CMR), independent of spatial sampling design, estimated an abundance of 81 (79.5-87.68). A spatial presence-absence (SPA) model, informed by telemetry-derived space-use parameters and independent of individual identification, estimated a density of 62.82 per 100 km² (54.58-231.95) and an abundance of 100.77 (56-177). Three observers independently identified fishing cats from the same camera-trap dataset and fitted spatially explicit capture-recapture (SECR) models. They identified 75, 79 and 91 unique individuals, yielding density estimates of 87.11 (69.23-109.60), 103.64 (82.69-129.90) and 124.03 (93.06-141.90) per 100 km², corresponding to abundances of 98.22 (78.06-123.58), 116.85 (93.23-146.46) and 129.56 (104.92-159.99), respectively. Activity-centre density surfaces differed significantly among observers.

High capture rates and repeated detections, together with telemetry evidence of broader space use, suggest that fishing cats aggregate around resource-rich stream corridors while maintaining larger and overlapping home ranges. Uncertainty in individual identification, driven by indistinct pelage patterns and image quality, including mud-obscured flanks and suboptimal camera angles and distances, propagated into SECR estimates, producing observer-dependent variation in abundance and density. Given the vulnerable status of fishing cats and their dependence on mangrove-wetland ecosystems, complementary approaches such as CMR, SPA and SECR can provide robust population benchmarks for monitoring and management in deltaic landscapes.

Keywords: *population ecology; camera trapping; spatially explicit capture-recapture (SECR); capture-mark-recapture (CMR); spatial presence-absence (SPA)*

✕ & 📷Text

Influence of resource-driven aggregation on fishing cat population estimation in a mangrove ecosystem #FishingCat #SaveOurMangroves #populationecology #AndhraPradesh

Title of the Project

Ecology and Conservation Perspectives of Fishing Cat (*Prionailurus viverrinus*) in EGREE, Andhra Pradesh

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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

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Counting the Collective: Application of novel methodologies into social carnivore population estimation

Bilal Habib

Reliable population estimation for social species remains a constant challenge in population ecology due to non-independent captures, high cohesion, imperfect detection and heterogeneity in group size, particularly when the species is individually unidentifiable. Researchers across the world have taken multiple methodological approaches to estimating social species, but most of those models remained restricted to particular study sites and data types that constrained their replicability. In this study, we evaluated and compared multiple methodological frameworks for estimating the population size of dholes (*Cuon alpinus*), a highly social and endangered carnivore.

We chose an area with an approximately known abundance and assessed the performance of four approaches using camera trap data: Spatial Capture-Recapture (SCR) for group-living species with individual/group identification, Spatial Presence-Absence (SPA), Integrated Population Models (IPMs) and a novel approach, Cluster-Based Population Model (CBPM), without individual recognition. IPM links ecological processes with observation processes in hierarchical framework to estimate abundance. In contrast, CBPM works on group level detection process of individuals to estimate abundance. Additionally, we applied unmarked estimators (SPA, IPM and CBPM) across seven protected areas in the Vidarbha landscape of Maharashtra, representing a gradient of PA size, prey and large carnivore densities.

We focused on estimating the total abundance, pack sizes and their variation across sites. Dhole pack size varied between 2-13 individuals. Among the methods, SCR exhibited realistic estimates but required individual identification. SPA yielded inconsistent and unrealistic abundance. IPM overestimated abundance slightly when fitted with detection/non-detection data and substantially when fitted with count data across all sites. They were highly sensitive to informative priors, thus depending on the availability of valid information from the study area. CBPM provided the most reliable estimate of total abundance and pack size corrected for imperfect detection with manageable complexity.

We propose an analytical framework for hierarchical cluster-based modelling as a practical tool for estimating populations of social species, with the following assumptions: 1) high cohesion; 2) dependent detections; 3) static activity centre of groups. Our results offer critical insights into methodological approaches and can guide conservation monitoring of social species.

Keywords: *spatial capture-recapture, dhole, integrated population model, spatial presence-absence, hierarchical cluster*

✉ & 📷 Text

Estimating social species is messy-but it doesn't have to be.
We compared SCR, SPA, IPM & a new Cluster-Based Population Model for dholes.
Result? CBPM delivers reliable abundance without individual IDs.
A step forward for monitoring social carnivores.

Baseline Assessment and Conservation Priorities of Coastal and Marine Biodiversity of Goa

Chinmaya Ghanekar, J.A. Johnson

Coastal ecosystems are among the most diverse and dynamic environments, yet comprehensive biodiversity assessments remain limited for many regions along the Indian coast. We conducted an integrated assessment of Goa's coastal and marine biodiversity using field surveys, fish-market observations and marine mammal stranding records. Surveys were conducted at 10 representative coastal stations across North and South Goa from June 2024 to December 2025. Intertidal biodiversity was assessed using replicated belt transects across tidal zones, supplemented by targeted searches of rocky habitats, tide pools and other microhabitats. Fish-market surveys and marine mammal stranding records obtained from local agencies complemented the biodiversity profiling.

A total of 398 species were recorded, with fishes (131 species) and molluscs (130 species) accounting for more than half of the documented diversity. Intertidal surveys recorded 178 species across 19 taxonomic groups, comprising 107 molluscs, 25 arthropods and 23 seaweeds. Species richness varied substantially among stations, with Polem recording the highest richness (101 species), followed by Morjim and Bogmalo (88 species each), while Candolim recorded the lowest (31 species). The intertidal zone exhibited the highest alpha diversity (151 species; $H' = 4.635$), while fine sandy substrates supported the highest recorded richness (120 species).

Fish-market surveys recorded 54 marine species, including 39 fishes, nine crustaceans and six molluscs, highlighting the diversity of marine resources represented in landings. A total of 167 marine mammal stranding events were documented, predominantly involving Indian Ocean humpback dolphins (96) and Indo-Pacific finless porpoises (61). South Goa emerged as a major marine mammal stranding hotspot, with 128 events. The Velsao-Varca-Mobor stretch accounted for 101 strandings (61.2% of all recorded events), identifying it as a priority area for targeted monitoring and further investigation.

This study establishes a baseline of Goa's coastal and marine biodiversity and identifies habitats and locations requiring continued conservation attention. Long-term, coordinated biodiversity monitoring, targeted management of sensitive coastal habitats and marine mammal stranding hotspots, and strengthened collaboration among government agencies, communities and resource users are recommended to support evidence-based coastal conservation and management.

Keywords: Intertidal biodiversity, Marine mammal strandings, Fishery resources

✖ & 📧 Text

Goa's coast harbours remarkable marine biodiversity, with diverse species and communities across coastal habitats. Our study also identifies the a marine mammal stranding hotspot, highlighting priorities for monitoring and conservation. #MarineBiodiversity #Goa

Title of the Project

Coastal and Marine Biodiversity Profiling of Goa State

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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

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Biodiversity Responses to a Changing Himalaya: Long-Term Monitoring and Conservation Prioritization of Freshwater Fishes

Vineet K Dubey, J.A. Johnson

Himalayan freshwater fishes occupy steep thermal, hydrological and elevational gradients, yet their responses to climate change remain poorly resolved because distributions are incompletely documented and dispersal is constrained within dendritic river networks. We examined whether climate-driven redistribution will reorganize taxonomic, phylogenetic and functional diversity, and whether existing conservation networks encompass areas likely to retain biodiversity under future climates. Occurrence records for 116 fish species across the western, central and eastern Himalaya were compiled from field monitoring under the National Mission for Sustaining the Himalayan Ecosystem (2015-2020 and 2021-2026), published literature and global biodiversity databases. We combined ensemble ecological niche models with a 116-tip species-level phylogeny and a weighted 14-trait functional matrix to project distributions under SSP2-4.5 and SSP5-8.5 for 2050. We quantified multidimensional diversity and community turnover, identified biodiversity hotspots and climate-stable refugia, and evaluated their representation within protected areas and dam-influenced river networks. Species models showed high predictive performance (TSS >0.8; AUC >0.7). Present-day richness was concentrated in foothill rivers (>80 species), but these high-richness zones also contained substantial projected losses. Community turnover was strongest across the central and western Himalaya, peaking at 500-1,500 m and exceeding 40% replacement in some rivers, whereas eastern Himalayan assemblages were comparatively stable. Redistribution nevertheless increased mean projected richness by 56.4% under SSP2-4.5 and 82.9% under SSP5-8.5; under SSP5-8.5, mean Faith's phylogenetic diversity and weighted-Gower functional diversity increased by 70.2% and 65.6%, respectively. These aggregate gains concealed marked ecological reassembly: rheophilic strategies declined while generalist-lentic strategies increased, and the freshwater area jointly supporting richness-independent phylogenetic and functional diversity contracted from 12.7% currently to 9.5% under SSP5-8.5. Climate refugia were spatially incongruent with contemporary biodiversity hotspots, with several occurring outside protected areas or overlapping dam-influenced corridors. Climate change is therefore projected to reassemble rather than uniformly impoverish Himalayan fish biodiversity, with gains in climatic suitability masking species replacement, altered ecological strategies and contraction of distinctive assemblages. Foothill and mid-elevation rivers emerge as a critical conservation frontier. Effective climate adaptation will require moving beyond species-rich sites and terrestrial protected-area boundaries towards connected, basin-scale networks that secure climate refugia, multidimensional biodiversity and river connectivity.

Keywords: Climate refugia, Community turnover, Phylogenetic diversity, Functional diversity, Ecological niche modelling

✉ & 📧Text

The rivers may gain species, yet lose something harder to replace. Across the Himalaya, climate change reshuffles communities, erodes distinctive evolutionary and functional assemblages, and leaves some refugia beyond protection.

Seasonal impact of invasive *Lantana camara* on the native vegetation and habitat suitability of Indian gaur in a southern tropical deciduous forest

Subhadra Barik

Introduction/ Context: Non-native floral species invasion has emerged as one of the biggest threats to native vegetation. This often affects ecosystem processes and reduces native habitat quality. *Lantana camara* (hereafter lantana), an aggressive invasive shrub, significantly impacts native biodiversity and critical wildlife habitats in India.

Location: The widespread invasion of lantana is increasingly threatening Bandipur Tiger Reserve (BTR), a part of the Western Ghats, by affecting major habitats of megaherbivores such as Indian gaur (*Bos gaurus*).

Objectives: We investigated the cascading seasonal impacts of lantana on native vegetation and habitat use of gaur by quantifying competitive interactions between native flora and lantana, and mapping the suitable habitats of lantana and gaur.

Methods: We conducted a systematic grid-based ecological survey across BTR during the dry and wet seasons in 2023. We collected the direct and indirect signs of gaur along with vegetation, climatic, topographic, edaphic, and anthropogenic disturbance data from a total of 245 vegetation plots across BTR. We used Artificial Neural Network (ANN) modelling to map suitable habitats of gaur.

Results/ Findings: The highly suitable habitats of gaur ranged from 8.52% (dry season) to 28.35% (wet season). During the dry season, lantana dominated over 19% of native shrub species, whereas its dominance reduced to 10.86% during the wet season. Herb cover, shrub cover, and forest plantations positively influenced gaur habitat suitability and simultaneously facilitated lantana suitability during the dry season. Conversely, these attributes negatively influenced lantana suitability during the wet season. During the dry season, gaur habitat preference was strongly associated with shrub and herb cover, canopy cover, and water availability, whereas forest cover and grassland availability positively influenced gaur distribution during the wet season.

Conclusions/ Implications: The study demonstrates that gaur habitat use and lantana invasion in BTR are strongly influenced by seasonal vegetational and environmental changes. This highlights the need for season-specific monitoring and prioritisation of highly suitable gaur habitats vulnerable to invasion. Lantana control before the dry season, maintenance of water sources, and grasslands could facilitate long-term gaur conservation in BTR.

Keywords: Bandipur Tiger Reserve, Bovidae, interspecific competition, megaherbivore, plant-animal interaction

Title of the Project

Evaluation of suitable habitat of Indian Gaur population with special emphasis on invasive species and wildfire in Bandipur Tiger Reserve, Karnataka

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One “just another plant” and a changing landscape of southern India

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Title of the Project

Assessing the ecosystem services provided by Colonial Nesting Waterbirds in and around select wetlands of Tamil Nadu

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Project Duration

2022-2025

With More Birds Comes More Nutrients? Linking Colonial Waterbird Density to Nutrient Dynamics in Globally Important Wetlands of Tamil Nadu

Alex Jacob, G. V. Gopi

Colonial nesting waterbirds transfer nutrients to freshwater wetlands through the continuous deposition of droppings and other organic materials during breeding, with larger breeding aggregations potentially contributing greater nutrient inputs. Although numerous studies have documented such nutrient inputs, most have focused on estimating nutrient loading, while direct assessments of how nutrient enrichment changes as water passes through breeding wetlands remain limited. We examined whether variation in colonial waterbird density was associated with nutrient enrichment and changes in water quality across nine irrigation wetlands distributed across Tamil Nadu, during the 2023-2024 and 2024-2025 breeding seasons. Wetlands varied considerably in area and hydrological conditions, and four paired control sites without breeding colonies provided a comparative context to evaluate colony-associated enrichment. Inlet and outlet water-quality measurements were collected repeatedly, with water inundation considered to account for hydrological variation. Laboratory analyses of water and sediment provided complementary chemical evidence of nutrient enrichment.

Across 173 field observations, bird density ranged from 0 to 129.1 birds/ha, and increasing bird density was associated with greater inlet-outlet changes in specific conductivity ($\rho = 0.645$), turbidity ($\rho = 0.557$), chlorophyll-a ($\rho = 0.336$), and ammonium ($\rho = 0.397$) among study sites, whereas dissolved oxygen showed no noticeable relationship. These relationships were consistent across both breeding seasons. Laboratory analyses further demonstrated significant inlet-outlet enrichment of ammonium and phosphate (mg L^{-1}). Ammonium enrichment was also greater at study sites supporting breeding colonies than at paired control sites. Moreover, among study sites, ammonium and phosphate enrichment increased with bird density, with the relationship particularly strong for phosphate ($\rho = 0.592$). In the broader repeated field dataset, the positive association between bird density and ammonium enrichment persisted after accounting for water inundation, season, and repeated observations within the site.

Together, these findings provide convergent field and chemical evidence that colonial nesting waterbirds contribute to the localised nutrient inputs and influence wetland nutrient dynamics, with effects most clearly observed in the water column. Recognising these nutrient inputs as part of natural wetland functioning can strengthen waterbird conservation and inform water management in these multifunctional irrigation wetlands.

Keywords: Nutrient enrichment, Irrigation tanks, Wetland water quality, Heronry

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With more birds comes more nutrients? Across 9 globally important irrigation wetlands in Tamil Nadu, including 8 Ramsar Sites, higher waterbird density was linked to greater nutrient enrichment and changes in water quality. Understanding these interactions can help balance waterbird conservation and water management.

Loss of breeding colonies of waterbirds to the decadal land use land cover transformations in the southern India

Rachaveelpula Sreeja, Riaz Sheriff, Tharmalingam Ramesh, Riddhika Kalle

The unprecedented demand for natural resources in the Anthropocene is causing massive changes in land-use land-cover (LULC). The carry-over effect of these LULC changes negatively influences the wetland habitat. In order to improvise the scientific understanding of the spatio-temporal impact of the LULC changes causing deterioration of the breeding habitat of waterbirds, we considered Spot-billed Pelican (*Pelecanus philippensis*) as a model species. We studied the influence of LULC factors on the habitat use, survival and recruitment of Spot-billed Pelican in 29 pelicanries in their southern breeding range of India and utilised the citizen science eBird dataset from 2015-2025, considering the checklist with the maximum count in the six peak breeding months in each pelicanry. We extracted variables on landscape composition, landscape configuration, Landscape Ecological Risk and weather using multiple datasets from Google Earth Engine at 500m, 1000m and 5000m buffers. We performed hierarchical state-space modelling in R program and calculated the conservation priority scores for the pelicanries. Our results highlighted that higher water availability and lower landscape ecological risk were positively associated with their survival. Erratic rainfall in the breeding season negatively influenced their immigration rate. Colonies surrounded by greater water area within a 5 km buffer in 2015, likely reflecting flooding, lowered their initial abundance in the pelicanries. Thirteen of the 29 pelicanries revealed population declines, and the breeding population declined by greater than 80% in nine pelicanries, which were classified as critical conservation sites. Conservation of these critical sites is crucial to avoid the extirpation of the breeding population of Spot-billed Pelican in India and preservation of the breeding habitat for the species also benefits other sympatric colonial nesting birds. Thus, our study urges conservation intervention of these critical sites at landscape level, for the sustenance of the species and management of wetland resources for human use.

Keywords: Conservation Priority Score, Landscape Ecological Risk, Pelicanries, Population trend, Wetland conservation

Title of the Project

Characterization of wetland habitat in a breeding range of Spot-billed Pelican

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Critical breeding sites with drastic population declines were identified for the conservation of Spot-billed Pelican in their southernmost breeding range.

Title of the Project

Understanding elephant conflict issues for suggesting conflict reduction measures Phase II (Odisha, West Bengal, Tamil Nadu, Kerala, Karnataka)

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Stable cores, shifting margins? Can human - elephant conflict be managed by Fences?

Mukesh Chand

Human-elephant conflict management responds to incidents. Conflict intensity assessments often use counts or hotspot maps and rarely examine if conflict centers remain static or dynamic or expand to new areas over time. We used records from Assam, Chhattisgarh, Jharkhand, Odisha, West Bengal, Karnataka, Kerala, and Tamil Nadu, representing north-eastern, east-central, and southern elephant-ranging regions, to examine if conflict shows stable cores with shifting margins.

We combined human-elephant conflict records from 2000 to 2025. The dataset included 8,806 human deaths, 3,608 nonfatal casualties, and 7,850 elephant deaths. We examined seasonal and demographic patterns, mapped hotspots, assessed land-use change and forest fragmentation, and examined the effects of landscape factors. Because reporting periods and definitions differed among states, we treated the results as patterns in recorded incidents rather than comparable conflict rates.

Human casualties were reported from 4,057 villages or localities, but the highest numbers were concentrated in a limited number of divisions and villages. Lower-intensity incidents extended across adjoining forest-farmland-settlement areas, suggesting stable conflict cores surrounded by broader and possibly shifting margins. Of the 7,850 elephant deaths, 2,273 were anthropogenic. Electrocution caused 1,168 deaths, or 51.4% of anthropogenic mortality, followed by poaching (299) and train collisions (251). Together, these three causes accounted for 75.6% of anthropogenic elephant deaths. Landscape factors differed among states, suggesting that one explanation or mitigation measure is unlikely to work everywhere.

