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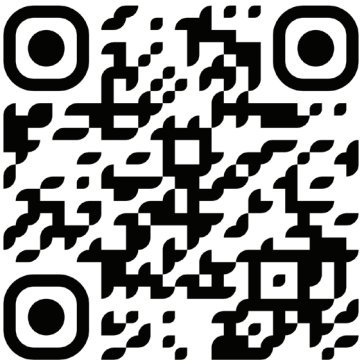

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CONTENTS

PLENARY ---- 6

SYMPOSIA SESSIONS ---- 10

S1 - ECOLOGICAL DEGRADATION IN THE ANTHROPOCENE: DETECTION, ESTIMATION, AND THE CONSEQUENCES FOR ECOSYSTEM FUNCTION ---- 11

S2 - PROXIMATE MECHANISMS OF ANIMAL BEHAVIOUR ---- 14

S3 - CONSERVATION AND COEXISTENCE: MULTIDIMENSIONAL LEARNINGS FROM PRIMATOLOGY ---- 18

S4 - INTEGRATING MIXED METHODS FOR DEEPER INSIGHTS IN SOCIO-ECOLOGICAL RESEARCH ---- 22

S5 - CANIDS AT THE CROSSROADS: COEXISTENCE AND CONFLICTS IN URBANIZING INDIA ---- 26

S6 - GRASSLANDS AND SAVANNAS - UNDERSTANDING FUNDAMENTAL DRIVERS AND PREDICTING IMPACTS OF ENVIRONMENTAL CHANGES ---- 30

S7 - THE ECONOMICS OF WILDLIFE CONSERVATION ---- 34

S8 - A NEW ERA IN INDIAN BAT RESEARCH & CONSERVATION ---- 37

S9 - WILDLIFE DISEASES AND SIGNIFICANCE FOR ECOLOGY AND CONSERVATION ---- 40

S10 - STATE OF BIOGEOGRAPHY, DIVERSIFICATION AND PHYLOGEOGRAPHY RESEARCH IN THE INDIAN SUBCONTINENT ---- 42

S11 - CAN THE PALEOSCIENCES INFORM LANDSCAPE AND BIODIVERSITY CONSERVATION? ---- 45

S12 - ADVANCING BIODIVERSITY MONITORING AND CONSERVATION THROUGH eDNA ---- 48

S13 - BIOACOUSTIC FRONTIERS IN BEHAVIOUR, ECOLOGY AND CONSERVATION ---- 50

S14 - BEHAVIOUR UNDER PRESSURE: HOW DISTURBANCE SHAPES WILDLIFE ECOLOGY ---- 54

S15 - BIODIVERSE'CITY IN THE ANTHROPOCENE: PATHWAYS FOR RESILIENT URBANSCAPES ---- 59

S16 - INSECTS IN A CHANGING WORLD ---- 62

S17 - INVASIVE PLANTS AND WILDLIFE HABITAT: MAPPING THREATS TO INDIA'S ECOSYSTEMS ---- 65

S18 - CONSERVATION OF RIVER ECOSYSTEMS ---- 67

S19 - THE FARM-FOREST FRONTIER ---- 69

S20 - BIOLOGICAL INVASIONS IN A CHANGING WORLD: FROM EXCITING SCIENCE TO CHALLENGING MANAGEMENT ---- 72

OPEN SESSIONS ---- 75

OS1- EVOLUTIONARY BIOLOGY: LINKING GENOMES, TRAITS, AND LANDSCAPES ---- 76

OS2-SPECIES DISTRIBUTION AND LANDSCAPE ECOLOGY ---- 80

OS3 ANIMALS IN CHANGING LANDSCAPES ---- 84

OS4-PATTERNS AND PROCESSES IN COMMUNITY ECOLOGY ---- 88

OS5-ANIMAL INTERACTIONS AND COMMUNICATION ---- 92

OS6-ANIMAL BEHAVIOR AND PHYSIOLOGY ---- 96

OS7-HUMAN-WILDLIFE INTERACTIONS AND LIVELIHOODS ---- 99

OS8-CONSERVATION CHALLENGES AND INTERVENTIONS ---- 103

OS9- CONSERVATION IN SHARED LANDSCAPES ---- 107

OS10- CLIMATE, HEALTH, AND CONSERVATION ---- 111

POSTERS ---- 115

POSTER 10, JULY 2026 ---- 116

POSTER 11, JULY 2026 ---- 137

PLENARY

PAIRED PLENARIES: CONVERSATIONS IN INDIAN WILDLIFE ECOLOGY

01

Mahesh Shankaran, NCBS-TIFR

Global change and the future of India's montane grasslands

Grasslands cover a large fraction of India's land surface area, support unique biodiversity, and provide critical services to dependent human communities. However, they are also amongst the most threatened ecosystems in the country. Threats to grassland ecosystems can be quite varied, ranging from land-use conversion to alterations in grazing and fire regimes and invasion by exotic species. Climate change has also emerged as a major threat to grassland ecosystems worldwide, but little is known currently about how Indian grasslands are likely to respond to these changes. In this talk, I present results from a series of experiments carried out in montane grassland ecosystems across the country to investigate how future changes in temperature and precipitation are likely to impact grassland functioning. I also outline a broad conceptual framework to synthesize the divergent responses of these different grasslands, and highlight avenues for future work.

02

Jahnavi Joshi, CSIR-CCMB, Hyderabad

Examining the evolutionary processes shaping species richness and composition of woody plants in the Western Ghats.

Tropical forests are storehouses of biodiversity, harbouring high levels of endemism and richness across taxa. However, the understanding of the role of evolutionary processes shaping this diversity remains limited. The Western Ghats (WG) is a global biodiversity hotspot, with more than 60% of the woody plants being endemic to the region. Its antiquity, combined with its broad latitudinal gradient in both current and historical climates, provides an ideal setting for examining the ecological and evolutionary processes that shape its diversity.