From 2000 to 2025, 37 villages with human deaths and 10 with elephant deaths were persistent conflict hotspots. 1656 villages with human deaths and 379 with elephant deaths were classified as emerging hotspots. Disappearing hotspots numbered 202 for human deaths and 67 for elephant deaths, while fluctuating (intermittent) hotspots were the largest group, at 2,247 and 676 for human and elephant deaths, respectively.

Together, these results reveal stable cores surrounded by shifting margins. Conflict continued despite mitigation efforts, but records rarely documented when interventions began, how they were maintained, or how elephants responded. Linking conflict, intervention, and elephant histories could distinguish habituation from barrier failure, food rewards, or displacement. Fences may help locally, but they cannot be the only response to a dynamic, landscape-scale problem.

Keywords: *Coexistence, Fences, Elephants, Conflict, Mitigation, Prioritization*

✉ & 📧 Text

Stable cores, shifting margins? Our 25-year study across 8 Indian states (Assam to Kerala) reveals human-elephant conflict has persistent hotspots and growing emerging zones and shows fences alone can't fix a dynamic, landscape-scale problem. #Coexistence #Elephants #Conservation

An integrated strategy for managing human elephant conflict in transboundary landscape

Richard S. Sangma, Ramesh K. Pandey, Vaibhav Mathur, Aju Matthew George, Bilal Habib, Parag Nigam, Anukul Nath.

Human-elephant conflict (HEC) is a growing conservation challenge in Northeast India, particularly in Assam, where human activities increasingly overlap with elephant habitats. We used an integrated landscape-level approach to examine elephant population dynamics, movement, habitat connectivity, and HEC in the Chirang-Ripu Elephant Reserve, western Assam.

Conflict records from 2011-2024 documented 96 elephant deaths, including 21 anthropogenic, 20 natural, and 55 undetermined deaths. Elephant deaths were mainly concentrated along the forest edges of Bornadi and Khalingduar. During the same period, 221 human casualties, including 144 deaths and 77 injuries, and 2,984 property-damage incidents were recorded. Human casualties and property damage were highest during the monsoon-harvest season.

Using photographic identification, we identified 201 individual elephants and found a strongly female-biased adult population in Udalguri (87 females:19 males) and Manas (63 females:15 males). Encounter histories were developed for 141 adult and subadult elephants and analysed using the POPAN Jolly-Seber model to estimate detection, apparent persistence, entry, and population size. The adult-subadult superpopulation was estimated at 240 individuals (95% CI: 206-293), indicating that about 41% of elephants were not detected during surveys. Elephant entry showed a clear seasonal pattern, peaking during the late monsoon and early post-monsoon period. HEC incidents also increased with occasion-specific elephant abundance, while persistence estimates indicated substantial within-season movement and turnover.

Using biomod2 and Circuitscape, we identified important habitat and connectivity areas along forest-agriculture edges, tea plantations, and riverine habitats, many of which overlapped with conflict hotspots. Group-level tracking revealed repeated use of specific movement routes, while an individual-level case study showed the potential for identifying conflict-associated elephants for targeted management.

Overall, HEC in the Chirang-Ripu Elephant Reserve is shaped by seasonal elephant movement, changes in abundance, habitat connectivity, and increasing overlap with people. Integrating population monitoring, modelling, habitat and connectivity analysis, and conflict data can help identify areas and periods of high conflict risk and support more targeted mitigation and safer coexistence.

Keywords: Human-elephant conflict, Chirang-Ripu Elephant Reserve, landscape connectivity, open-population model

Title of the Project

PAN India Integrated Development of Wildlife Habitats (IDWH)- Red Panda

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Living on the Edge: Red Panda Habitat, Connectivity, and Threats across the Indian Himalaya

Pooja Kumari

The Red panda (*Ailurus fulgens*) is an endangered arboreal carnivore of the Eastern Himalayas, where its survival is increasingly challenged by habitat loss, fragmentation, and anthropogenic pressures. Although protected areas provide important refuges, effective Red panda conservation requires a landscape-level understanding of habitat suitability, connectivity among suitable habitats, and anthropogenic pressures associated with species occurrence.

The study was conducted across protected and non-protected forested areas of West Bengal, Sikkim, and Arunachal Pradesh in the Indian Himalayas.

We assessed habitat suitability, landscape connectivity, and anthropogenic pressures affecting Red panda presence across the landscape.

We developed an ensemble habitat-suitability model by integrating multiple species-distribution modelling algorithms with Red panda occurrence points (primary and secondary) and relevant climatic, topographic, and environmental variables to identify areas of suitable habitat. We then used the habitat suitability map as a conductance layer and to generate focal habitat nodes (>25 sq.km) to model connectivity for the species using Circuitscape. Red-panda occurrence (presence/absence) and 11 anthropogenic and environmental threats were assessed across Sikkim, Arunachal Pradesh, and West Bengal. State-specific binary logistic regression was used to evaluate associations between individual threats and red-panda occurrence.

Ensemble model predicted ~10% of the total northeastern landscape (including India & Bhutan) under highly suitable habitat for the species, and rest of the area to moderate- to low-suitable habitat. Major variables contributing were Elevation, Bio3 (Isothermality), Bio2 (mean diurnal range), and Bio15 (Precipitation Seasonality). High- to moderate-connectivity was found within the habitat of Khangchendzonga NP, Kyongnosla Alpine Sanctuary, Pangolakha WLS, Neora Valley NP, and Jigme Khesar Reserve of Bhutan. And moderate to low connectivity in habitat of West Kameng, Tawang districts, and Sakteng WLS (Bhutan). Most threats showed no significant association with Red Panda occurrence. However, plant disturbance was negatively associated and infrastructure positively associated with occurrence in Sikkim, while landslides showed a positive association in West Bengal.

The findings emphasized landscape-level conservation, prioritizing highly suitable habitats, maintaining connectivity, and integrating Red panda needs into land-use planning. Targeted community-based threat management and transboundary conservation are essential to maintain connected habitats and ensure the long-term survival of Red pandas across the Eastern Himalayas.

Keywords: Ailurus fulgens, Transboundary Conservation, Conservation Planning, Eastern Himalaya

✉ & 📧Text

“Living on the Edge: Red Panda Habitat, Connectivity, and Threats across the Indian Himalaya” was presented. The study intends to identify habitat suitability, transboundary corridors, and threat associations to prioritize conservation areas in this region. #redpanda

ABSTRACTS

SPEED TALKS

DAY 2



50	Title of the Project NA Name of PI(s) NA Name of Co-PI(s) NA Funding Agency NA Project Duration NA ✖ Handle of all authors NA 📧 Handle of all authors NA	Female mate sampling in a Blackbuck lek Akshay A.J., Bilal Habib, Akanksha Rathore Mate choice is a fundamental component of sexual selection, and the behavioural mechanisms underlying how females search for, assess, and ultimately choose potential mates have received extensive attention. However, studies have focused on the final stage of mate choice, while preceding processes of search and assessment remain comparatively less understood, particularly in mammals. Lek systems provide a unique opportunity to examine female mate sampling behaviour because male aggregate spatially while females retain the freedom to sample multiple potential mates. We investigated female mate sampling behaviour in blackbuck at Tal Chhapar Wildlife Sanctuary, between February and April 2026, during the peak mating season. Unmanned Aerial Vehicles (UAV) were used continuously to track focal female from entry to exit of a mapped lek, allowing their movements among male territories and associated courtship interactions to be quantified. Across 69 mate-sampling bouts, females visited an average of 3.45 ± 2.35 territories and spent 37.38 ± 29.14 min on the lek. Observed movement patterns were classified into three sampling motifs: single-territory visits, multiple-territory visits without revisits, and multiple-territory visits with revisits. These motifs differed in time spent on the lek (Kruskal-Wallis $\chi^2 = 12.40$, $n = 69$, $df = 2$, $p = 0.002$), the spatial position of the first territory visited (Kruskal-Wallis $\chi^2 = 6.39$, $n = 69$, $df = 2$, $p = 0.041$), and the spatial position of territories where courtship occurred ($F = 4.49$, $p = 0.018$). Courtship occurrence also varied among sampling motifs. Our findings indicate that female blackbuck exhibit variation in how they sample males within leks, with movement patterns consistent with differences in sampling effort and spatial use of the lek. These patterns may reflect a trade-off between the costs of continued sampling and potential mating benefits. This study provides a baseline for understanding female mate-sampling behaviour in a relatively large, undisturbed blackbuck lek within a predator-absent habitat. <i>Keywords: NA</i> ✖ & 📧Text NA
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Influence of Prey Availability on Habitat Utilization of Mugger Crocodile and Interactions with Fishermen in the Moyar-Bhavanisagar Landscape

Bryan Thompson

Crocodylians are considered to be apex predators of freshwater ecosystems, yet little is known about the influence of prey availability on their habitat utilization. In shared landscapes, human beings often compete with wildlife for resources. Fish are regarded to be the major prey source for crocodiles and are also heavily utilized by multiple human stakeholders. This study aims to measure the influence of prey availability (fish biomass) on the habitat utilization of mugger crocodiles in the Moyar river and to quantify crocodile-caused net damages and the associated costs experienced by fishermen in the Bhavanisagar reservoir. Model selection revealed that fish biomass was the best fit model for crocodile habitat utilization. Questionnaire surveys involving fishermen and experimental net monitoring in the reservoir revealed that the perceived frequency of crocodile-caused net damage is approximately 2.2 times higher than the observed frequency of net damage. The mean estimate of losses experienced by fishermen over a four month period in the reservoir due to crocodiles was calculated to be approximately Rs. 32,029. Nets placed closer to the bank experienced more damage by crocodiles than nets placed further from the bank. This study highlights the importance of prey availability and scientific management and monitoring of habitat for crocodile populations and provides baseline information on fishermen-crocodile conflict and can aid in informing stakeholders in implementing mitigation measures and compensation schemes.

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52	Title of the Project NA Name of PI(s) NA Name of Co-PI(s) NA Funding Agency NA Project Duration NA ✖ Handle of all authors NA 🌐 Handle of all authors NA	Density Estimation and Habitat Selection of Obligate grassland birds in D’Ering Memorial Wildlife Sanctuary, Arunachal Pradesh Sunny Nama, Dr. Anukul Nath, Dr. Sutirtha Dutta Riverine alluvial grasslands of the Brahmaputra floodplains are among the mostdynamic and threatened ecosystems in India. These floodplain grasslands, maintained by annual flooding and sediment deposition, host a unique assemblage of obligate grassland birds dependent on early and midsuccessional habitats. However, quantitative information on the population status and habitat requirements of these species is limited especially in the riverine grasslands of D’Ering Memorial Wildlife Sanctuary, Arunachal Pradesh. In this context, the present study was designed to estimate the population density of obligate grassland birds and to understand the influence of habitat characteristics on their distribution in this floodplain ecosystem. Bird surveys were conducted using passive point counts and call-playback surveys while acoustic triangulation was used to estimate the position of vocalising birds for distance sampling analyses. Passive aural point count produced more precise density estimates than the call play back. Habitat selection was assessed using microhabitat variables, grass species composition, vegetation structure and landscape attributes such as island age and island size. Generalised Linear Models (GLMs) were used to identify habitat variables associated with species occurrence while community level responses were assessed using Non-metric Multidimensional Scaling (NMDS). Grass assemblage was the most important predictor for all four focal species.The study provides the first quantitative baseline on population density and habitat selection of obligate grassland birds from this protected area and offers a foundation for future ecological research and long-term monitoring of riverine grassland ecosystem. <i>Keywords: NA</i> ✖ & 🌐Text NA
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Understanding Habitat Ecology and its Drivers for small carnivores in the Nilgiris

Rohan R

Small carnivores are vital to global food webs, yet they are historically sidelined in conservation efforts. This research evaluates the spatial distribution, habitat use, and intra-guild interactions of small carnivores across a 100 km² human-modified landscape in the Nilgiris, Western Ghats. Through an camera-trapping effort totaling 2,477 trap nights, we captured 63 detections of seven small carnivore species, exclusively within Shola forests, Shola grasslands, and exotic tree patches.

Generalized linear models (GLMs) revealed that key functional groups-such as leopard cats, civets, and mongooses-exhibit non-linear responses to environmental gradients, actively preferring an optimal zone of intermediate remoteness and structural complexity rather than extremes. To minimize competition, the small carnivores rely heavily on spatio-temporal niche partitioning; for instance, species like the leopard cat and mongoose complex overlap spatially but segregate their activity temporally.

Additionally, we synthesized baseline ecological and social data on the elusive endemic Nilgiri Marten (*Martes gwatkinsii*). A 110-respondent community survey documented overwhelmingly positive local conservation attitudes and uncovered two previously unrecorded indigenous names for the species: “Karumverugu” (Tamil) and “Peshku” (Toda). Ultimately, this study highlights that preserving native forest patches is strictly critical for sustaining mesopredator diversity and coexistence in heavily modified landscapes.

Keywords: NA

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54	Title of the Project NA Name of PI(s) NA Name of Co-PI(s) NA Funding Agency NA Project Duration NA ✖ Handle of all authors NA 📧 Handle of all authors NA	What can camera traps reveal about smooth-coated otters? Pritham Balaji Science-based conservation of a species requires practitioners to understand their resource requirements, interactions within its ecosystem, abundance in a population as well as its behaviour. Research on smooth-coated otters have primarily used indirect signs left by them on banks to understand their habitat and diet needs. We do not have information on their abundance or whether indirect signs which have popularly been used in literature can be used to understand their population status in a habitat. The aim of my project is to gain insights into the population status of smooth-coated otters in the rivers of the Himalayan foothills and to understand their diel activity patterns by using underutilised tools such as camera traps for otters. This study provides one of the first quantitative assessments for abundance estimation using a systematic framework and my findings suggest that indirect signs do not act as a reliable indicator for population status. By incorporating camera traps in the study, we were also able to gain insights into their activity patterns in disturbed and undisturbed habitats. <i>Keywords: NA</i> ✖ & 📧Text NA
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Nutritional Ecology, Movement Patterns & Herd Dynamics of Nilgai in Kuno National Park

Tanya Vyas

Despite the various types of research done before on the nilgai, very little focus was given to what actually propelled forth their propensity to raid crops. This study was meant to delve into the factors that could possibly lead to crop raiding by nilgai. In context of the semi-arid zone, nutrition played a factor for nilgai that lived in places overrun by invasives, but did not provide any advantage to nilgai with access to natural vegetation. Through Manley's selection ratios, it was found that nilgai select for savannah, especially at night, proving a negative association with forests. Models run for finer structural cues showed a negative selection for elevations, slope, hills and mixed forests. Avoidance of predators was seen despite lack of actual attack. Herd dynamics showed changes daily and across the breeding season. And finally, many novel behaviours of nilgai were noted; there is potential for further research on their social structure.

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56	Title of the Project NA Name of PI(s) NA Name of Co-PI(s) NA Funding Agency NA Project Duration NA ✖ Handle of all authors NA 📧 Handle of all authors NA	Behavioural responses of rodents and reptiles to woody encroachment in the Thar desert Himani Pawar Woody encroachment alters habitat structure and may modify how animals perceive and respond to predation risk. In the Thar Desert, the expansion of <i>Calotropis procera</i> is transforming open grassland and scrubland habitats, yet its effects on behavioural responses of desert fauna remain poorly understood. This study examined how varying levels of <i>C. procera</i> encroachment influence behavioural responses associated with perceived predation risk in nocturnal rodents and two diurnal lizard species in and around Desert National Park, Jaisalmer. Nocturnal rodent community responses were assessed using giving-up density (GUD) experiments, and responses of diurnal reptiles, <i>i.e.</i>, <i>Acanthodactylus cantoris</i> and <i>Trapelus agilis</i>, were assessed using flight-initiation distance (FID) experiments across no, moderate, and high encroachment levels. Rodents exhibited higher GUDs in non-encroached areas than in moderate and high-encroachment habitats, suggesting greater perceived predation risk in more open conditions. Lizard species showed contrasting escape responses. FID of <i>A. cantoris</i> decreased with increasing encroachment, whereas FID of <i>T. agilis</i> showed no clear response to encroachment and was more strongly associated with distance to the nearest refuge and starting distance. These results indicate that woody encroachment can alter behavioural responses to predation risk in a species-specific manner. Such changes in habitat structure may modify the perceived costs and benefits of movement, foraging, and escape behaviour, with potential consequences for predator-prey interactions and habitat use in desert ecosystems. <i>Keywords:</i> NA ✖ & 📧Text NA
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Breeding Biology and Diet of Tawny Eagles in Desert National Park, Rajasthan

Gayathri Varma

The Tawny Eagle (*Aquila rapax*), is raptor species, found across the Indian subcontinent, widely spread and poorly studied. This study investigates the factors influencing habitat selection, breeding ecology and diet composition of the population of Tawny Eagles in the Thar desert landscape of Rajasthan, India, during the 2025-2026 breeding season. This study aimed to provide a baseline understanding of the species ecology by examining nest-site selection, spatial distribution of nests, parental behaviours, provisioning behaviours and seasonal changes in prey compositions.

Nest search was conducted across approximately, 2000 km², with approximately 4000 km of nest search effort with active nest tree characteristics mapped, and distance between the nest and the protected grasslands calculated. A total of ten nests were found across the study area, with all nest occurring within, or in close proximity to the protected grasslands in Desert National Park. Nine out of ten nests were either inside enclosures or located immediately adjacent to them, with an average distance of 1.56 km from enclosure boundaries. As all the nests were recorded in only a small part of the study area, a rapid population survey was conducted across the study area to determine the spatial distribution of the species across the study area. Raptor surveys covering 734.78 km across 63 grids recorded 14 Tawny Eagle sightings, confined largely to areas where nests had been located.

Diet composition was assessed using pellet analysis, CCTV observations, and drone surveys, resulting in 224 prey records from nine nests. Tawny Eagles showed dietary flexibility, with mammals (41.9%) and reptiles (40.1%) comprising the majority of prey items. Diet composition changed significantly across months and nesting stages, with a shift from mammalian prey during colder months towards increased reptilian prey as temperatures rose and Spiny-tailed Lizards became more available.

Overall, this study highlights the importance of protected grassland habitats within Desert National Park for supporting Tawny Eagle populations by providing suitable nesting structures, reduced disturbance, and productive foraging habitats.

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58	Title of the Project NA Name of PI(s) NA Name of Co-PI(s) NA Funding Agency NA Project Duration NA ✖ Handle of all authors NA 🌐 Handle of all authors NA	Comparing acoustic properties, diel activity pattern and social representation of Golden Jackal between two sites in Dehradun and Haridwar Ashutosh Bajpai The selection pressures which an urban environment induces upon wild animals can lead to significant behavioural shifts over time. In this study, we attempted to understand the effect of urbanisation on acoustic properties and the diel activity pattern of golden jackals. We also explored the social representations of golden jackals in rural and urban environments. The Wildlife Institute of India’s campus was the urban study area. Two ranges of Haridwar Forest Division and Gairdikhata village were the rural study area. We deployed passive acoustic monitoring devices for acoustic data collection, camera traps to understand diel activity patterns and interviews were taken to collect data on people’s perception towards golden jackals. 129 vocalization events (urban-66 and rural 63) were used to compare acoustic parameters. Rural vocalisations were more spectrally brighter, acoustically elaborate and longer compared to urban vocalisations which were more spectrally darker, tonally denser and shorter. Rural jackals were found to be diurnal (59.6% day) while urban jackals were more nocturnal (71.6%). The most important finding from the prototypical quadrant matrix was that “dog-like appearance” was the most salient free listed item with Smith’s Salience Index of 0.577 for rural subjects and 0.176 for urban. The urban subjects mostly ecology/wildlife and conservation professionals structured their representation around ecological and behavioural traits such as howling (0.152), scavenging behaviour (0.150), social animals (0.141) whereas rural respondents structured their representations around ‘attacks poultry’ (0.197), ‘enters home/kitchen’ (0.103), ‘scavenger’ (0.192). The study’s findings suggest that golden jackals adapt to the stressors induced by urban respondents and have contrasting social representation in rural versus urban habitat type. Keywords: NA ✖ & 🌐Text NA
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Comparison of small carnivore detection rates between two different leopard density regimes in Kuno National Park

Srajal Namdev

The study assessed the detection patterns of small carnivores in Kuno National Park using a camera-trap survey conducted across two sampling areas, blocks representing contrasting leopard density regimes. Camera traps were deployed using a systematic 0.5 km² grid design with approximately 700 m spacing between stations to maximise detections of small carnivores while maintaining standardised sampling. A total of ten small carnivore species were targeted, and Relative Abundance Indices (RAI) were calculated to compare detection rates among species and sampling blocks.

Another study design with trail cameras on the same blocks was used to investigate the small carnivore community in two blocks representing high and medium density areas to understand community composition between the two study areas, although some species differed in their relative abundance. Small Indian civet, leopard, and golden jackal were detected more frequently in the high-density block, while jungle cat was relatively more common in the medium-density block.

Spatial and temporal analyses indicated that most small carnivore species shared the same habits and were active during similar periods of the day. However, some species delayed their visits after another carnivore had recently used the same location, suggesting that coexistence is maintained mainly through short-term temporal avoidance rather than by occupying different habitats.

This study also evaluated the effect of camera-trap sampling scale (grid size) on Relative abundance Index (RAI) showed that common species which were detected consistently throughout the camera trap with adequate sample size produced estimates with lower coefficient of variation comparative to rarely detected species which became increasingly variable as sampling scale increased. These findings highlight the importance of using finer camera-trap grids when monitoring smaller species with less movement or home ranges.

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60	Title of the Project NA Name of PI(s) NA Name of Co-PI(s) NA Funding Agency NA Project Duration NA ✖ Handle of all authors NA 🌐 Handle of all authors NA	Freshwater Diatoms in the Sky Islands of the Western Ghats Priyanjali Singh The Palakkad Gap is a major biogeographic discontinuity in the Western Ghats, India, but its influence on freshwater microbial biogeography remains untested. We surveyed diatom assemblages from 40 high-altitude stream sites spanning the Gap to determine whether it structures diatom composition and, if so, to identify the underlying mechanism. A total of 130 taxa were recorded (114 known and 16 putatively undescribed), with only 50.8% shared between the northern and southern sectors; sampling completeness was high in both (Chao1: 89% north, 99% south). Local species richness did not differ between sectors (alpha diversity indices S, H', 1-D, and J'; all $p > 0.30$), but water chemistry did, with pH and specific conductance both significantly elevated in the south (pH 7.36 vs 8.29, $p = 0.009$; EC $p = 0.018$). Statistical tests (PERMANOVA) confirmed that the overall diatom communities in the north and south are significantly different from each other. whereas a Mantel test found no significant relationship between geographic distance and compositional dissimilarity ($r = 0.055$, $p = 0.075$), excluding spatial distance as the primary driver. Indicator species analysis identified seven taxa with significant sector fidelity, including two Western Ghats-endemic genera, <i>Indiconema</i> sp.1 (IndVal = 0.982) and <i>Gandhia</i> sp.1 (IndVal = 0.708) supporting the sectors' species exclusivity. These results indicate the environmental parameters of Palakkad Gap functions as a filter for freshwater diatoms, rather than dispersal limitation, with implications for the generality of the “everything is everywhere” paradigm in microbial biogeography. Keywords: NA ✖ & 🌐Text NA
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Effect of Turbidity on Prey-predator interaction: An Experimental Approach

Cherie Joby Achandy

Freshwater systems are one of the most fragile systems, and are highly influenced by natural disturbances such as floods and by various anthropogenic activities such as removal of riparian vegetation, pollution and water obstructions. Turbidity is one such factor that can alter visual information and influence predator-prey interactions in aquatic ecosystems. Prey fish may respond to reduced visibility by altering their social behaviour, antipredator strategies including shoaling cohesion. Although, globally studies have been done on the abiotic stressor aspect of prey-predator interactions, in Indian context the direct effect of turbidity on active predator-prey encounter or how prey shoaling responds to real predation, threat under turbid conditions has not been studied. This is a distinct gap, in this era of increasing urbanization, freshwater ecosystems face significant threats from various anthropogenic drivers. This in turn influences their vulnerability to predation. This study experimentally investigated how turbidity and predator presence affect shoaling behaviour in zebra danio (*Danio rerio*). A 2 x 2 factorial experiment was conducted with two turbidity conditions (low and high) and two predator contexts (predator absent and predator present). Shoaling cohesion was quantified using the Nearest Neighbour Distance (NND) metric, measured from video recordings at regular time intervals. *Channa gachua* was chosen as the freshwater predator to simulate predation risk. The result indicated that turbidity did not significantly affect NND, whereas predator context had a significant effect on shoaling cohesion. No significant interaction was observed between turbidity and predator presence. These findings indicate that the prey social behaviour may respond more strongly to predator-related cues than to changes in visual conditions within the experimental turbidity range simulated. This study highlights the importance of considering behavioural responses alongside environmental changes when examining predator-prey interactions in freshwater ecosystems.

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ABSTRACTS

POSTER PRESENTATIONS



Asan Landscape: A River of Biodiversity and Ecosystem Services

Amlan Das, Neeraj Mahar, Shivani Barthwal, Pariva Dobriyal, S.A. Hussain, Ruchi Badola

Riverine and adjoining forest ecosystems support diverse biological communities and provide important ecosystem services. The present assessment examined biodiversity and selected ecosystem services associated with the Asan River basin, particularly the HESCO campus and adjoining forest in Dehradun, Uttarakhand. Vegetation was assessed through quadrat-based sampling across 29 plots, recording species composition, density and diversity. Carbon sequestration potential was estimated from woody plant biomass, avifaunal diversity was assessed across forest, agricultural and riverine habitats, and available records were used to examine changes in water discharge. A total of 143 plant species were recorded, comprising 54 trees, 31 shrubs, 40 herbs, 12 climbers and 6 weeds. Among 599 recorded woody individuals, *Shorea robusta* showed the highest stand density (329.31 individuals/ha) and relative density (63.77%). The total estimated carbon sequestration potential was 90.93 Mg/ha, with *Shorea robusta* contributing the largest share (51.32 Mg/ha). The avifaunal assessment documented 120 species, with forest habitat supporting the highest number of species (92), followed by agricultural (42) and riverine (40) habitats. Water-discharge records indicated substantial temporal variation, while intensive monitoring during October 2018-June 2019 showed a declining trend in average flow. Overall, the assessment highlights the ecological significance of the Asan River landscape in supporting plant and avian diversity and contributing to carbon sequestration and water-related ecosystem services. The findings emphasize the importance of continued biodiversity monitoring, habitat conservation and ecological management to sustain these ecological functions.

Keywords: *Vegetation diversity, Avifaunal diversity, Carbon sequestration, Water discharge, Habitat conservation*

✖ & 📷Text

Asan Landscape: A biodiversity assessment recorded 143 plant species and 120 bird species, with an estimated carbon sequestration potential of 90.93 Mg/ha. The findings highlight the Asan River landscape as an important ecosystem supporting biodiversity, carbon storage and water-related services.

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

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Funding Agency

NMCG

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Title of the Project

Youth for Wildlife Alliance (YUWA): A National Programme for Involving Local Youth in Wildlife Conservation

Name of PI(s)

Dr. Pramod P

Name of Co-PI(s)

NA

Funding Agency

MoEFCC

Project Duration

2026-2028

Youth for Wildlife Alliance (YUWA): A National Programme for Involving Local Youth in Wildlife Conservation

Brawin Kumar, Sujith V.G, Swapna Ray, Karthik Thottathil, Stanley J.B and Pramod P.

As announced by the Hon'ble Prime Minister of India during the 7th National Wildlife Board Meeting, SACON-WII has initiated the Project YUWA (Youth for Wildlife Alliance) as national programme to engage youth in wildlife conservation, with a focus on youth living around Protected Areas (PAs). The programme aims to establish a sustained pathway for young people aged 15-25 years to connect with forest and conservation through practical field-based learning and youth-led conservation actions.

To begin with the programme was initiated 10 locations in the southern states of Karnataka, Kerala and Tamil Nadu such as Nilgiris, Mudumalai, Bandipur, Nagarhole, Anamalai, Parambikulam, Wayanad and Silent Valley, Attappadi and Coimbatore landscapes. So far 54 stakeholder interactions were conducted with potential mentors, local youth leaders, Forest Department officers, educational institutions, naturalists, conservation educators, NGOs, EDC/VSS representatives, and tribal and community leaders for mobilising youth for wildlife conservation.

A Mentor Network is being established to provide guidance to youth through conservation activities, ensuring that engagement extends beyond the initial training phase. A mentor workshop, is now in plan to bring together mentors identified across the initiated locations. In the future, YUWA programme plans to work in collaboration with activities of Centre of Excellence of Human Wildlife Conflict at WII-SACON with special focus on the landscapes of priority as directed by the MoEFCC.

Two other programmes in the plan to be conducted are 1. A National fellowship programme for the Youth to conduct Wildlife Conservation based internships for field studies during their school or college days, 2. A National Youth Conclave to provide a platform for youth and mentors from across India to share experiences, showcase outcomes, and strengthen the engagement in wildlife conservation. Selected youth across the country will get chance to meet, interact and learn from eminent scientists and conservation professionals during the conclave.

Keywords: Youth, wildlife conservation, Protected Areas, YUWA, community participation, capacity building, conservation leadership.

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NA

Testing scenarios for estimating the carrying capacity of pilgrimage tracks in Uttarakhand

Rajat Singh Rana

Uttarakhand is home to several important religious sites attracting large numbers of pilgrims/tourists each year. This influx places considerable pressure on the fragile and eco-sensitive Himalayan landscape, which supports a wide range of flora and fauna, including the snow leopard and its prey species.

In this study, we presented different scenarios and cases for estimating the carrying capacity of pilgrimage tracks at key religious sites in Uttarakhand. The scenarios incorporate pilgrims' area and associated transport needs - including equines, palanquins, and kandis/porters as well as considerations of pilgrims' safety. The pilgrimage track route carrying capacity is evaluated under four cases (Case I - IV) corresponding to different levels of service based on area required per pedestrian, ranging from 1-3.5 m² per pedestrian. The area allocated to other users was considered as 8.8 m² for equines, 7.48 m² for palanquins, and 3.58 m² for kandis.

Kedarnath receives the highest pilgrim influx, about 22,000 pilgrims per day during the peak months of May and June, employing thousands of people and equines while placing a high load on the management. In contrast, Hemkund Sahib experiences the lowest pilgrim influx, resulting in a manageable level of pilgrimage pressure. Under Case I (1 m² per pedestrian) and Case II (1.5 m² per pedestrian), with a fixed allocated area of 8.8 m² for equines, 7.48 m² for palanquins, and 3.58 m² for kandis, the current pilgrimage influx operated within the estimated carrying capacity of the tracks at all concerned sites. However, under Case III (2.4 m² per pedestrian) and Case IV (3.5 m² per pedestrian), the pilgrim influx on the Kedarnath route exceeds the estimated track capacity by 17.05% and 56.48%, respectively. The Yamunotri track route follows a similar trend. Therefore, we described site-specific optimum track-use capacities and corresponding flow conditions for each case.

The findings show that carrying capacity of track routes is not constant but varies with the space allocated to pedestrians and the corresponding transport needs. Accordingly, the limiting capacity of each track route should be calculated on a site-specific basis considering available space, pilgrim safety, transport demand and the local environment.

Keywords: Religious tourism, Space-use, Management, Sustainability, Policy

Title of the Project

Scientific Study for the Assessment of Carrying Capacity of Kedarnath, Hemkund Sahib, Gangotri and Yamunotri Tracks of Uttarakhand

Name of PI(s)

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Dr. B. S. Adhikari (Retd.)

Name of Co-PI(s)

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Dr. Tanveer Ahmed

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Uttarakhand
Pollution Control Board

Project Duration

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How many visitors can a pilgrimage track route accommodate? This study tests multiple scenarios to estimate the site-specific carrying capacity based on multiple factors.

How many visitors can a pilgrimage track route accommodate? This study tests different scenarios across multiple cases to estimate the site-specific carrying capacity of pilgrimage routes in Uttarakhand based on space use, track operating periods, and visitor flow characteristics.

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Title of the Project

Assessing Elephant Corridors, Habitat Utilization and Conflict Hotspots in the Bandhavgarh-Sanjay Landscape

Name of PI(s)

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Name of Co-PI(s)

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CAMPA

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Land use changes in the Asian Elephant Habitat in the central Indian landscape

Shivam Sharma

Asian elephants (*Elephas maximus*), locally extinct in Madhya Pradesh since the early twentieth century, re-entered the state in 2018 when a herd of approximately 40 individuals moved from Chhattisgarh into the Bandhavgarh landscape through the Panpatha buffer range. The population subsequently became established, reaching roughly 60 individuals by 2023, with Bandhavgarh Tiger Reserve and the Panpatha buffer range emerging as seasonally important habitats. This recolonization has occurred within an already fragmented landscape, increasing overlap between elephant movements and human-dominated areas, particularly agriculture. Crop raiding has emerged as a key conservation concern, while the death of ten elephants in October 2024 after consuming kodo millet contaminated with cyclopiazonic acid highlighted the wider risks associated with the agriculture-wildlife interface.

We assessed landscape change between 2016, before elephant recolonization, and 2025, following population establishment, using 30-m resolution LULC data across eight land-use classes. Forest cover declined from 54.40% to 51.85%, while shrubland increased from 17.62% to 21.98% and built-up areas nearly doubled from 1.51% to 2.66%. These changes indicate a gradual shift from natural cover toward human-modified and transitional land. Patch Density and Edge Density were also assessed as indicators of fragmentation, although these metrics remain preliminary pending validation.

Overall, the observed LULC changes suggest increasing human influence within the recolonized elephant landscape and provide an important baseline for understanding the emerging human-elephant interface in Bandhavgarh. The study highlights the need to integrate landscape change, elephant movement, and habitat connectivity into future conservation planning.

Keywords: human-elephant conflict, elephant recolonization, landscape fragmentation, Bandhavgarh Tiger Reserve

✉ & 📧 Text

NA

Islands, Genes & Giant: Genetic Diversity and Population Structure of the Reticulated Python (*Malayopython reticulatus*) in the Nicobar Archipelago

Kodeeswaran Velmurugan, Tannu Balhara

The reticulated python (*Malayopython reticulatus*), the world's longest snake, is widely distributed across southeast Asia. In India, its established distribution is primarily restricted to the Nicobar Archipelago, with sporadic records from the northeast India. Reticulated python populations in Nicobar are increasingly exposed to habitat modification and human-wildlife conflict. As genetic information on the island populations remains limited, it is challenging to identify populations of high conservation significance. Hence, we investigated the genetic diversity and population structure of *M. reticulatus* across the Nicobar Archipelago, which covers approximately 1,841 km² and comprises 21 islands grouped into northern, central, and southern island groups.

Biological samples, including shed skins and scales from dead individuals, were collected from eight islands. Mitochondrial cytochrome b (Cyt b) and control-region sequences were amplified and analysed using BioEdit, Sequencer, DnaSP, BEAST, and PopART. For nuclear genetic analysis, 15 microsatellite loci were initially screened, of which 12 were successfully amplified. Fluorescently labelled universal primers (M13, M13R and T7) were used for genotyping, and allele sizes were determined using the LIZ-500 Size Standard on an ABI 3500XL Genetic Analyser and analysed using GeneMarker v2.7.4. Bayesian clustering was performed using STRUCTURE v2.3.4 to infer population structure, while Discriminant Analysis of Principal Components (DAPC) was conducted using the ADEGENET package in R as a complementary, model-free approach.

Mitochondrial Cyt b and control-region analyses identified four haplotypes across the sampled islands. Nuclear microsatellite analysis revealed three distinct genetic clusters. Together, the mitochondrial and nuclear evidence provides an important baseline for genetic diversity and population structure of *M. reticulatus* in the Nicobar archipelago. The observed genetic structuring suggests that island isolation influences the genetic structure of *M. reticulatus* by restricting gene flow between island populations. Therefore, conserving individual island populations is important to prevent the loss of genetically distinct populations and maintain the overall genetic diversity of the species in India.

Keywords: *Haplotype diversity, Microsatellites, Gene flow, Island isolation, Conservation genetics*

✖ & 📄 Text

How does island isolation shape the genetics of the world's longest snake? We identify four mitochondrial haplotypes and three nuclear genetic clusters in reticulated pythons across the Nicobar Archipelago, highlighting distinct populations and conservation connectivity needs.

Title of the Project

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

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Title of the Project

Mangrove monitoring for climate change vulnerability and restoration effectiveness in the critical mangrove sites across Maharashtra

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A Comprehensive Framework for Assessing the Ecological Effectiveness of Mangrove Restoration Interventions

Mayur Fulmali

Context: Mangrove habitat restoration intends to revive degraded habitats and restore them to their former natural state, with success generally measured in terms of species recovery and vegetation growth compared to a natural site. However, restoration success is difficult to quantify, and merely comparing species counts with a natural site may lead to incorrect inferences. Therefore, a key approach to evaluating mangrove restoration effectiveness lies in assessing the ecological functioning of restoration sites.