Using spatial phylogenetic methods, we examined the distribution of 470 species across the WG to determine whether different regions act as a "museum" (preserving ancient lineages) or a "cradle" (promoting recent diversification) of evolutionary diversity. We show that the southern WG is both a museum and a cradle, harbouring a high proportion of both ancient and young evolutionary lineages. This diversity gradient is likely driven by the region's geo-climatic stability and phylogenetic niche conservatism, favouring moist and aseasonal habitats. This was corroborated by persistent lineage nestedness across evolutionary time and a strong correlation between evolutionary diversity and drought seasonality, precipitation, and topographic heterogeneity.

We further examined the phylogenetic composition and structure of the woody plant assemblages in the WG, and assessed the relative roles of geography, the geography of climate (climatic area and isolation), and climate. We identified four evolutionary clusters in the WG that separate along the water-availability gradient, with the southern WG exhibiting the highest unique evolutionary diversity. The homogeneous evolutionary composition and high diversity within the southern WG are shaped by geographically contiguous and unique climatic regions. Overall, our results support growing evidence that water availability is a key driver of lineage distributions, richness, and composition across tropical landscapes. Additionally, in contrast to other global studies, our findings suggest that unique climatic areas within the WG are the key drivers of the observed richness gradient.

03

Asad Rahmani, BNHS, Mumbai

Emerging Threats to Indian Birds

Besides habitat destruction and hunting, Indian birds are facing huge threats by invasive species, free-ranging dogs, glass buildings, light pollution, solar panels, high-tension wires, misdirected developments, monoculture plantations, and ecological traps. Even common species are no more common. Till now, our response is not adequate to face these challenges. Species-specific and site-specific conservation actions are urgently required.

04

Ashwin Viswanathan, Nature Conservation Foundation

What Birds Can Teach India's Citizen Science Movement

Biodiversity science in India has been transformed over the past two decades by the rapid growth of citizen science. What began as a small community of curious naturalists sharing observations through public digital platforms has evolved into one of the country's most significant sources of biodiversity data, with tens of thousands of people contributing observations each year. While many citizen science initiatives continue to grapple with challenges of data curation, collective learning, and collaborative knowledge production, bird-focused programmes have demonstrated that some of these challenges can be overcome. They have provided examples of how citizen-generated data can support rigorous research, inform conservation, and produce scientific knowledge through collaboration between volunteers and researchers.

In this talk, I will trace the evolution of bird citizen science in India and examine the factors that have contributed to both its successes and its failures. Beyond advances in technology, the drivers of success include cultivating engaged communities, designing projects that are scientifically rigorous yet accessible, creating meaningful volunteer experiences, and ensuring that participant contributions translate into tangible scientific and conservation outcomes. Although every citizen science project has its own ecological and social context, many of the principles underpinning the success of bird monitoring are broadly transferable. By reflecting on both achievements and continuing challenges, I will explore how citizen science can continue to grow as a powerful partnership between researchers, practitioners, and the public.