Objectives: To develop an integrated framework for evaluating mangrove restoration effectiveness based on ecological functioning and functional diversity, and to establish standardized indicators for long-term monitoring of restoration outcomes.

Results/Findings: Relying on functional proxies such as leaf-litter decomposition and faunal larval recruitment is key to assessing habitat functioning. Mangrove leaf litter is an important source of organic matter and nutrients, while larval recruitment indicates the suitability of recovering habitats for supporting faunal biodiversity. Moreover, assessment of faunal functional diversity provides an overview of the recovery of functional roles within the ecosystem. Restoration sites may follow different trajectories of functional recovery, which may not be consistent even among sites of similar restoration age. Functional diversity assessment can therefore provide early signs of functional recovery and offer a more detailed understanding of habitat functioning. Sedimentation and carbon burial can also be used as abiotic functional indicators to assess the effectiveness of restoration interventions.

Conclusions/Implications: Leaf-litter decomposition can be used as a process-based indicator of ecological functioning because it integrates microbial activity, detritivore-mediated processing, organic-matter turnover, and nutrient cycling within mangrove ecosystems. Larval recruitment and faunal functional diversity, along with sedimentation and carbon burial, can provide key indicators for evaluating restoration interventions. This approach has practical implications for managers by helping determine the degree of ecological recovery rather than simply classifying a site as “restored.”

Carnivore, blue carbon, mangrove crabs, tidal forest, ecosystems services, habitat degradation

✉ & 📧Text

When is a restored mangrove truly restored? Our framework assesses ecological recovery through functional diversity, larval recruitment, litter decomposition, and sedimentation.

When and Where Carnivores Overlap: Integrating Spatial Co-occurrence and Temporal Overlap in Balpakram National Park, Meghalaya

Supratik Roy, Nishi Nath Halder, Aiborlang Sawian, Javed G. Momin, Salvador Lyngdoh, Sh. Prashant Mahajan

Balpakram National Park (220 km²) in South Garo Hills, Meghalaya, (25.2627° N, 90.8643° E), elevation ranges from 300-1,000 m and is dominated by Tropical Semi-evergreen and Tropical Moist Deciduous forests. The park supports a rich assemblage of carnivores, yet how these sympatric carnivores persist and their spatio-temporal association patterns remain poorly studied. Understanding how they share time and space in this protected area is essential for future conservation management. This study focused on seven sympatric carnivores: 2 felids (Clouded Leopard, Leopard Cat), 1 mustelid (Yellow-throated Marten), 3 viverrids (Large Indian Civet, Small Indian Civet, Asian Palm Civet), and 1 herpestid (Crab-eating Mongoose). Camera trapping was conducted across a systematic 1×1 km grid covering the entire park from October 2025 to April 2026, with staggered deployments of 153 camera traps at accessible locations, preferentially along animal trails, resulting in a total of 4,721 trap nights. Temporal overlap was estimated using $\Delta 4$ for species pairs with >50 detections for both species and $\Delta 1$ for species pairs with ≤ 50 detections for either one of the species. We also quantified diel activity patterns, and assessed spatial relationships using the probabilistic Veech co-occurrence model and Pianka's spatial overlap index. The guild segregated into a nocturnal cluster, a diurnal pair, and a cathemeral Clouded Leopard. Temporal overlap was generally moderate to high. The highest temporal overlap occurred between Large Indian Civet and Leopard Cat ($\Delta 4 = 0.91$, 95% CI = 0.78-0.93). Yellow-throated Marten and Crab-eating Mongoose showed high temporal overlap ($\Delta 1 = 0.80$, 95% CI = 0.64-0.91) but very low spatial overlap ($\Omega = 0.056$). Clouded Leopard showed cathemeral activity, staying active across multiple time periods, while Small Indian Civet showed the lowest spatial overlap with most other species. Of 21 species pairs, 18 showed random co-occurrence associations, while 3 showed positive co-occurrence. Low detection frequencies for some species may limit the precision of activity and overlap estimates, while the absence of habitat covariates limits interpretation of spatial associations. These findings provide a quantitative baseline for understanding carnivore associations and future multi-species monitoring in Balpakram National Park.

Keywords: *Camera trapping, Diel activity, Carnivore guild, Pianka's overlap index, Northeast India*

Title of the Project

Mammalian Population Assessment in the State of Meghalaya Across Protected and Fragmented Landscapes

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Sharing a landscape, but do carnivores share the same space and time? Our study in Balpakram NP explored patterns of activity, spatial overlap and co-occurrence among seven sympatric carnivores, some pairs showed strong temporal overlap but contrasting spatial patterns. #Balpakram #CarnivoreEcology.

Title of the Project

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

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Assessment of Flood Risk and Ecological Vulnerability in the Paisuni (Mandakini) River Basin Using Multi-sensor Geospatial Data

Arpita Bairagi, Salma Khatun, Smrithy S, Abishek Kishore, Ashish Mani, Gajendra Kumar, Shivani Barthwal, Sk. Zeeshan Ali, Syed Ainul Hussain, Ruchi Badola

Floods are one of the most severe hydro-environmental hazards, especially in regions with steep terrain and intense rainfall conditions, which increases vulnerability. Paisuni (Mandakini) River basin needs detailed assessment because of its susceptibility to intense rainfall and flooding, particularly at the pilgrimage town of Chitrakoot. The flood event of 29th August 2026, resulted in extensive inundation of Chitrakoot. River levels reportedly rose approximately 8-9 m above the danger mark, highlighting the potential severity of flood hazards in the basin. Such extreme events affects settlement, infrastructure as well as riverine habitats and freshwater ecosystems. This study investigates flood hazard areas in the Paisuni River basin, a tributary of the Yamuna River within the larger Ganga River Basin. The Paisuni river flows 130 km through the Vindhya hill range in Madhya Pradesh and having an area about 1626 km², with emphasis on spatial distribution of flood-prone areas, and implications for riverine biodiversity. For, flood hazard mapping, Sentinel-1A Synthetic Aperture Radar (SAR) imagery (2017, 2021, and 2026 at 10 m spatial resolution) was utilized to derive flood-inundated areas and Indian Meteorological Department (IMD) rainfall data (last 10 years) for spatio-temporal rainfall analysis. Additionally, Sentinel-2 multispectral imagery (2017, 2021, and 2026 at 10 m spatial resolution) was used to generate Land Use Land Cover (LULC) to identify agriculture, built-up, vegetation, and water-logged areas. Advanced Land Observing Satellite-Digital Elevation Model (ALOS-DEM; 30m spatial resolution) was incorporated to characterize terrain and delineate drainage network. The resulting flood hazard assessment classified 9.33% (151.68 km²) of the basin as areas at extreme hazard prone, 45.49% (739.73 km²) as areas at high prone, 28.89% (469.65 km²) as moderate and 16.29% (264.94 km²) as low hazard prone areas. Recurrent inundation may cause habitat degradation, vegetation loss and disruption of freshwater ecosystems. The predominance of extreme-hazard areas highlights the need to prioritize flood mitigation and land-use planning in vulnerable parts of the basin while incorporating ecological considerations into flood-management strategies. The study demonstrates value of integrating SAR, multispectral, rainfall, and elevation data for spatial flood-hazard assessment in the Paisuni River basin.

Keywords: Remote Sensing, SAR, ALOS DEM, LULC, Biodiversity, Ganga Basin

✉ & 📧Text

Paisuni (Mandakini) River Basin: Geospatial analysis using Multi-sensor geospatial data reveal 9.33% (151.68 km²) of the 1,626 km² basin under extreme flood hazard prone area, threatening livelihoods, ecosystem and biodiversity. #PaisuniRiver #FloodRisk #GIS

Understanding human-sloth bear interactions and community perspectives from species' westernmost range in India

Utkarsh Prajapati

Human-sloth bear interactions range from routine encounters to incidents causing injury or death. Understanding where, when, and how frequently these interactions occur, together with community perceptions, is essential for conservation planning and effective human-wildlife interface management. We conducted a pilot assessment in villages within a 2-km buffer of Jessore Sloth Bear Sanctuary, Gujarat, Mount Abu Wildlife Sanctuary and Sundha Mata Conservation Reserve, Rajasthan.

Using semi-structured and open-ended questionnaires, we surveyed 661 households across 66 villages to document household characteristics, forest dependence, bear encounters, conflict experiences, and attitudes toward conservation. Generalised additive mixed-effects models were used to identify factors associated with reported encounters.

Encounters differed substantially among landscapes: 78.54% of households in Jessore (n=194/247) reported encounters, compared with 59.86% in Mount Abu (n=176/294) and 55.83% in Sundha Mata (n=67/120). Forest dependence showed the strongest association with encounters, although a few respondents encountered bears while collecting forest products. Encounters occurred primarily along the fringes of settlements and croplands located at the forest edge. Most respondents perceived bears as non-aggressive during encounters. Bears generally retreated during close encounters, while charges were reported infrequently. However, the majority of reported charges resulted in injuries, demonstrating that rare aggressive interactions can have serious consequences. Most respondents perceived that encounters had increased over the past 5 years. Despite frequent encounters, support for sloth bear conservation remained high across landscapes (71-82%). However, only 30% were aware of compensation schemes.

Our findings suggest that encounter frequency alone is an incomplete measure of human-sloth bear conflict risk. Risk also depends on encounter context and outcomes. Frequent encounters may represent routine coexistence, while less frequent encounters under high-risk conditions may lead to more severe consequences. These findings will help in managing human-sloth bear interface by identifying high-risk areas and interaction contexts, which will ultimately inform landscape-specific actions to reduce negative interactions and promote long-term human-sloth bear coexistence.

Keyword: interface management, conflict, tolerance, human dimension.

✖ & 📄 Text

From encounters to coexistence: a pilot assessment across 66 villages in the westernmost range of sloth bears in India examines human-bear interactions, community perceptions, and conflict risks, strengthening evidence for conservation under #ProjectSlothBear.

Title of the Project

Conservation and Management of Sloth Bear in India - A Landscape based Initiative

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Title of the Project

Diversity and population status of snakes in selected protected areas of Madhya Pradesh

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Can we monitor snakes in our protected areas - A case study from Madhya Pradesh

Isaac Rayen, Mayank Bagchi

Introduction

Snakes are important components of terrestrial ecosystems, contributing substantially to food-web regulation and ecosystem functioning. However, information on their diversity, population status and spatial distribution remains limited in several protected areas of Madhya Pradesh. The present study aims to assess species richness, relative abundance, and distribution along with habitat preferences across selected protected areas of the state. Multiple complementary approaches were implemented to improve species detection across different habitats and activity periods.

Location

Based on the vegetation types of Madhya Pradesh, five areas were chosen namely, Gandhi sagar WLS, Kanha TR, Satpura TR, Panna TR and Amarkantak biosphere reserve.

Method

Snake records were collected through road-cruising surveys, visual encounter surveys, rescue records, photographic records shared through whatsapp groups by forest department field staff, and opportunistic observations. Geographic coordinates and relevant habitat parameters were recorded wherever available. The compiled dataset was used to estimate species richness, relative abundance and occurrence patterns, while survey effort will be quantified to assess sampling intensity and detection across study sites.

Result

A total of approximately 472 snake records were compiled, comprising 176 road-cruising records, 32 rescue-call records, 60 photographic records and 50 opportunistic records. These records provide a substantial preliminary dataset for assessing snake assemblages across selected protected areas. The combined dataset of this study was analysed to determine species richness (29), relative abundance for each species where *Fowlea piscator* scores the most in all the five areas and patterns of occurrence, along with the overall effort (5,590 km drive) contributed by the survey team. Spatially referenced records will further facilitate assessment of species distribution across the study landscapes.

Conclusion

The integration of standardized field surveys with forest staff-based photographic and rescue records provides a comprehensive approach for documenting snake diversity. This multi-method approach improves the detection of less frequently encountered species and provides valuable baseline information on snake assemblages, occurrence and their distribution. The findings are expected to support future monitoring, identification of priority areas and development of evidence-based conservation strategies for snakes in Madhya Pradesh.

Keywords: Snakes, Biodiversity, Monitoring, Occurrence, Population status

✉ & 📧 Text

A study to look into the relative abundance, species richness and occurrence of snakes across different habitats of Madhya Pradesh.

What lies inside predicted range? Habitat composition of the clouded leopard (*Neofelis nebulosa*) across North East India

Sneha Pandey

The clouded leopard (*Neofelis nebulosa*) is a Vulnerable, forest-dependent felid whose Indian range lies almost entirely within Northeast India and the Eastern Himalaya. Recent modelling has predicted where the species is likely to occur, but the land cover composition within these predicted areas remains poorly quantified, limiting its management use. We restricted our land use and land cover classification to the highest-suitability zones delineated by a published species distribution model, mapping ten classes from Landsat 8 OLI imagery from October 2025 in Google Earth Engine. A Random Forest classifier with 100 trees was trained on manually digitized samples from high-resolution imagery; classified maps were refined using a 3×3 majority filter and visual correction, then validated against an independent reference dataset. Forests dominated the suitable habitat, covering 15,401 km², or 85% of the 18,027 km² mapped across nine states. Arunachal Pradesh (4,712 km²), Assam (3,171 km²) and Sikkim (2,011 km²) held the largest forest extents, while grasslands and water bodies in Assam and croplands in Sikkim formed the principal secondary cover. Within 67 protected areas the forest proportion was higher at 89%, led by Namdapha (1,184 km²), Manas (1,168 km²) and Khangchendzonga (647 km²). Built-up land, barren land and shifting cultivation together occupied less than 1%, indicating limited conversion within core habitat. These results identify forested reserves of Arunachal Pradesh and Assam as principal refugia and provide a spatially explicit baseline for tracking habitat loss and fragmentation.

Keywords: Eastern Himalaya, Google Earth Engine, protected areas, remote sensing, shifting cultivation, species distribution modelling

✂ & 📷 Text

Unraveling the clouded leopard's habitat in NE India! Our poster at @wii_india Annual Research Seminar has the answers.

Using #GoogleEarthEngine, we mapped the habitats in high-suitability zones Stay tuned for more on how we can map & protect the clouded leopard's habitat! #EasternHimalaya #mappinghabitats

Title of the Project

PAN India:
Assessment and
Monitoring of
Endangered Species
under the Integrated
Development of
Wildlife Habitats
IDWH: Select habitat
monitoring of critical
endangered species

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Title of the Project

Preparation of Comprehensive Site-Specific Wildlife Management Plan for Sijimali Bauxite Mines in Rayagada Forest Division & Kalahandi (South) Forest Division, Odisha

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Glance from the Eastern Ghats: Establishing a Biodiversity Baseline for Sijimali, Odisha

Saibal Ghosh, Arjun A.C., Dibyajit Parida, Diksha Nagarkoti, Shradhanjali Samal, Vanki Sethu Pravallika, G. V. Gopi

Rapid economic development and increasing energy demands have intensified pressure on natural ecosystems, often resulting in substantial ecological and biodiversity costs. Open-cast mining is of particular concern in forested landscapes, where vegetation clearance, habitat loss, fragmentation, and altered landscape connectivity can adversely affect wildlife and ecosystem functioning. Against this backdrop, the present study aims to establish a baseline of biodiversity in the Sijimali landscape of Odisha to support the preparation of a comprehensive, site-specific Wildlife Management Plan.

The study area encompasses the proposed Sijimali mining area and a 10-km radial buffer, extending across the Rayagada and Kalahandi (South) Forest Divisions. A preliminary multi-taxa biodiversity assessment was undertaken in August 2026 through reconnaissance surveys and grid-based sampling across representative habitat types. The assessment documented 18 herpetofaunal, 10 mammalian, 86 avian, and 78 plant species (comprising 52 trees, 11 shrubs, 7 herbs, 6 grasses, and 2 climbers). Notably, three species of conservation significance were recorded, including two endangered and one vulnerable species.

These preliminary findings indicate that the Sijimali landscape supports considerable biological diversity and encompasses habitats of conservation importance. However, increasing anthropogenic pressure, such as industrial development, recurrent forest fires, and jhoom (shifting) cultivation, contributes to habitat degradation, fragmentation, and declining ecological connectivity. As the biodiversity assessment progresses, additional multi-season and multi-taxa surveys will strengthen the baseline database and improve understanding of species distributions, habitat associations, and ecological priorities. The integrated findings will ultimately inform an evidence-based, comprehensive, and site-specific wildlife management plan aimed at balancing developmental requirements with long-term biodiversity conservation in the Eastern Ghats landscape.

Keywords: Biodiversity assessment, Sijimali Bauxite landscape, Wildlife management, Habitat degradation, Human-wildlife coexistence

✉ & 📧 Text

A preliminary biodiversity assessment in Odisha's Sijimali landscape for preparation of comprehensive site-specific Wildlife Management Plan.

Little Guardians of the Ganga: Basin-Scale Conservation Education through the Bal Ganga Prahari Initiative

Anshul Bhawsar

The Ganga River supports exceptional aquatic and riparian biodiversity while sustaining livelihoods, agriculture, and cultural practices of hundreds of millions of people. However, increasing anthropogenic pressures necessitate integrated conservation approaches that combine ecological management with sustained public engagement and conservation education. Under the National Mission for Clean Ganga (NMCG), the Wildlife Institute of India (WII), through the WII-NMCG project, has advanced conservation education as an important component of aquatic biodiversity conservation. This study presents the implementation and outcomes of the Bal Ganga Prahari (BGP) Programme as a basin-scale model for strengthening ecological literacy, conservation values, and stewardship among school communities. Between 2020 and 2026, the programme was implemented across eleven Ganga Basin states, targeting schools and communities in river-influenced landscapes. The programme was structured around five founding objectives and aligned with the National Education Policy (NEP) 2020 and experiential-learning pedagogy. A dual framework integrated localized school-based interventions, including student enrolment, BGP Corners and interpretation centres, with mass-outreach platforms such as melas, radio talks, exhibitions, social media, and street theatre. Schools were identified through standardized reconnaissance surveys, with priority given to government schools located approximately 5-8 km from the riverbank. The methodology incorporated baseline reconnaissance, stakeholder consultations, structured sensitization and experiential-learning activities, teacher capacity-building, establishment of interpretation spaces, and pre- and post-intervention assessments to evaluate changes in knowledge and conservation awareness. Programme implementation and outreach records were used to quantify participation, institutional coverage, and engagement. The program engaged 736 schools, reaching 400,523 students and 9,927 teachers. A total of 48 BGP Corners and 118 Jalmala Samvaad corners were established. Capacity-building initiatives trained 961 in-service and 523 pre-service teachers, while large-scale outreach, including Mahakumbh Mela 2025 and allied campaigns, sensitized millions. Participating students demonstrated gains in knowledge related to aquatic biodiversity, cultural heritage, and conservation values. The BGP Programme demonstrates the potential of a developmentally sequenced, NEP-aligned model integrating formal education, experiential learning, and non-formal outreach. By connecting localized learning with basin-scale public engagement, the initiative offers a scalable and potentially replicable framework for strengthening ecological literacy and conservation stewardship across river basins.