05

Maria Thaker, IISc, Bengaluru

The hot and the hungry. Physiology as a lens to understand animal strategies in a challenging world.

In this talk, I will share how my students and I have been integrating field measurements with lab experiments to understand the physiology and behaviour of animals in the wild. Using Saara hardwickii from the Thar desert and Psammophilus dorsalis from Bengaluru as model systems, I will show how the study of nutritional ecology and thermal biology enables us to understand animal behaviours under challenging conditions. Such data are then used to predict behavioural outcomes under future climate warming scenarios. I'll end my talk by showing how physiological processes can be extended and scaled to understand the ways in which temperature and resources influence the movement of animals, including the largest land mammal on earth, Loxodanta africana.

06

Anusha Shankar, TIFR Hyderabad

Endotherm energetics in India, how little we know and what can we do about it!

Animals constantly have to deal with their environment changing - temperature, food, competition - all these factors shift constantly. I am fascinated by how they manage their daily energy needs given these challenges to surviving in changing environments. While we know something about how animals do this temperate regions, we know very little from the human-dense tropics, where biodiversity and human pressures are high. Imagine a bird in a rural area and another of the same species in an urban area. They are experiencing very different worlds in terms of food they can find, temperatures, lights, and habitat. One way to study how they experience these worlds differently is to measure how animals balance their daily energy budgets across different activities like flying, feeding, or nesting, across these environmental gradients from rural to urban. I have slowly been gaining the skills to measure these things by studying hummingbirds in Ecuador and the US. I am especially amazed by their ability to get cold (sometimes down to 3°C) and save energy overnight. At TIFRH, my lab is starting to study birds like sunbirds and nightjars, collecting data from the Indian tropics while training local biologists. But there are huge data gaps for energetics in the tropics, with almost no data on endotherm energetics in India. I will continue to integrate perspectives from ecology, physiology, evolution, and molecular and imaging techniques to understand how heterothermic animals exist. While salsa dancing and reading fiction!

SYMPOSIA SESSIONS

S1 - ECOLOGICAL DEGRADATION IN THE ANTHROPOCENE: DETECTION, ESTIMATION, AND THE CONSEQUENCES FOR ECOSYSTEM FUNCTION

Chairs: Ghazala Shahabuddin, Ashoka University; Meghna Krishnadas, National Centre for Biological Sciences-TIFR

01

MULTIPLE LAND-USE LEGACIES DRIVE DIVERGENT FLORISTIC RECOVERY IN TROPICAL RAINFORESTS OVER DECADAL TIMESCALES DESPITE SHARED LANDSCAPE CONTEXT

A. P. Madhavan – Nature Conservation Foundation, Mysuru

Divya Mudappa - Nature Conservation Foundation, Mysuru; T. R. Shankar Raman - Nature Conservation Foundation, Mysuru; Anand M. Osuri - Nature Conservation Foundation, Mysuru

Abstract – Secondary forest successional trajectories are mediated by landscape and local factors that shape species availability and performance. Trajectories converge when both factors are shared, and diverge when landscape-scale factors differ. Whether differing local-scale land-use histories shape trajectories when landscape is constant remains unclear due to confounding landscape differences in multi-landuse studies. We sampled 105 plots across 9 land-use types naturally regenerating over past 25-50 years in a valley in Wayanad, Western Ghats, to understand how age and land use history influence recovery and whether shared landscape promotes convergence or land-use differences drive divergence across cohorts.
Age and past land-use jointly explained recovery patterns, with higher disturbance land use types recovering more poorly across indicators. Aboveground carbon and compositional similarity to reference forests remained below 30% irrespective of disturbance intensity, while diversity metrics approached reference conditions. Floristic trajectories revealed predominantly divergent dynamics irrespective of disturbance history, with most land-use types remaining compositionally distant from reference forests (<0.16). while similarity across land use started low (~0.3) and either remained as distant or diverged further. These findings demonstrate that land-use legacies govern recovery trajectories through recruitment filters even under relatively uniform landscape conditions.