Keywords: Conservation education, Ganga River Basin, Biodiversity conservation, School students & teachers, Bal Ganga Prahari, NEP 2020

✖ & 📍Text

“Little Guardians of the Ganga Showcasing basin-scale conservation education through the Bal Ganga Prahari Initiative. Engaging 736 schools & millions via outreach for ecological literacy. Poster by Anshul Bhawsar

Through the Bal Ganga Prahari Initiative, we empowered 736 schools, 400K+ students, & millions via outreach to protect river biodiversity. Poster presented by Anshul Bhawsar

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

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Funding Agency

National Mission for Clean Ganga (NMCG)

Project Duration

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Title of the Project
Strengthening
the Conservation
Status of the Bengal
Florican (*Houbaropsis
bengalensis*) through
Research and
Capacity Building in
Assam

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Project Duration
2026-2027

Conservation Challenges of Critically Endangered Bengal
Florican (*Houbaropsis bengalensis*, J.F. Gmelin, 1789) in Multi-
use Landscape of North-East India

Saurav Das

Protected areas are cornerstones of global biodiversity conservation. However, as habitat loss continues to threaten biodiversity, many species now persist in human-modified landscapes, including agricultural land. Once widely distributed across the Terai, dooars and Brahmaputra floodplains, the Critically Endangered Bengal Florican (*Houbaropsis bengalensis*) is now largely confined to protected area with peculiar disjunct distribution. One population, however, has persisted for over two decades outside any protected area, at Koklabari Agricultural Farm (KAF), Assam, with an estimated 12 breeding males by 2025. We used camera trapping and questionnaires to characterise the wildlife assemblages, threats, florican activity related to livestock and people and local attitudes toward the species. 18 camera traps (391 trap-days) recorded total 17 vertebrate taxa. About 75% of the capture were domestic related including cattle, human, buffalo etc. Florican temporal overlap was moderate with cattle and people; with joint activity peaked at approximately 08:22 and 15:00 with cattle, and 09:23 and 15:00 with people. Interviews with 50 residents found widespread awareness (96%) and support for protection (98%) and pesticide use near-universal pesticide use (98%). Dog ownership was reported by 13 of 50 respondents (26%), all of whose dogs were free-roaming; a minority (30.76) reported their dogs entering agricultural fields. These findings show that low-intensity, actively farmed landscapes with awareness among local farmers can support Bengal Florican populations. Regulating pesticide use should therefore be central to conservation planning at KAF, alongside monitoring free-ranging dogs and cattle as potential disturbance sources. More broadly, our results argue for recognising low-intensity agricultural mosaics as complementary conservation units within the recovery planning for the Bengal Florican, alongside the protected grasslands on which the species’ survival currently depends.

Keywords: Bengal Florican, *Houbaropsis bengalensis*, agricultural landscape, anthropogenic threats, conservation outside protected areas

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NA

Status of blackbuck and its associated conflict in and around the Kaimoor Wildlife Sanctuary (KWLS), Mirzapur, Uttar Pradesh, India

Roshan Yadav, Shubham Singh, Vamika Sharma, Tapas Mihir, Tanveer Ahmed

Kaimoor Wildlife Sanctuary located in the south-eastern part of Uttar Pradesh, supports populations of various grassland herbivores, including the blackbuck (*Antelope cervicapra*). The blackbuck population is threatened by low grassland cover, habitat degradation due to development activities, and hunting pressure, which may affect its demographic structure. The limited availability of suitable habitat may also drive blackbuck to feed on the agricultural field crops, resulting in crop damages and potentially generating negative attitudes among the local communities and villager's towards its conservation. Therefore, in this study, we assessed the status of blackbuck and human-blackbuck conflict in the Halia and Ghorawal ranges of Kaimoor Wildlife Sanctuary between April and August 2026.

A total of 37 transects was surveyed across the study area, while 198 semi-structured, open-ended interviews were conducted to determine the status of blackbuck and human-blackbuck conflict. A total of 275 blackbuck individuals were sighted in 8 different groups, with an average group size of approximately 17 individuals. The encounter rate was 7.43 individual / km in Halia, and Ghorawal range with the difference potentially reflecting variation in habitat availability, water scarcity, grassland cover, and anthropogenic pressure. The observed male to female ratio was 1:1.9, the female to young ratio was 1:1.56, and the male to young was 1:2.95.

About 70 % of the villagers reported experiencing conflict with blackbuck, with the highest conflict recorded in Majhgaon, Matihara, Devghata Pandey, Visundhari, and Padari villages.

Local communities also reported incidents of blackbuck hunting. Therefore, the Forest Department should strengthen protection measures through effective water holes management, a real-time monitoring and surveillance system, regular patrolling to prevent hunting, protect of blackbuck populations and their habitat within and around Kaimoor Wildlife Sanctuary.

Strengthening these measures will be important for reducing human-blackbuck conflict and support and long term conservation of the species and its habitat.

Keywords: *Grassland herbivore, anthropogenic pressure, Age-sex, Population, Real-time Monitoring.*

Title of the Project

Assessing the status of blackbuck and human wildlife conflict in and around Kaimoor Wildlife Sanctuary, (KWLS), Mirzapur, Uttar Pradesh, India

Name of PI(s)

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Name of Co-PI(s)

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Funding Agency

Uttar Pradesh Forest Department

Project Duration

2026-2027

✖ & 📄 Text

A field study on Blackbuck conservation in Kaimoor Wildlife Sanctuary, focusing on population status, habitat challenges, and human-wildlife conflict. The study highlights the need for strengthen habitat protection, monitoring, patrolling, and community participation for effective conservation.

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Title of the Project

Assessment and Monitoring of Biodiversity Values in the Saranda Forest Division, Jharkhand

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Funding Agency

Jharkhand Forest Department

Project Duration

2023-2027

Landscape scale above-ground biomass and carbon stock assessment of Saranda Forest Division using field inventory, canopy height models and GEDI data

Abhishek Gupta, Abhishek Shukla, Prashant Mahajan

The Saranda Forest Division (approx. 850 km²) in Jharkhand is one of the largest contiguous Shorea robusta-dominated forests in Asia, representing a significant carbon stock that has not been adequately quantified. Accurate landscape-scale biomass assessment is important for forest management, REDD+ implementation and the nation's greenhouse gas reporting. However, in eastern Indian forests, biomass estimation mainly relies on plot-based inventories or optical index (e.g., NDVI/EVI) based spatial extrapolation, with limited predictive accuracy. To address this gap, this study presents an integrated framework that combines field inventory, a multi-spectral satellite dataset, multi-resolution canopy height models, and a spaceborne LiDAR (GEDI) dataset to estimate above-ground biomass (AGB) and carbon stock across the Saranda landscape.

A field vegetation survey was conducted across 754 square plots (10m X 10m) within 190 grids at 1km X 1km spacing. Tree-level AGB was estimated from diameter at breast height (DBH) using species-specific local volume equations (FSI, 1996), wood density, and biomass expansion factor (BEF). Plot-level AGB estimates were used as training data for a Random Forest regression model incorporating the Meta 1m and ETH Global Canopy height (10m) models, Sentinel-2-derived spectral indices, and terrain variables from NASADEM (SRTM-30m). This was used to generate a wall-to-wall AGB map for the Saranda Forest Division landscape. Independent validation of the predicted AGB map was done against GEDI L4A above-ground biomass density (AGBD v2.1) at available footprint locations. Carbon stocks were estimated from the predicted AGB map using carbon fractions, according to the guidelines established in the IPCC 2006.

This study expected to produce: (i) a spatially explicit wall to wall AGB map for Saranda landscape, enabling identification of high biomass zones and forest degradation hotspots which is important for prioritising conservation efforts; (ii) a quantified carbon stock estimate and total landscape level carbon storage, relevant to REDD+ accounting; (iii) a comparative assessment of Meta 1m and ETH 10m canopy height model performance in predicting AGB. These outputs provide the first multi-source, landscape-scale carbon baseline for Saranda Forest Division, with direct relevance to data-driven forest management and climate mitigation policy in eastern India.

Keywords: Above Ground Biomass, Carbon Stock, Random Forest, GEDI

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Saranda holds one of India's largest Sal forests - but how much carbon? We combined 754 field plots, multi-resolution canopy height models to map biomass across the landscape and independently validated using spaceborne LiDAR (GEDI) dataset - a first landscape-scale carbon baseline for REDD+ & forest management.

Rangewide Estimation of Riverine and Estuarine Dolphins-2nd Cycle: Progress and Plan

Hiyashri Sarma, Vijay Pratap Singh, Merin Jacob, Gargi Roy Choudhury, Gautam Singh, Surojit Moitra, Sunny Deori, Vineet Singh, Abdul Wakid, Lallianpuii Kawlani, Vishnupriya Kolipakam

Reliable information on population status and distribution is fundamental to the effective conservation and management of aquatic megafauna. India supports important populations of the Gangetic dolphin (*Platanista gangetica*), Indus dolphin (*Platanista minor*), and Irrawaddy dolphin (*Orcaella brevirostris*) across diverse freshwater, estuarine, and coastal ecosystems. Building upon the first national assessment conducted during 2021-2023, the second cycle of the Rangewide Estimation exercise aims to generate updated information on the occurrence, abundance, distribution, and habitat characteristics of these cetaceans across their known and potential habitats across India. Standardised boat-based surveys are being conducted across major river systems, tributaries, estuarine stretches, and coastal habitats to document dolphin distribution, habitat characteristics, and associated aquatic biodiversity. The assessment also aims to identify critical habitats, distribution gaps, potential threats, and priority areas for conservation intervention, while strengthening long-term monitoring capacity through training programmes for Forest Department personnel and partner organisations. The first cycle estimated 6,327 (5,980-6,691) river dolphins across 8,507 km of surveyed rivers spanning seven states. The first phase of this cycle was completed in January -March 2026 covering Ganga, Bhagirathi-Hooghly, Rupnarayan and its tributaries spanning across 4 states with a total of 2438 km river length. The ongoing exercise is planned to encompass approximately 10,000 km of riverine and estuarine habitats within the ranges of the three focal species. The information generated will contribute to evaluate changes since the previous assessment and will provide an essential scientific basis for conservation planning, management interventions, and policy development.

Keywords: *Ganges River Dolphin, Indus River Dolphin, Irrawaddy Dolphin, Population Estimation, Cetacean*

✉ & 📧 Text

Presented the ongoing work on India's second national assessment of riverine and estuarine dolphins, expanding standardised surveys to track abundance, distribution, habitat and threats-strengthening long-term monitoring and conservation of aquatic cetaceans.

Title of the Project

Rangewide Estimation of Riverine and Estuarine Dolphins-2nd Cycle

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Project Duration

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Title of the Project

Monitoring Tigers, copredators, prey and their habitat in India

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The Conservation Legacy - Sixth Cycle of All India Tiger Monitoring

Tiger Cell Team

The All India Tiger Estimation (AITE), initiated in 2006 and conducted every four years under the National Tiger Conservation Authority (NTCA) and the Wildlife Institute of India (WII), is the world’s largest scientifically designed carnivore monitoring programme. The Fifth Cycle (2022) had deployed over 32,000 camera traps and recorded nearly 4.7 crore wildlife photographs, yielding an estimate of 3,682 tigers, then a new national record. Building on this legacy, the ongoing Sixth Cycle (AITE 2026) marks a new era in scale, technology integration, and institutional collaboration. Preparatory work commenced with a national meeting of State Nodal Officers, followed by cascading Regional Landscape-level Training of Trainers across India’s five major tiger landscapes, resulting in the training of over 35,000 frontline personnel, among the largest capacity-building efforts in global wildlife monitoring history. The cycle has also expanded geographically, with Gujarat and Sikkim following confirmed tiger presence, supported by region-specific training programmes. Field implementation is projected to establish over 50,000 camera-trap stations, surpassing previous global benchmarks, while digital tools such as M-STrIPES Ecological and Polygon applications are enabling real-time, standardized data capture across ecologically diverse landscapes. With sampling substantially complete, approximately 150 researchers are currently processing over five crore camera-trap images using AI-assisted classification and expert verification. This study presents the methodological advances, capacity-building achievements, and preliminary progress of AITE 2026, situating the exercise within the historical trajectory of India’s tiger monitoring programme and highlighting its implications for corridor connectivity, prey estimation, and forest ecosystem health, with the final report expected in 2027.

Keywords: All India Tiger Estimation, NTCA, Wildlife Institute of India, camera-trap survey, M-STrIPES, capacity building, tiger landscapes, population monitoring, corridor connectivity, AI-assisted image classification

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AITE 2026 marks a new era in tiger monitoring. Building on 3,682 tigers in 2022, the Sixth Cycle has trained 35,000+ frontline personnel, expanded to Gujarat & Sikkim, and is deploying 50,000+ camera traps. 5+ crore images are being processed with AI.

Characterising Functional Strategies and Trait Space of Freshwater Macroinvertebrates Across Streams of the Eastern Himalaya.

Meghavi Purohit, Sameera Hindalekar, Vineet Dubey, J.A. Johnson

Indian Himalayan streams harbour steep elevational and environmental gradients and support functionally diverse macroinvertebrate communities. Our study examines functional trait composition across an elevational gradient to characterize functional strategies among freshwater macroinvertebrate communities. Our study was conducted from 2023 to 2026 across a 92 km stretch of river within the West Kameng Basin, Arunachal Pradesh, covering elevations from 400 to 4500 masl and an area of approximately 3800 km². The study aimed to characterize changes in functional trait composition and diversity along elevation and assess how functional strategies vary among macroinvertebrate communities with increasing elevational separation. Macroinvertebrate sampling followed a downstream-to-upstream approach at 500 m intervals in higher-order streams and 200 m intervals in lower-order streams. Twenty-five environmental parameters of stream habitat were recorded. Macroinvertebrates were identified to family level and assigned functional traits. Community-weighted mean (CWM) trait composition was examined along elevation, while Principal Coordinates Analysis (PCoA) characterized functional trait space. Functional diversity was assessed using multiple indices. Functional beta diversity was partitioned into turnover and nestedness, and Mantel tests assessed relationships between functional dissimilarity and elevational distance. The dataset comprised 122 sites and 81 macroinvertebrate families spanning 400- 4500 masl. CWM analysis revealed distinct functional shifts, with higher elevations favouring univoltine, shredding, and cold-associated strategies, while lower elevations showed greater representation of predatory, multivoltine, and warm-associated strategies. Mid-elevations showed comparatively high representation of several trait modalities. PCoA1 and PCoA2 explained 23.18% and 11.65% of functional variation, respectively. Mean functional beta diversity was 0.456, comprising 47.4% turnover and 52.6% nestedness. Functional dissimilarity increased significantly with elevational distance ($p = 0.0002$), with both turnover ($p = 0.0011$) and nestedness ($p = 0.0157$) contributing to this pattern. Together, these results reveal a clear elevational shift from cold-associated, univoltine and shredding strategies at higher elevations towards warm-associated, multivoltine and predatory strategies at lower elevations, accompanied by increasing functional dissimilarity with elevational distance. The observed functional differentiation across elevations highlights the importance of conserving diverse freshwater habitats that support distinct macroinvertebrate functional strategies.

Keywords: Aquatic Insects, Adaptive features, Functional Niches, Elevational Gradient

✖ & 📷 Text

How do freshwater macroinvertebrates adapt to steep Himalayan elevation gradients? Our study explores shifts in functional strategies, trait space and beta diversity across the West Kameng River Basin, Arunachal Pradesh.
#FreshwaterEcology #FunctionalEcology#AquaticInsects #EasternHimalaya

Title of the Project

Assessment and monitoring of Climate Change effects on Wildlife species and ecosystems for developing adaptation strategies in the India Himalayan region (DST-NMSHE Phase II)

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Title of the Project

Bird hazard risk assessment for the proposed International Airport, Great Nicobar Island

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Project Duration

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Metal and Feathers: Assessing potential bird hazard risk to aviation in Great Nicobar Island

Swethakrishna V K, Dhananjay Pandit, Smrithi U.M., Prateek Dey, Pramod P

Our study was undertaken to characterise the avifaunal community around the proposed International airport in Great Nicobar Island.

Bird surveys were conducted using systematic point counts in a 10 km radius around the proposed airport coordinate centre. The 10 km zone was further subdivided into three concentric buffer zones (0-2 km, 2-5 km, and 5-10 km) from the centre of the airport runway. For systematic study, each buffer zone was further subdivided into 500m × 500m grid cells using GIS. Point counts were conducted from the centroid of each grid. 75% of the grids in the 0-2 km zone, 50% of the grids in the 2-5 km zone, and 25% of the grids in the 5-10 km zone were randomly surveyed to ensure representative coverage of the bird assemblages. Habitat and vegetation assessments were also undertaken to document vegetation structure, habitat characteristics, and potential bird-attracting resources.

The preliminary survey resulted in a total of 102 bird species being recorded across the Island, comprising 5,787 individual detections. 81 species were recorded in the 0-2 km zone, 68 species in the 2-5 km zone and 48 species in the 5-10 km zone. The study recorded diverse assemblages associated with different habitat types, with wetlands and coastal habitats providing important foraging and roosting opportunities for waterbirds and other shore-associated species. Forest habitats supported forest-associated species, including endemic and specialist birds, while plantations, open lands, and settlements supported generalist species. Vegetation assessments further identified habitat characteristics that may influence bird occurrence and habitat use.

Keywords: Bird hazard, bird-aircraft strike, Great Nicobar Island, proposed airport, avifaunal diversity, habitat assessment, aviation safety.

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Our study was undertaken to characterise the avifaunal community around the proposed International airport in Great Nicobar Island.

Elevational Patterns in Fish Assemblages and Seasonal Life-History Dynamics of Snow Trout (*Schizothorax richardsonii*) in the Eastern Himalaya

Himangshu Borah, Vineet K Dubey, J.A. Johnson

The Indian Himalayan Region exhibits remarkable ecological richness in freshwater fish, though these riverine ecosystems are experiencing widespread biodiversity declines. This study evaluates fish diversity, distribution, and community patterns along the altitudinal gradient of the West Kameng Basin in Arunachal Pradesh, while determining long-term life-history metrics and breeding phenology for Snow trout (*Schizothorax richardsonii*) across the region.