02

PLANT TRAITS, NEIGHBOURHOODS, AND HERBIVORE NETWORK STRUCTURE MEDIATE ELEVATED HERBIVORY AT SEMI-ARID FOREST EDGES

Upasana Sengupta – Ashoka University, Haryana

Manan Mehta, PhD, Department of Biology, Ashoka University & Shivani Krishna, Assistant Professor, Department of Biology, Ashoka University

Abstract – Fragmentation delineates landscapes into a gradient of habitat patches, with forest edges emerging as key zones where ecological interactions are reshaped. Associational resistance alone cannot explain the observed herbivory patterns in mixed-forest stands. A trait-based approach incorporating variation across diverse neighbourhoods may be critical to understanding herbivory. In an agricultural-mosaic system in the Aravalli Range of India, we examined i) whether edge proximity alters the magnitude of herbivory, ii) if these alterations are mediated by plant traits, neighbourhood context and herbivore assemblages. We laid out plots (n=77) along interior and edge transects, recording plant and herbivore composition, defense traits, percentage herbivory and 5 nearest-neighbours of each plant. Plant diversity was higher in the interior while edges had a more homogenous composition. Herbivory was ~30% higher at edges, with substantial inter- and intra-specific variation. Using a network approach, we found that herbivore richness and abundance were similar across regions but varied in composition. Plants with greater alkaloid concentration that occurred spatially with more conspecific

neighbours experienced lower damage, revealing a potential dilution effect. Our results show that within-species variations in herbivory are explained by a combined effect of external factors such as local neighbourhood and intrinsic factors such as plant traits.

03

FOREST FIRE-INDUCED HABITAT LOSS AND FRAGMENTATION IN UTTARAKHAND HIMALAYA USING SATELLITE REMOTE SENSING

Tazmin Sultana – Ramakrishna Mission Vivekananda Educational and Research Institute

Abstract - Forest fires in the Himalayas are an emerging issue with significant ecological implications. In Uttarakhand, they pose an open threat across sectors, destroying valuable timber, disrupting local livelihoods of forest-fringe communities, and endangering the precious Himalayan wildlife. This study highlights the vulnerability of Himalayan wildlife, which was affected by the 2020 forest fire. Using multi-temporal satellite data, habitat degradation and fragmentation were analyzed, followed by Burn severity, which is quantified using the differenced Normalized Burn Ratio (dNBR) derived from Sentinel 2. Results suggest substantial vegetation loss in areas with moderate-to-high burn severity, as seen in declines in NDVI values. Spatial overlay analysis reveals that high-severity burn zones correspond to the most significant reductions in vegetation cover. Landscape structure analysis shows a decrease in contiguous forest patches and an increase in smaller, isolated patches following the fire. This study establishes the utility of satellite-based approaches for quantifying fire-induced ecological changes and provides deeper insights into the potential impacts of recurring forest fires on Himalayan ecosystems. The findings suggest an urgent need for long-term conservation planning in the Himalayas.

04

DETECTING ECOLOGICAL DEGRADATION USING NDVI BREAKPOINTS IN WESTERN HIMALAYAS

Abhishek Kumar – ICAR National Bureau of Plant Genetic Resources, New Delhi

Meenu Patil (Department of Botany, Panjab University, Chandigarh); Anand Narain Singh (Department of Botany, Panjab University, Chandigarh)

Abstract – Human-mediated pressures are altering the structure and functioning of mountain ecosystems leading to ecological degradation. However, detecting ecological degradation remained challenging due to limited availability long-term observations. We analysed satellite-derived proxies of vegetation dynamics to detect large scale signals of ecological degradation in the Western Himalayas. Specifically, we used BFAST (Breaks For Additive Season and Trend) algorithm to identify breakpoints in the MODIS NDVI time series data (2001 to 2025). Our results showed variation in magnitude, timing, and break types in vegetation dynamics. These preliminary results indicate higher degradation at lower elevations, suggesting greater anthropogenic pressure. Our study highlights that integrating breakpoints detection with spectral diversity can provide a framework to detect ecological degradation in data-poor regions.

05

RESILIENCE AND RECOVERY OF DEGRADED HIMALAYAN OAK FORESTS: ROLE OF DISPERSAL TRAITS, HABIT AND HABITAT

Ghazala Shahabuddin – Ashoka University, Haryana

Shivani Krishna, Department of Biological Sciences, Ashoka University, Plot # 2 Rajiv Gandhi Education City, Sonipat, Haryana- 131029, India. Soham Kacker, Department of Biological Sciences, Ashoka University, Plot # 2 Rajiv Gandhi Education City, Sonipat, Haryana- 131029, India.

Abstract - Degraded forests may possess the potential for recovery of species diversity and composition during regrowth. Woody plant resilience may depend on both dispersal traits and growth habit in increasingly fragmented forests. In this study, we explore the recovery potential of degraded forest as indicated by woody plant regeneration in 15 protected (dense) and 15 degraded oak-dominated hardwood forest stands in the Western Himalaya, and explore the role of plant traits related to dispersal and growth habit in determining resilience. Richness ($p<0.001$), density ($p<0.001$) and diversity ($p< 0.005$) of shrub regeneration were significantly lower in degraded forests than in dense. Tree regeneration did not show similar differences. Composition of both tree regeneration and shrub regeneration differed significantly between dense and degraded sites, suggesting future transition to an altered plant community. Regeneration density of both biotically dispersed and small-seeded shrub species was significantly higher in dense forest than in degraded forest, but trees did not exhibit this difference. Our results indicate that shrubs may be far more vulnerable to forest degradation than trees, and that dispersal agency and seed size may drive shrub species losses. Our results provide directions for the restoration of degraded oak forest in the Western Himalaya.

06

IMPACTS OF LIVESTOCK HERBIVORY ON SUCCESSIONAL MANGROVES IN THE NICOBAR ISLANDS

Thirumurugan Vedagiri - Madras Christian College, Chennai

Thirumurugan V1,2, Anoop Raj Singh1, Gnanasekaran G2, Nehru Prabakaran1 Affiliation: 1. Post Box 18, Wildlife Institute of India, Chandrabani, Dehradun 248 001, Uttarakhand, India 2. Department of Botany, Madras Christian College (Autonomous), Tambaram East, Chennai 600 059, Tamil Nadu, India*

Abstract - The 2004 tsunami coupled with coastal subsidence (land drowning) caused large scale loss of mangroves across the Nicobar Islands. The subsequent succession of mangroves is faced with multiple challenges including livestock herbivory. We studied how livestock herbivory impact mangrove succession across the tidal zones from 25 mangrove successional sites in the Nicobar Islands. Livestock disturbance intensity were quantified through assigning disturbance scores of 1-10 (low – high) from 205 plots. A total of 71 trees (8.15 %), 357 saplings (27.82 %) and 678 seedlings (11.37 %) were affected by livestock herbivory in the Nicobar Islands; within that, 65 trees (91.5 %), 331 saplings (92.7 %) and 637 seedlings (94 %) individuals were accounted from the Great Nicobar Island. The disturbance intensities have significantly varied across the mangrove zones (seaward, ecotone, and landward) and lifeforms (seedling, sapling and trees). The livestock herbivory in the Great Nicobar Island leading to cryptic ecological degradation and slow mangrove colonization, where only a few set of species with resilience to herbivory managed to establish. The study highlights the need for effective management of cattle herbivory to facilitate mangrove succession and rejuvenation of consequent ecosystem services.

S2 - PROXIMATE MECHANISMS OF ANIMAL BEHAVIOUR

Chairs: Maria Thaker, Indian Institute of Science; Ratna Ghosal, Ahmedabad University

01

THERMAL FLUCTUATIONS AFFECT EMBRYONIC PHYSIOLOGY IN A TROPICAL AGAMID LIZARD

Amanda Ben – Indian Institute of Science Bangalore

Nubla BM, Debarpita Das, Aranya Girish, Maria Thaker

Abstract – Climate change is increasing both mean and fluctuations in environmental temperature, creating novel challenges for ectotherms. Reptilian embryos are particularly vulnerable as they develop with little or no parental care and have limited capacity for thermoregulation. However, most laboratory studies designed to understand temperature effects still use constant incubation temperatures that fail to replicate natural conditions, a critical gap for tropical species that already experience high temperatures. Our study investigated the effects of constant versus fluctuating incubation temperatures on embryonic physiology, development, and hatchling phenotype in Psammophilus dorsalis, the Indian rock agama. Eggs were incubated under one of five treatments: constant 25°C, 30°C, and 35°C, and two fluctuating regimes (F2:25–30°C, mean 27.5°C; F3:25–30–35°C, mean 30°C). Embryonic heart rate and egg mass were monitored throughout development, along with hatching success, developmental duration, and hatchling morphology. Incubation regime significantly affected embryonic heart rate and mass, with the warmest fluctuating treatment (F3) showing the strongest responses. Hatching success declined and developmental time shortened at higher temperatures, while hatchling mass was reduced in F3 treatment. These results highlight the physiological effects of temperature fluctuations and the importance of using realistic thermal regimes to predict climate change impacts on tropical reptiles.