Sampling was conducted from November 2022 to June 2026 across the 3,800 km² West Kameng Basin, covering the Dirang, Tenga, and Bichom sub-basins. Using a systematic downstream-to-upstream design spanning elevations from 700 to 2,500 masl, fish and physiochemical data were collected across 280 sampling points. Analytical procedures included ordination methods, linear regression for length-weight relationships (n=564), Fulton's-K and Le Cren's-Kn for body condition, and logistic regression to determine length at first maturity (L50) (n=148).

A total of 28 fish species were recorded across the West Kameng Basin, with species richness highest at elevation band 700-1200 masl and declining progressively towards higher elevations. *Schizothorax richardsonii* comprised the dominant portion of the catch (55.77%), followed by *Schizothorax progastus* (9.04%) and *Neolissochilus hexagonolepis* (4.18%). Snow trout displayed overall allometric growth ($b = 2.95$), alongside distinct seasonal shifts: winter $b = 2.80$, spring $b = 3.03$, monsoon $b = 2.97$, and autumn $b = 2.97$. Condition factor varied across seasons, peaking during the monsoon ($K = 0.90-0.92$; $Kn = 1.00-1.07$), followed by spring ($K = 0.86$; $Kn = 0.99$), winter ($K = 0.80$; $Kn = 0.92$), and autumn ($K = 0.77$; $Kn = 0.90$). Logistic models identified sex-specific length at maturity at 18.96 cm for males and 23.67 cm for females. Monthly Gonado-somatic index profiles revealed primary breeding peaks in December and March.

This study establishes an ecological baseline for Himalayan riverine fishes by linking elevational assemblage patterns with the growth, condition, and reproductive phenology of *Schizothorax richardsonii*. Seasonal variation in body condition and the identification of distinct breeding periods highlight critical annual phases during which snow trout populations may be particularly sensitive to changes in river flow and habitat conditions.

Keywords: Fish assemblage, Elevational gradient, Life History, Eastern Himalaya, *Schizothorax richardsonii*

Title of the Project

National Mission on Sustaining Himalayan Ecosystem-Phase II

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Funding Agency

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2022-2026

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Our study from the West Kameng Basin, Arunachal Pradesh, examines elevational patterns in fish assemblages and the seasonal life-history dynamics of Snow Trout (*Schizothorax richardsonii*), with insights into growth, body condition, maturity and breeding phenology.

Title of the Project

Implementing Rhino DNA indexing system to counter poaching threat and aid population management in India - Phase-II

Name of PI(s)

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Ministry of Environment, Forest and Climate Change

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DNA Detective: Tracking rhino poaching through genetics

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

The Indian rhinoceros is a flagship species, and its recovery is regarded as a major conservation success in the history of Indian wildlife. Despite extensive recovery efforts, the species still faces ongoing risks from illegal wildlife trade (IWT) targeting its horns. To counter this threat, a DNA-based assignment test could trace the origin of confiscated rhino products. This research evaluates whether the current genetic database can effectively identify Indian rhino trading hotspots nationwide. Biological samples were collected from nine rhino-bearing protected areas (PA) across four states: Dudhwa National Park (NP), Valmiki Tiger Reserve (TR), Gorumara NP, Jaldapara NP, Manas NP, Pobitora Wildlife Sanctuary (WLS), Orang NP, Laokhowa-Burhachapori WLS, and Kaziranga NP. In total, we identified 1373 unique rhino individuals across India using 12 microsatellite loci (STRs). Using complete mitogenome data from wild rhino individuals (n=111), we developed a state-specific signature for forensic use and used a two-step assignment approach to assign rhino contraband to its origin. After identifying the origin states, we used a STR-based Bayesian clustering approach through STRUCTURE to assign rhino contraband to populations. We calculated genetic differentiation (Fst) among subpopulations and generated an allele frequency map (AFM) for all identified groups. Mitogenomic analysis identified one polymorphic site in each of West Bengal and Uttar Pradesh within the control region of mtDNA (241 bp, n=855 individuals). We achieved a 100% success rate in assigning rhino contraband to their states based on mtDNA. Finally, an exclusion test with GENECLASS verified the accuracy of the assignment analysis. Multiple clustering methods identified six genetic subpopulations (k=6) in the Indian rhinoceros. The Fst results revealed minimal differentiation (Fst<0.05) among the Assam population, in contrast to the high differentiation (Fst>0.2) found in West Bengal. The database successfully assigned over 98% of seized rhino contraband (n=37) to their source populations. This study highlights the genetic database’s effectiveness as a conservation genetics tool, supporting efforts to combat rhino poaching and the illegal wildlife trade.

Keywords: Illegal wildlife trade (IWT), Allele Frequency Map (AFM), population assignment, rhino contraband.

✉ & 📧Text

Using DNA-based genetic forensics, this study traces confiscated rhino products to their geographic origin. With 1,373 individuals and >98% assignment success, genetics can strengthen efforts against rhino poaching and illegal wildlife trade.

Hydropeaking and Riverine Ecology: A Geospatial Assessment of the Lohit River Basin

Foram Jadeja, A. D. Udhayaraj, Bhaskar Saikia, Navaneeth M, Samrat Kalita, Shachi Pandey, Sonalika Wayembam, G.V. Gopi

Hydropeaking refers to the frequent and rapid fluctuations in river discharge over short timescales, typically ranging from sub-daily to weekly associated with hydropower operations. Such flow alterations transform the natural hydrological regime and inundation dynamics of river, potentially altering downstream riverine ecosystems and resulting in significant impacts on biodiversity. The Lohit River, one of the three major tributaries of the Brahmaputra, enters India near Kibitho in Arunachal Pradesh and flows through dynamic floodplains downstream of Parshuram Kund, characterized by braided channels and numerous river islands locally known as chaporis. These flood-dependent ecosystems support diverse aquatic and terrestrial biota that may be sensitive to artificial flow fluctuations altering the river's circadian flooding.

This study aims to assess riverine biodiversity and biota likely affected by peaking operations of the proposed Lower Demwe Hydroelectric Project (HEP). The study will characterize the hydro-morphology and circadian flooding of the Lohit riverscape and evaluate the relationships among flow magnitude, river morphology, inundation dynamics, and habitat availability to identify ecologically favourable flow conditions that minimize adverse impacts on riverine biota.

The study encompasses ~1,106 km² of the Lohit riverscape, extending from the proposed HEP submergence zone in the Anjaw District, Arunachal Pradesh to the downstream near Dibru-Saikhowa National Park, Assam. A comprehensive geospatial framework integrating high-resolution satellite remote sensing, multi-temporal analysis, field observations, hydrological and meteorological datasets, and hydrodynamic modelling will be employed. Further, high-resolution mapping of topography, channel width, river morphology, chaporis, and seasonal inundation dynamics will facilitate simulation of alternative discharge and hydropeaking scenarios and assessment of downstream ecosystem implications.

The study will assess potential impacts on aquatic and terrestrial biota, with particular emphasis on IUCN-categorised Critically Endangered, Endangered, and Threatened species. Integrating geospatial assessments along with the field observations will provide a spatially explicit evaluation of biodiversity hotspots and areas vulnerable to hydropeaking. The findings will further support the development of an ecologically viable operational and mitigation framework, including recommendations on the magnitude and timing of water releases to minimize adverse impacts on riverine biodiversity while maintaining sustainable flows for hydropower generation.

Keywords: Inundation Modelling, Flow regime, Circadian Flooding, Hydro-Ecological Dynamics

✉ & 📧 Text

Mapping biodiversity, understanding flows: A geospatial assessment of the proposed Lower Demwe Hydro-Electric Project, explores hydropeaking and its potential implications for riverine biodiversity in the Lohit Basin, Arunachal Pradesh and Assam.

Title of the Project

Geospatially Analyze the Impacts of Lower Demwe Hydroelectric Project on the Riverine Ecosystems of Lohit Basin

Name of PI(s)

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Funding Agency

Greenko Demwe Power Limited

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Title of the Project

Preparation of Conservation Plan for the Critically Endangered White Bellied Heron (*Ardea insignis*) and its habitats in the Lohit River and Noa-Dehing River Basins

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In Search of the Elusive: Habitat Suitability Modelling of Critically Endangered White-bellied Heron in India

Partha Pratim Das, Nonita Rana, Akash Sai, Pujan Kumar Pradhan, Ameen Ummath, Alex Jacob, Govindan Veeraswami Gopi

The critically endangered White-bellied Heron (*Ardea insignis*) is the second largest heron in the world with a population of less than 60 individuals. Its elusive nature, infrequent sightings, and limited ecological information make it difficult to understand its current distribution and develop effective conservation strategies. Thus, by using the global citizen science database and published literature, we compute the potential habitats for the White-bellied Heron. These initial identifications will boost ground surveys and help identify focus sites.

Decadal occurrence records from Arunachal Pradesh and Assam were compiled from 2015 onward, up to the latest available records. A total of 110 presence locations were initially extracted from GBIF. Following data cleaning and spatial rarefaction at a 1×1 km resolution, 35 occurrence points were retained for modelling. An ensemble modelling approach was implemented using the biomod2 package in R, incorporating six algorithms: GLM, GAM, RF, MARS, MaxEnt, and XGBoost. Of the 23 initial predictor variables including 19 BioClimatic variables, elevation (DEM), aspect, slope, and Terrain Ruggedness Index, eight were retained following a correlation test.

The model identified 366.30 km^2 as highly suitable and 377.31 km^2 as moderately suitable habitat in total from both the state. Precipitation seasonality (bio15), precipitation of the driest month (bio14), isothermality (bio3), annual temperature range (bio7), and mean diurnal range (bio2) emerged as significant contributing variables. Priority areas were identified within the Lohit and Noa-Dehing river basins, with 122 suitable 2×2 km grid cells identified as priority sites for targeted field surveys and future conservation efforts.

These findings provide an initial spatial framework for locating potential habitats of the White-bellied Heron and can help guide targeted ground surveys and future conservation planning in Assam and Arunachal Pradesh.

Keywords: *Ardea insignis*, species distribution, conservation, Arunachal Pradesh, Assam

✉ & 📧 Text

A step towards understanding one of the world's most elusive and threatened birds, White-bellied Heron (*Ardea insignis*). The study maps potential habitat across the distribution range in India using a decade of occurrence records and identified key areas to focus future field surveys and conservation efforts.

A step towards understanding one of the world's most elusive and threatened birds, White-bellied Heron (*Ardea insignis*). The study maps potential habitat across the distribution range in India using a decade of occurrence records and identified key areas to focus future field surveys and conservation efforts.

From Survival to Recruitment: Understanding Leopard Population Dynamics in Kuno National Park, Madhya Pradesh

Nibedita Basu

Understanding population dynamics is essential for evaluating demographic response of large carnivores to changing ecological conditions and management interventions. This study assessed temporal variation in the population dynamics of leopards (*Panthera pardus*) in Kuno National Park, Madhya Pradesh, using photographic capture-recapture sampling (2021-2024). Studies suggest leopard demographic rates vary with sex and environmental conditions, reflecting differences in space use and dispersal. Females, with smaller and more stable ranges, exhibit higher apparent survival, whereas sex-specific differences in space use may result in differential detection probabilities and influence representation of newly detected individuals through dispersal. Population dynamics are also closely linked to prey availability and interspecific competition with sympatric carnivores. In Kuno, cheetah reintroduction presented a potential competitor with overlapping prey and spatial requirements; however, relatively higher prey availability and habitat heterogeneity may facilitate coexistence. We predicted sex- and time-specific variation in apparent survival, detection and recruitment, while expecting sustained prey availability to support recruitment and population persistence despite the altered predator assemblage. Leopard populations were monitored using camera-traps at 86 locations (254 km²-37days)-2021, at 88 locations (280 km²-41days)-2023 and at 131 locations (268 km²-47 days)-2024. Open-population capture-recapture models were used to estimate apparent survival, detection probability, recruitment and population size, accounting for temporal and sex-specific variation. Annualized apparent survival increased from 77.7% (2021-2023) to 81.0% (2023-2024). Females consistently exhibited higher apparent survival, although sex effect was not statistically supported. Detection probability was also higher for females, indicating sex-specific differences in detectability. Recruitment remained substantial and approximately constant at ~21%, with no strong temporal or sex effect, although sex-specific recruitment model indicated greater male arrival. Estimated population size remained relatively stable between 2021 and 2023 (~134 individuals) before increasing to ~183 individuals in 2024. The estimated sex-identified population increased from 80(2021) to 123(2024) individuals. The results indicate an apparent positive population trajectory driven by improved time-specific survival and sustained recruitment. The increasing population size, coupled with relatively stable recruitment, suggests that it is demographically persistent and showed signs of recent growth. These findings provide a baseline for continued demographic monitoring of leopards in a PA undergoing substantial ecological and management changes.

Keywords: *Population dynamics, Capture - recapture, Apparent survival, Recruitment, Population size*

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NA

Nibedita Basu, associated with Project Cheetah, presented her research on leopard population dynamics in Kuno NP. The study explores survival, detection, recruitment and population trends, offering insights into leopard persistence and population growth amid changing ecological conditions.

Title of the Project

Bringing Back the Cheetah to India

Name of PI(s)

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National Tiger Conservation Authority

Project Duration

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Title of the Project

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Project Duration

2022-2027

Seasonal Variation in Activity Patterns and Group Structure of Chital in Kuno National Park, Madhya Pradesh

Shrestha Singh

Ungulate behaviour and social organization are shaped by seasonal changes in resource availability, habitat conditions, reproductive activity, and predation risk. Chital (*Axis axis*), the most abundant ungulate in Kuno National Park (NP) and principal prey species of leopards and cheetahs, plays a key role in structuring predator-prey dynamics. Studies indicates that chital females often allocate greater time to foraging due to differences in digestive efficiency and nutrient extraction. Seasonal shifts in herd size and composition further reflect changes in resource conditions and reproductive behaviour, including increased male representation in mixed-sex herds during early-summer rut and more births during winter. Habitat structure may also influence grouping patterns, with larger herds expected in open habitats where forage availability is comparatively greater. To examine these patterns, data on activity budgets (behaviour categorized as states and events), herd size, age-sex composition, and habitat associations were recorded using focal sampling (n=206) during pre-monsoon, monsoon, and post-monsoon periods. Each sampling was carried out for 10 minutes after the animal(s) were comfortable to observer's presence. The study revealed seasonal, sex-specific variation in activity, with males exhibiting greater foraging and walking during pre-monsoon ($p<0.001$), whereas females showed greater foraging activity during monsoon season ($p<0.001$). Herd size varied significantly among seasons (Kruskal-Wallis test: $\chi^2=46.723$, $df=2$, $p<0.001$), increasing during monsoon ($17.28\pm1.22SE$) and declining markedly during post-monsoon ($8.17\pm0.66SE$), suggesting shifts between aggregation and dispersion in response to changing ecological conditions. Habitat significantly influenced herd size ($F_{1,598}=25.93$, $p<0.001$), whereas the combined effect of season and habitat was not significant. Open grassland habitats supported larger herds than forests ($14.0\pm1.35SE$), with comparatively larger groups recorded during monsoon ($20.0\pm1.85SE$). Seasonal changes in age-sex composition, together with increased reproductive activity during pre-monsoon and greater occurrence of births during winter, further indicate a strong seasonal component to chital social organization. Overall, our findings demonstrate that chital activity and grouping patterns are not static, but reflect the interplay of seasonal resource conditions, reproductive dynamics, and habitat structure. Understanding these behavioral and social responses provides important ecological context for interpreting prey availability and predator-prey interactions in Kuno NP.

Keywords: Seasonal variation, Activity patterns, Social grouping, Habitat association

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Shrestha Singh, working with Project Cheetah, presented his research on seasonal variation in chital activity and group structure in Kuno NP. The study explores how season, habitat and reproduction shape chital behaviour and social organization, informing prey availability and predator-prey dynamics.

Preliminary Ecological Assessment of Critical Reaches of the Chambal and Tons (Tamsa) Rivers with reference to Environmental Flow Management

Sumit Kumar, Feba K S, Neha Verma

Environmental flow (E-flow) is essential for sustaining the ecological integrity of human-modified river systems, yet it remains poorly quantified for most of Indian rivers. The aim of the present study is to environmental flow for critical reaches of the Chambal and Tons rivers based on the habitat requirements of ecologically significant species. The study was designed to address the following four objectives: (i) biodiversity profile of identified critical reaches; (ii) identification of keystone and indicator species whose habitat requirements best represent overall river health; (iii) characterization of instream habitat at each reach; and (iv) development of habitat suitability curves for identified keystone and indicator species to inform flow-habitat relationships. To meet these objectives, a preliminary integrated assessment of hydrological, physico-chemical, and biodiversity assessment was carried out during May and June 2026 across ten critical reaches of the Tons River and seventeen critical reaches of the Chambal River, spanning their upper, middle, and lower stretches. At each reach, a 1 km stretch was surveyed across three cross-sections (upstream, midstream, downstream) for water depth, flow velocity, wetted width, and substratum, alongside physico-chemical parameters (pH, temperature, conductivity, TDS, salinity). Fish were sampled using gill-nets and cast-nets, waterbirds through point counts and aquatic reptiles through visual encounter surveys. The preliminary assessment recorded a total of 43 fish species and 20 water bird species in the Tons River, and 33 fish species and 37 water bird species in the Chambal River. Conservation-significant taxa such as Wallago attu (freshwater shark), Tor tor (Mahseer), Gharial, Mugger Crocodile, River Tern, and Indian Skimmer were also recorded during the survey. Hydrological conditions varied markedly across reaches, from barrage-impounded, stagnant stretches to free-flowing habitats supporting higher biodiversity, while anthropogenic pressures including barrages, sand mining, agricultural runoff, fishing, religious and recreational activity, and infrastructure development were recorded across both basins. These findings establish a comparative baseline for the Chambal and Tons rivers and provide a methodological foundation for reach-wise environmental flow assessment to support the conservation of their ecologically significant riverine biodiversity.

Keywords: Environmental flow, Critical reaches, Biodiversity assessment, River conservation, Habitat suitability curves, Keystone species, Indicator species.

✖ & 📷Text

Preliminary surveys across critical reaches of the Chambal and Tons rivers recorded rich fish and waterbird diversity, including Gharial, Mahseer and Indian Skimmer. The study provides an ecological baseline to guide reach-wise environmental flow management and conservation.

Title of the Project

Environmental Flow Assessment of Chambal and Tons River at Critical Reaches

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Transcending Boundaries: Habitat Suitability of the Indian Grey Wolf (*Canis lupus pallipes*) in the Gandhi Sagar Landscape of Central India

Prayas Auddy

Protected areas (PAs) rarely cover the full ranges of wide-ranging large carnivores, yet habitat suitability assessments seldom extend beyond PA boundaries to capture this gap, limiting landscape-level conservation planning. This is particularly relevant for umbrella species like the cheetah, whose conservation requires large, contiguous, open ecosystems and thus overlaps with securing habitat for other threatened species sharing the same landscape. We assessed habitat suitability for one such under-studied large carnivore, the Indian grey wolf, in and around Gandhi Sagar Wildlife Sanctuary (WLS; ~498 km²) on the Madhya Pradesh (MP)-Rajasthan border, which hosts India's ongoing cheetah reintroduction programme.

We hypothesised that a substantial share of suitable wolf habitat lies outside the PA and across this state boundary, making single-state, PA-bound management insufficient for landscape-level wolf persistence.

Sign surveys covering ~519 km were conducted across the PA, with opportunistic wolf detections added as additional occurrence records. Habitat suitability was modelled for the PA and a 10 km buffer (~2,096 km²) using a four-algorithm ensemble (GLM, GAM, Random Forest, CTA) in biomod2, deliberately restricted given the small presence sample (n=19), and evaluated using spatial block cross-validation. The ensemble achieved a test AUC of ~0.95, with cold-quarter temperature (47.3%±5.07SE) and grassland cover (37.7%±4.62SE) as the dominant predictors. At the suitability threshold, area ~338.1 km² (68%) of the PA was classified as suitable. Outside, area ~547 km² (34.2%) was suitable, in patches ranging 1.9-137.27 km²; most lies in MP (365.5 km², 66.8%), the rest in Rajasthan (181.5 km², 33.2%). Mean predicted suitability was highest in grassland (0.33) and shrubland (0.26), lowest in cropland (0.14) and tree cover (0.12), reinforcing grassland as the primary structural resource underlying wolf habitat selection.

Suitable wolf habitat thus extends well beyond the PA and across the interstate boundary, concentrated in shared refuges that plausibly function as critical breeding habitat rather than marginal-use areas. This overlap makes cheetah-focused landscape management a practical pathway to secure habitat for species like wolves. We recommend highly suitable habitats be prioritized for scientific management and monitoring and moderately suitable habitats for active restoration on both sides of the state boundary within a shared transboundary framework.

Keywords: Ensemble species distribution modelling, Habitat restoration, Umbrella species management, Transboundary conservation planning

✉ & 📧 Text

At Gandhi Sagar Wildlife Sanctuary, where cheetahs now roam, wolves quietly thrive too, ignoring administrative boundaries. Our study found that suitable wolf habitats often lie outside the sanctuary, and protecting open ecosystems here ensures that both species thrive together. #WolfConservation #CheetahProject

Bridging the gap: Evaluating community attitude towards tiger translocation in Sahyadri Tiger Reserve

Harshita Prajapati, Susmita Patil, Akash Patil, Ramesh Krishnamurthy

The science and practice of conservation translocation aim to reverse local extinctions, halt population declines, and restore species within their historical ranges to maintain ecosystem integrity. However, neglecting human dimensions may jeopardize recovery, particularly for large carnivores involved in HWC. The Sahyadri Tiger Reserve (1,166 km²) in Maharashtra's northern Western Ghats is implementing tiger translocation following historical population decline, with three female tigers translocated during 2025-2026. We assessed community perceptions of tiger translocation and exposure to human-wildlife conflict using socio-economic questionnaires. A 10% stratified random household sample surveyed 636 respondents across 68 core and buffer villages.

Community attitudes toward tiger translocation were mixed: 49% (n = 280) opposed, 37% (n = 213) supported, and 14% (n = 77) were neutral. Awareness of translocation was significantly associated with community support ($\chi^2 = 568.835$, df = 4, p < 0.001). Socio-demographic variables significantly predicted attitudes ($\chi^2 = 67.967$, df = 20, p < 0.001; Nagelkerke $R^2 = 0.131$), with gender as the only significant predictor ($\chi^2 = 17.089$, df = 2, p < 0.001). Males had lower odds of negative (OR = 0.399) and neutral (OR = 0.477) attitudes than positive attitudes. Further, loss reporting and education were identified as significant predictors ($\chi^2 = 30.385$, df = 8, p < 0.001; $R^2 = 0.104$). Non-reporting of losses was associated with higher odds of negative attitudes (OR = 2.788, 95% CI: 1.617-4.805, p < 0.001), highlighting the importance of education and accessible compensation procedures. Synthesising these outcomes, management strategies must prioritise local tolerance by expanding behavioural and conservation awareness, particularly among less educated groups, streamlining loss-reporting procedures, and ensuring transparent compensation.

Keywords: Conservation translocation, community attitudes, human-wildlife conflict, human dimension, current exposure.

Title of the Project

Tiger Recovery Strategy and Long-term Monitoring in Sahyadri Tiger Reserve, Maharashtra Phase II: Active Recovery of Prey Populations, Tigers, Monitoring and Landscape Strategies.

Name of PI(s)

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Funding Agency

Maharashtra Forest Department

Project Duration

2025-2030

✖ & 📄 Text

Bridging the gap between conservation and communities. Our study in Sahyadri Tiger Reserve found mixed attitudes toward tiger translocation, highlighting the roles of awareness, gender, loss reporting and education in building community support for tiger recovery.

Can tiger recovery succeed without community support? Our study in Sahyadri Tiger Reserve reveals mixed attitudes toward tiger translocation and highlights the importance of awareness, education, accessible loss reporting and transparent compensation.

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Title of the Project

Development of genetic database of captive elephants across India for welfare and management

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Project Duration

2026-2027

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Decoding India’s captive elephants: A centralized genetic and digital database

Swati Gairola, Anjali Rawat, Aju Mathew George, Vaibhav C Mathur, Bilal Habib, Gobind S. Bhardwaj, Ramesh K. Pandey, Parag Nigam, Samrat Mondol

The Asian elephant (*Elephas maximus*) is integral to India’s culture and mythology. India hosts a large number of captive elephants, facing threats from the illegal trade/transfers of live animals and their body parts. To address this, the Project Elephant Division, MoEF&CC, has initiated a program to create a national registry of captive elephants, including photographs, measurements, and DNA data, to prevent illegal activities and strengthen conservation and welfare efforts. Samples were collected from all 27 captive elephant-bearing states in India. Our study aims to collate genetic and physical information in one place and understand the genetic status of the current captive elephant population. We created a tamper-proof forensic sampling kit and a secure Android app, ‘Gajah Suchana,’ for collecting biological samples and details from captive elephants in India. Respective Forest Departments conducted blood sampling and submitted information through the app. Elephant genetic profiling was performed using a standardized forensic marker panel. We compiled all data to generate a comprehensive state-wise captive elephant database and performed standard population genetic analyses. Out of 27 states, 11 completed biological sampling, 15 did partial sampling, and 1 did none. WII received 2160 samples, with individual profiling for 2135 captive elephants, but only 1964 have complete data. Analyses showed moderate to high polymorphism, and genetic clustering revealed 3 clusters, mainly mixed lineages among Indian captive elephants. The elephants recorded via the Gajah Suchana App were 26.52% wild-caught, 33.64% captive-born, and 39.84% of unknown origin. Regarding their locations, 43.78% were privately owned, 36.35% were kept in camps, 16.64% were associated with temples, 1.99% were in rescue centres, and 1.23% were in zoos. Gender distribution was 53.81% females, 38.30% males, and 7.89% unidentified. Age groups included 0.36% calves, 4.97% juveniles, 13.87% sub-adults, 55.45% adults, and 24.58% over 50 years old. Overall, the data indicates a predominantly female, adult-dominated population. The Gajah Suchana initiative not only helps safeguard captive elephants from illegal activities but also provides a structured framework for planning their management and welfare. Integrating this data helps identify individuals and supports health and welfare monitoring by State Forest Departments and the MoEF&CC.

Keywords: DNA profiling, microsatellite markers, genetic diversity, captive elephant database, wildlife conservation

✉ & 📧 Text

Decoding India’s captive elephants: A centralized genetic & digital database. Combining individual identification, digital records and genetic profiling to strengthen conservation, management, welfare, and curb illegal trade across India.

Decoding India’s captive elephants: A centralized genetic & digital database. Combining individual identification, digital records and genetic profiling to strengthen conservation, management, welfare, and curb illegal trade across India.

Mind the Gap: Emerging Conservation Priorities of India

Kanishka Mehta, Ruchi Thakur, Nayana NC, Karan Bharat Jain, Gautam Talukdar

India's wildlife conservation framework has evolved considerably since the enactment of the Wildlife (Protection) Act, 1972, with subsequent expansion of protected areas, species recovery programmes, community-based approaches and more recently, landscape-level and ecosystem-based conservation. However, how conservation priorities and the gaps identified in conservation practice have changed over this period has not been systematically synthesised. This study examines temporal trends in India's wildlife conservation literature to understand how major conservation themes, identified gaps and recommended actions have evolved over time. A structured Boolean literature search was conducted in Google Scholar. India-focused peer-reviewed papers identified through the search were screened and qualitatively analysed. For each paper, the major conservation theme, gaps identified and recommended actions were extracted and thematically classified to assess changes in the focus of conservation research over time. The literature shows a broadening of conservation concerns from predominantly species recovery, protected-area management, resource use, community participation and human-wildlife coexistence towards a wider range of institutional, financial, landscape and emerging conservation challenges. Community participation and coexistence remained prominent throughout the period, while recent literature increasingly addressed conservation finance, policy implementation, institutional capacity, invasive species and biosecurity, landscape connectivity, infrastructure impacts, wildlife health and underrepresented ecosystems. The gaps identified across the literature included weak institutional coordination, uneven implementation capacity, inadequate monitoring and evaluation, limited assessment of conservation financing, insufficient attention to less-studied taxa and ecosystems, and inadequate integration of connectivity and emerging threats into conservation planning. Overall, the temporal analysis indicates a shift in India's conservation discourse from a predominantly species- and protected-area-centred approach towards a more integrated understanding of ecological, social, institutional and economic dimensions of conservation. This synthesis provides a basis for identifying emerging priorities and strengthening future conservation planning by aligning policy and management responses with the changing challenges identified in the scientific literature.

Keywords: community participation; conservation policy; human-wildlife coexistence; landscape monitoring; wildlife conservation

✖ & 📧 Text

At #ARS2026, Dr. Kanishka Mehta, presented "Mind the Gap: Emerging Conservation Priorities of India," highlighting the evolving conservation discourse and emerging priorities for strengthening integrated wildlife conservation in India. #WildlifeConservationPriorities

Title of the Project

Global Best Standards on Wildlife Conservation for India

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2025-2027

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Title of the Project

Preparation of
Nomination
Dossier of Kanger
Valley National
Park, Jagdalpur,
(Chhattisgarh)

Name of PI(s)

Dr. Gautam Talukdar

Name of Co-PI(s)

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Funding Agency

Kanger Valley
National Park,
Jagdalpur

Project Duration

2026-2027

Assessment of Outstanding Universal Value and Preparation
of a UNESCO World Heritage Nomination Dossier for Kanger
Valley National Park

Sudhir Ranjan Choudhury, Gautam Talukdar

Kanger Valley National Park (KVNP), located in Bastar District of Chhattisgarh, represents a distinctive combination of geological, geomorphological, ecological, biodiversity and cultural values within a compact protected landscape of approximately 200 km². The study examines the potential Outstanding Universal Value (OUV) of KVNP. The ongoing assessment focuses on the KVNP's Proterozoic geological heritage, karst landscapes, limestone cave systems, waterfalls, Peninsular Valley Sal forests and associated biodiversity. The geological carbonate formations have facilitated the development of more than 20 limestone caves, including Kotumsar, Kailash, Dandak and Aranyak, which exhibit distinctive speleothems, water-rock interactions and specialized subterranean habitats. Tirathgarh Waterfall, approximately 300 feet high and associated with sandstone formations, adds significant scenic and geomorphological value to the landscape. KVNP supports exceptionally rich biodiversity, with 963 floral species representing 574 genera and 120 families, including 30 orchid species and several rare and threatened taxa. Its documented fauna comprises 49 mammals, 201 birds, 16 amphibians, 37 reptiles, 57 fish, 141 butterflies and 113 spiders. Cave ecosystems further support habitat-specialist fauna, emphasizing the ecological significance of the subterranean environment. The project is currently evaluating the relevance and strength through systematic documentation of natural features, biodiversity, landscape aesthetics and cultural associations. Scientific literature, historical records and management documents are being compiled to identify evidence gaps. Comparative assessment with relevant World Heritage properties is also being initiated to determine KVNP's distinctiveness and global significance. The project further examines integrity, protection, management systems, community associations and stakeholder perspectives. The anticipated outcome is a scientifically supported OUV assessment and structured nomination framework to guide subsequent technical evaluation, stakeholder consultation and preparation of the comprehensive UNESCO World Heritage nomination dossier.

Keywords: Karst Landscape, Limestone Caves, Biodiversity, Landscape Aesthetics

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NA

NA

A lake in motion: seasonal dynamics of the waterbirds of India’s largest freshwater lake

Inamul Haq, Rajdeep Mitra, R Suresh Kumar

Wular Lake, a Ramsar wetland of international importance in Jammu and Kashmir, serves as a critical wintering and staging habitat for migratory waterbirds along the Central Asian Flyway. This study aimed to assess the seasonal distribution, key habitat use, and population status of waterbirds inhabiting Wular Lake and adjoining wetlands through systematic grid-based monitoring. We divided the lake into 13 (5 × 5 km) grids, and conducted avifaunal surveys using direct observations and boat-based counts from January to December 2025.

A total of 56 waterbird and water-associated species belonging to 13 families were recorded. Within the lake, Grid 12, characterised by extensive Typha reedbeds and shallow-water levels, was consistently the most important area, supporting a mean abundance of 26,399 birds in winter, 7,152 in spring, 1,864 in summer and 12,824 in autumn, followed by Grid 13. In contrast, waterbird activity was consistently low or absent in several grids. Grids 2 and 6 recorded zero waterbirds during winter, while winter mean abundances in Grids 3, 4, 7, 8 and 9 remained between 11 and 24 birds. During summer and autumn, most peripheral grids continued to support comparatively low numbers, generally with mean abundances below 100 birds, whereas only a few grids, particularly 12 and 13, supported large aggregations, while Grid 1 and Grid 5 remained dry throughout the year. Common Teal (*Anas crecca*) was the dominant species in all four seasons, contributing 59% of winter, 50% of spring, 50% of summer and 65% of autumn abundance. Eurasian Coot, Grey-headed Swamphen and Northern Pintail were other major contributors. Seasonal comparisons indicated no species turnover, with variation driven primarily by changes in abundance.

The findings identify critical habitats within Wular Lake that require focused conservation and management interventions. Continued monitoring, habitat protection, and planned telemetry studies on migratory geese will provide essential information for long-term wetland management and the conservation of migratory waterbirds in this ecologically important Himalayan wetland system.

Keywords: Waterfowl, Central Asian Flyway, Seasonal Dynamics, Wetland Conservation.

✖ & 🌐Text

NA

NA

Title of the Project

Comprehensive Population Assessment of Waterbirds and Track Movements of Select Species of the Wular Lake and Adjoining Areas

Name of PI(s)

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Funding Agency

Wular Conservation and Management Authority

Project Duration

2025-2027

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Title of the Project

National Mission
For Sustaining
The Himalayan
Ecosystem, Phase 2

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Project Duration

2022-2026

Preliminary Assessment of Wild Bee Diversity in the Eastern Himalaya, with Observations on Ctenoplectra-Dendrobium Interactions

Anand Sharma

Bees are the primary pollinators of wild and cultivated plants. Globally, bees are declining at an alarming rate, and data supporting this decline are only available from America and Europe. A lack of reliable baseline data makes it difficult to monitor wild bee populations and assess their decline, especially for the largely unexplored Asian wild bee fauna. Taxonomic ambiguities pose major challenges while studying wild bees. The major reasons for these ambiguities are poor documentation, inaccessibility to type specimens, and many undescribed species. The issue becomes more significant for a highly sensitive and biodiverse yet understudied landscape like Eastern Himalaya.

The study is aimed at creating baseline data on wild bee distribution and diversity in the West Kameng district in Arunachal Pradesh using an integrated approach to taxonomy, utilizing both morphological and molecular data.

Field methods employed 4 km x 4 km grids stratified by 500 m elevational gradients, using random transects and open plots in forests and meadows, respectively, for systematic sampling, replicated in different seasons, using both pan-trapping and sweep-netting methods. Ecological covariates such as habitat features, microhabitat, dominant floral resources, and seasonality were recorded alongside. For taxonomy, both morphological traits and molecular tools are being used.

The preliminary survey from October 2025 to July 2026 recorded more than 20 genera from a total of five families of wild bees across elevations between 400- 4300 m asl. At higher elevations (3500-4300 m), bees only from the genera Andrena and Bombus were found, with no records of the genera Halictus and Lasioglossum (family Halictidae), which were most common in traps at lower and mid elevations (400-3200 m). Also, a rare oil-collecting bee, Ctenoplectra sp., has been recorded, with a photographic record of pollinaria from Dendrobium densiflorum (Orchid species) during the survey.

The findings of the study will help in understanding the wild bee diversity of the region and validate the taxonomic ambiguities in wild bee pollinator species of the region.

Keywords: Wild Bee , Taxonomy, Eastern Himalaya

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A lack of baseline data hampers Asian bee conservation. My poster shares our integrated taxonomy approach for diversity assessment of wild bees across multiple elevation gradients in West Kameng, Arunachal Pradesh. Highlight: record of a rare oil-collecting bee, with a foraging record on an orchid species

Preliminary Assessment of Animal-Vehicle Collisions along the Tiger Corridors and Road Networks in the Satpura-Pench-Melghat Landscape

Gopianan G, Aditya Lad, Dr. Ramesh Krishnamurthy, Dr. Ashish Kumar, Dr. Neha Jaiswal, Palak Thakur, Pinki Kumari

The Satpura-Pench-Melghat Landscape in Central India is a critical wildlife conservation area facing increasing mortality risk due to expanding linear infrastructure. Dispersing individuals are susceptible to animal-vehicle collisions, resulting in direct mortality and potentially disrupting animal movement, functional connectivity, and gene flow. Therefore, identifying roadkill patterns is crucial for assessing wildlife mortality associated with linear infrastructure and informing targeted mitigation measures. A systematic roadkill survey was conducted across 17 survey routes, clustering multiple interconnected road sections including state and national highways. Survey routes were divided into 250-m sampling units spatially distributed in the landscape, across multiple LULC types and environmental gradients. Over 84 survey days (May - August), a total distance of 45,773.15 km was surveyed, recording 1,693 roadkill representing 99 species across four taxonomic classes. NH 47 (Betul - Harda) showed the highest species count ($n = 74$); Reptilia represented 36.95% of the total recorded roadkill, with 160 kills of Checkered Keelback contributing the highest proportion (9.45%). Other important species recorded in the landscape were Golden jackal (52 kills, 3.07%), jungle cat (13 kills, 0.77%), rhesus macaque (9 kills, 0.53%), Indian rock python (5 kills, 0.30%), Indian gray langur (3 kills, 0.18%), and rusty-spotted cat (3 kills, 0.18%). A total of 70.96% of roadkill occurred within 15-km proximity to forest boundaries, whereas 58.54% of roadkill records were immediate to agricultural areas. Carcass persistence was influenced by species, body size, carcass condition, weather, and habitat type. Mammals showed the highest persistence, with 16.8 % of carcasses remaining detectable for up to 48 hours. Our preliminary analysis suggested that roadkill detectability was influenced by time, and higher detection was recorded between 07:00 and 10:00 AM. Overall, our findings demonstrate considerable spatio-temporal and taxonomic variation in roadkill composition. The high diversity of animal mortality in roadkill, including species of conservation priority, highlights its significant impact on biodiversity and the loss of ecosystem services. Further study and detailed analyses would help identify roadkill hotspots and suggest informed management actions across the landscape.

Keywords: Road ecology, Landscape connectivity, Ecotone, Mitigation planning

✕ & 📷 Text

Roadkill threatens wildlife movement and connectivity across the Satpura-Pench-Melghat Landscape. Our survey recorded 1,693 roadkills of 99 species across 45,773 km, highlighting key mortality patterns and the need for targeted mitigation. #RoadEcology #WildlifeConservation

Across the Satpura-Pench-Melghat Landscape, we recorded 1,693 roadkill representing 99 species over 45,773 km. With 71% occurring within 15 km of forests, our findings highlight the urgent need for wildlife-sensitive road mitigation. #RoadEcology #WildlifeConservation

Title of the Project

Integrated Landscape Management Plan and Long-term Monitoring of Satpura-Pench-Melghat Landscape Complex, Central India

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Title of the Project

Assessment of Wildlife Values and the Impact of Water Submergence on the habitat of Gharial upstream from the Sadrapur Barrage construction site across Yamuna River up to National Chambal Wildlife Sanctuary, Uttar Pradesh

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The River of Life: Assessing Wildlife Values in and around the Yamuna River under Changing Water Regimes in the Sadrapur Region, Auraiya

Shantam Ojha

The Sadrapur Barrage Project is proposed to evaluate the possible effects of submergence brought by the construction of the proposed barrage in Gharial habitat and other aquatic and riparian species. As part of the assessment, a 30-km stretch of the river along with a 1-km terrestrial buffer along both banks is being surveyed to document wildlife diversity, habitat-use patterns, and areas of ecological significance. Field surveys commenced from 1st July 2026 and two months of fieldwork have been completed to date. Mammal, avifauna, herpetofauna and ichthyofauna components were included using taxon-specific survey methods. Mammalian survey was performed through Indirect sign surveys and camera trapping, whereas terrestrial herpetofauna and avifauna surveys were conducted through visual encounter surveys and point count methods respectively. Boat-based surveys were conducted to document aquatic fauna across the study stretch.

A total of 27 mammalian species, 100 avifaunal species and 40 herpeto-faunal species were found during the survey. The survey documented 34 threatened and protected species, including flagship aquatic species such as the Gharials (CR), Gangetic River Dolphins (EN), Mugger (VU), Indian Skimmer (EN) and threatened river turtles including the Red-crowned Roofed Turtle (CR), Three-striped roofed turtle (CR) and Indian narrow-headed Softshell Turtle (EN). All recorded species are protected under the Wildlife (Protection) Act, 2022, with most listed under Schedule I, indicating high conservation importance.

The Chambal-Yamuna confluence emerged as a potential hotspot during the current survey period, with representation of both avifauna and herpetofauna. These preliminary findings highlight the ecological importance of the river stretch proposed for the Barrage and emphasize on the need for continued seasonal surveys before determining the implications of barrage construction and subsequent water submergence. Further assessment will be critical for evaluating potential impacts on flagship species, breeding and nesting sites, critical habitats and overall biodiversity for informing appropriate mitigation and conservation measures.

Keywords: Sadrapur barrage, Water submergence, Yamuna river, Wildlife, Gharial, Gharial habitat, Buffer, Terrestrial surveys, Aquatic surveys

✉ & 📧Text

THE RIVER OF LIFE: Surveys near the proposed Sadrapur Barrage recorded 27 mammals, 100 birds & 40 herpetofauna, including Gharial, Dolphin, Skimmer & threatened turtles-highlighting the Yamuna's conservation value and need for continued monitoring. #Yamuna #Biodiversity

Water for People, Space for Wildlife: A Preliminary Ecological Assessment and Mitigation Approach for the Yettinahole Project

Priya Ooti, Sampath Deepan Chackaravarthy, Aruna Kumar Rath, Aadithi Goplakrishnan, Manoj M, Sindhu G Pawar, Wesley Sunderraj, Saurav kumar, Tanveer Ahmed, Maria Christu Raja, Govindan Veeraswami Gopi

Water is a fundamental need for peoples, and to meet these needs, specialised engineering projects and infrastructure have been developed nationwide. When such projects fall within environmentally sensitive regions, robust scientific study is necessary to achieve sustainable development goals. The Yettinahole Project is a major inter-basin water transfer project, diverting water from some of the west-flowing streams from the Western Ghats district of Karnataka to its eastern districts. The canal implementation involves diverting forest land and creating linear infrastructure. The study aims to create a site-specific wildlife management/mitigation plan along the canal alignment. The open canal runs for 250km across Hassan and Tumkur in Karnataka with major associated structures. Considering the biodiversity value, a baseline biodiversity assessment was systematically conducted in the scope areas, focusing on vegetation, fish, avifauna, mammals, and butterflies. Secondary data on human-wildlife negative interactions and radio-telemetry data were collected from the Forest Department. The baseline survey recorded 78 plants, 12 fish, 174 birds, 26 mammals, and 84 butterfly species. The list includes 15 mammals and 16 birds under Schedule I of the Wildlife (Protection) Act, 1972, and one species each of fish and bird and three mammal species are Endangered as per IUCN. The preliminary assessment identified the distribution of species of conservation importance in the study area. The negative interaction was found to be highest with respect to elephants, followed by leopards, gaur, and sloth bears. The home range estimate using telemetry data of elephants found the intersection of the infrastructures. The project outcomes will identify the potential impact of linear structures on wildlife habitat, distribution, and movement patterns. This analysis will bring out site-specific mitigation and management recommendations for the conservation of wildlife in the forest divisions along the canal alignment.

Keywords: Linear infrastructure; canal, home range; Sustainable development; Yettinahole

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Title of the Project

Preparation of Wildlife Mitigation/ Management Plan for the Yettinahole Drinking Water Project in Hassan and Tumkur Districts, Karnataka

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2026-2027

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Title of the Project

Human-Wildlife
Conflict Management
and Zonal
Management Plan for
Tirumala Tirupati
Devasthanam,
Andhra Pradesh.

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Spatial Patterns of Leopard Use and Human-Leopard Interactions in the Tirumala-Tirupati Devasthanam Area, Andhra Pradesh

Ankita Sharma, Vijay Sekar Babu Manchili, Balaji Vijayakumar

The Tirumala-Tirupati Devasthanam (TTD) area supports a leopard population within a landscape that is also intensively used by pilgrims and visitors. The continued use of this shared landscape by both leopards and people makes it important to understand how leopard space use relates to patterns of human activity. The Alipiri and Srivari Mettu footpaths, regularly used by pilgrims travelling between Tirupati and Tirumala, along with the Tirumala township with its heavy daily human footfall, provide important areas to examine human-leopard interactions. However, knowing where leopards occur alone does not indicate where encounters with people may be more likely. We hypothesize that leopard spatial use and human activity are not randomly distributed across the TTD area and that their spatial and temporal convergence influences the potential for human-leopard encounters.

We deployed 102 Keep Guard cameras across the study area from December 2025 to April 2026 using systematic grid-based sampling. The cameras were active for an average of 45 days, resulting in a total effort of 4,590 trap nights. We used time-stamped independent event photographs to identify individual leopards and generate detection histories to estimate leopard density using maximum-likelihood spatially explicit capture-recapture. We are examining leopard spatial use in relation to NDVI, elevation, slope, terrain ruggedness, and distance from human settlements, roads, and pilgrimage footpaths. We will further examine leopard use in relation to distance from the Alipiri and Srivari Mettu footpaths and integrate these patterns with human activity along the routes to assess spatial and temporal convergence and develop a predictive framework for potential encounter risk.

We expect to identify variation in leopard spatial use across the TTD landscape in relation to habitat, terrain, and human-use features, as well as differences in leopard use with distance from the pilgrimage footpaths. Areas and periods where leopard use and human activity overlap are expected to indicate greater potential for human-leopard encounters. Our findings will improve understanding of how leopards and people share space within a heavily used pilgrimage landscape and provide a spatial basis for assessing potential human-leopard encounter risk.

Keywords: camera trapping, spatial ecology, habitat relationships, pilgrimage routes, wildlife coexistence

✉ & 📧Text

Where the forest meets the footpath,
who shares the space?
Our study in the Tirumala-Tirupati
landscape explores how leopards
move through a pilgrimage landscape,
where their paths may converge
with thousands of people-and where
potential encounters may occur.
#LeopardResearch

Two worlds. One landscape.
Leopards move through the same
spaces where thousands of pilgrims
travel each day. We're mapping where
these paths may converge in the
Tirumala-Tirupati landscape.
#LeopardResearch

Local Community Perceptions of Small Wild Cat Conservation: Preliminary Insights from Pakke-Eaglenest and Dudhwa Landscapes

Bablin Huidrom, Avril Amanna, Urjit Bhatt, S P Goyal, Salvador Lyngdoh, Bilal Habib

Small wild cats receive considerably less conservation attention than larger felids despite increasing pressures in human-modified landscapes. The project focuses on two ecologically distinct landscapes selected for their focal small-cat assemblages: the wetland-grassland landscape of Dudhwa for the fishing cat and other small wild cats, and the semi-evergreen and moist mixed deciduous forests of Pakke-Eaglenest for the clouded leopard and other small wild cats. It integrates ecological monitoring with community awareness, human-wildlife conflict mitigation, and capacity building. As an initial phase, we conducted socio-ecological surveys during June-July 2026 to assess local knowledge, interactions, and attitudes towards these species.

The Pakke-Eaglenest landscape supports several small wild cats: clouded leopard, Asiatic golden cat, marbled cat, leopard cat, jungle cat, and fishing cat. We conducted structured questionnaire surveys with 248 informants across 16 villages using snowball sampling, with particular emphasis on community perceptions of the clouded leopard. Forest-resource dependence was substantial: 73.8% of respondents collected wild vegetables and fruits, 67.3% collected fuelwood, 66.5% collected bamboo, and 59.3% collected medicinal plants. Most respondents (82.7%) could identify the clouded leopard, although only 39.9% reported having observed it. Retaliatory killing was the most frequently perceived threat, followed by illegal wildlife trade and habitat loss. Despite 71.0% perceiving the species as dangerous, 89.9% supported its protection.

In Dudhwa, we conducted semi-structured questionnaire surveys with 151 households across six villages to assess perceptions of four small wild cats: the jungle cat, fishing cat, rusty-spotted cat and leopard cat, with particular emphasis on the fishing cat. Recognition of the fishing cat was comparatively low: 17.9% of respondents reported having seen the species, while 82.1% did not recognise it. Reported encounters occurred mainly in sugarcane fields and wetland-associated areas. Nevertheless, 69% considered the fishing cat non-dangerous, 72% recognised its ecological importance, and 40% supported prioritising the species for conservation.

These preliminary findings reveal marked differences in species knowledge between the two landscapes, while indicating broadly positive conservation attitudes despite differences in awareness and perceived risk. Landscape-specific awareness programmes, community engagement and continued socio-ecological research could strengthen coexistence and conservation of India's lesser-known felids.

Keywords: Attitudes, Awareness, Coexistence, Human-wildlife interactions, Socio-ecology

✖ & 📄Text

How do local communities perceive India's lesser-known wild cats? Our study compares knowledge, attitudes and perceived threats towards clouded leopards in Pakke-Eaglenest and fishing cats in Dudhwa, revealing contrasting awareness but broadly positive attitudes towards conservation.

What do local communities know and think about small wild cats? From clouded leopards in Pakke-Eaglenest to fishing cats in Dudhwa, our study reveals contrasting awareness and perceived threats, alongside encouraging support for conservation across both landscapes.

Title of the Project

Strengthening Conservation and Resilience of Globally Significant Wild Cat Landscapes through a Focus on Small Cat and Leopard Conservation

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UNDP-India & MoEFCC

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Project Duration
Continuous

Elephant Conservation in India: Status, Challenges and Strategies

Sadhana Yadav, Netri Datta Banerjee, Abhishek Sharma, Anukul Nath, Parag Nigam

India supports around 60% of the global wild Asian elephant population and plays a central role in Asian elephant conservation. Elephants occur across 14 States and four major landscapes, where populations are increasingly influenced by habitat loss, fragmentation and interactions with human-dominated areas. Project Elephant, initiated by the Government of India in 1992, provides the national framework for elephant conservation, focusing on protecting habitats and corridors, mitigating human-elephant conflict and promoting captive elephant welfare. The Synchronous All India population estimation of elephants (SAIEE) for 2022-2023 estimated 18,255-26,645 elephants in India, strengthening the scientific basis for population assessment and monitoring.

Elephant landscapes continue to experience pressures from deforestation, agricultural expansion, mining, urbanization and other forms of land-use change. Habitat degradation and fragmentation reduce habitat availability and disrupt traditional movement routes and landscape connectivity. Human-elephant conflict remains a major conservation concern, with crop damage, human casualties and elephant mortality reported across elephant-bearing areas. Railway and road collisions, electrocution and other infrastructure-related threats further increase risks to elephants. Invasive species and changing climatic conditions may also affect forage availability, water resources and habitat quality. The cumulative nature of these pressures highlights the need for conservation approaches extending beyond protected-area boundaries.

Maintaining functional connectivity through the identification protection and restoration of elephant corridors is essential for sustaining viable populations. GIS and remote sensing, spatial modelling, DNA-based assessment, camera trapping, GPS telemetry and drone-based monitoring can strengthen understanding of elephant distribution, habitat use, movement and population trends. Effective conflict mitigation requires context-specific measures, including early-warning systems, rapid response, wildlife-sensitive infrastructure, crop-protection measures and timely compensation, supported by community participation. Strengthening coordination among States, research institutions and implementing agencies, alongside landscape-level planning and integration of elephant conservation into broader land-use decisions, is critical for maintaining connected elephant landscapes and promoting coexistence between people and elephants.

Keywords: Asian elephant; habitat connectivity; human-elephant conflict; landscape-level conservation; coexistence

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Active Recovery of Tigers and Prey in Sahyadri Tiger Reserve: A New Beginning

Susmita Patil, Akash Patil, Harshita Prajapati, Aditya Lad, K. Ramesh, S. K. Gupta, Prashant Mahajan, Tushar Chavhan

The Sahyadri Tiger Reserve (STR) in the northern Western Ghats represents a historic tiger landscape and is now being complemented by active recovery efforts. Tiger Recovery Project (Phase-II) adopted an integrated approach combining intensive tiger (*Panthera tigris*) monitoring, prey-base assessment and augmentation, founder-female translocation, trophic ecology, and landscape connectivity management. Concurrent prey monitoring indicated an overall increase in major prey availability. Between 2022 and 2023, estimated densities increased for wild pig (*Sus scrofa*) (7.16-18.40 individuals/km²), gaur (*Bos gaurus*) (7.06-9.11), sambar (*Rusa unicolor*) (2.65-4.55), and barking deer (*Muntiacus muntjak*) (1.98-3.73), while other prey species also showed positive trends. 121 chital (*Axis axis*) and 16 sambar (*Rusa unicolor*) were translocated to STR during 2025-26 to strengthen prey availability. Leopard (*Panthera pardus*) abundance also increased from 43 individuals in 2020 to 60 in 2023, while camera trapping documented diverse carnivores, including sloth bear (*Melursus ursinus*), dhole (*Cuon alpinus*), and nine small-carnivore species. By February 2026, four naturally dispersed adult male tigers (STR-T1, STR-T2, STR-T3 and STR-T9) were documented with established territories across STR. Three founder female tigers (STR-T4, STR-T5 and STR-T6) were subsequently introduced into STR using soft- and hard-release strategies. All three females demonstrated successful post-release adaptation, including confirmed wild prey kills, progressive establishment of territories, and spatial overlap with resident male tigers. Trophic assessment identified 14 prey species from tiger, leopard, and dhole scat analysis (107 scats). Tigers showed the lowest dietary diversity, whereas leopard and dhole had broader diets and greater dietary overlap. Landscape-level monitoring further confirmed the importance of around 200-km STR-Kali Tiger Reserve corridor, with promising records of a breeding tiger population. The new beginning of Phase II interventions demonstrates a transition from natural recolonization towards active tiger and prey recovery in STR. Sustained establishment of founder females, improvement of prey availability, systematic monitoring and protection of functional corridors, supported by an Integrated Landscape Management Plan, will be critical for establishing a viable and connected tiger population across the Greater Sahyadri Landscape.

Keywords: *Western Ghats, Prey-based Assessment, Prey Augmentation, Tiger Recovery Strategy, Landscape Connectivity*

Title of the Project

Tiger recovery Strategy and long-term monitoring of tiger in Sahyadri Tiger Reserve, Maharashtra Phase-II: Active Recovery of Prey Populations, Tigers, Monitoring and Landscape Strategies

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Sahyadri Tiger Reserve's Phase II recovery is advancing steadily: rising prey density, 4 male tigers holding territory, and 3 founder females successfully translocated and established, building toward a connected Greater Sahyadri Landscape.

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