02

FROM SONG TO CHOICE: NEURAL AND BEHAVIOURAL CORRELATES OF FEMALE SONGBIRD PREFERENCES

Titir Roy – Indian Institute of Science Education and Research

Abstract – Songbirds provide a powerful model for studying learned vocal communication and mate choice. While male zebra finches produce learned songs to attract females, the acoustic features that drive female responses, and how these relate to mate choice remain unclear. In particular, the role of less-studied song components such as introductory syllables, compared to the stereotyped motif, is poorly understood.
Here, we investigate female vocal responses during natural courtship interactions using a multi-animal recording system that combines acoustic recordings with respiration signals to accurately attribute vocalizations to individuals. This approach enables precise alignment of female calls to distinct male song elements, including introductory syllables, motif syllables, and calls, allowing quantification of response probability and latency in an interactive context. We present preliminary results on the timing of female vocalizations relative to male song. Unlike traditional playback paradigms, this framework captures communication as a dynamic, temporally structured exchange. To link behavior with neural processing, we have begun recording from the caudal mesopallium (CM) during song playback. Together, these approaches aim to identify the acoustic features and neural mechanisms underlying female responses and mate choice.

03

ONTOGENETIC STAGE DIVERGENCE IN MORPHOLOGY, ACTIVITY AND BEHAVIORAL PHENOTYPES OF THE HYDROTHERMAL VENT CRAB XENOGRAPSUS TESTUDINATUS

Jishnu Panamoly Ayyappan - Institute of Marine Biology, National Taiwan Ocean University, Taiwan

Li-Chun Tseng1, Subramani Thirunavukkarasu1, Murugan Vasanthakumaran1, Triparna Chatterjee1 Sami Souissi3,4 and Jiang-Shiou Hwang1,3 1 Institute of Marine Biology, National Taiwan Ocean University, Keelung 20224, Taiwan 2 Biodiversity Division, Earth Climate and Ocean Research Foundation, Kochi, Kerala 683546, India 3 Center of Excellence for the Oceans, National Taiwan Ocean University, Keelung 20224, Taiwan 4 Lille University, Faculty of Sciences and Technologies, F-59000 Lille, France * Correspondence: Tel: 886-2-24622192 ext. 5304; Fax: 886-2-24629464; E-mail: jshwang@mail.ntou.edu.tw*

Abstract - Ontogeny is a major axis of ecological differentiation, yet how coordinated behavioral change emerges across development remains poorly resolved in extreme environments. We quantified ontogenetic variation in locomotion, space use, and integrated behavioral profiles in the shallow hydrothermal vent crab *Xenograpsus testudinatus* using standardized open-field assays with trajectory tracking. Adults were larger and travelled farther than juveniles (4.81 ± 2.20 m vs 3.28 ± 3.43 m; $p < 0.001$), showing broader spatial coverage and longer pauses, whereas juveniles performed sharper turning. Behavioral profiles differed significantly between stages (PERMANOVA: $F(1,118) = 34.957$, $R2 = 0.229$, $p < 0.001$). A random forest classifier predicted ontogenetic stage with high accuracy (0.942 ± 0.020), identifying pausing dynamics, locomotor output, and arena use as key discriminators. Speed- and freezing- related metrics did not differ, indicating divergence was expressed through movement organization and spatial strategy rather than locomotor capacity alone. These results demonstrate a multivariate reconfiguration of movement intermittency across ontogeny, providing a foundation for testing encounter propensity in vent-associated contexts.

Keywords: Ontogeny; behavioral phenotypes; movement ecology; multivariate analysis; open-field assay; random
forest; X. testudinatus

04

LINKING VISUAL SENSITIVITY AND SOCIAL BEHAVIOUR ACROSS LIGHT ENVIRONMENTS IN GREEN CHROMIDES (ETROPLUS SURATENSIS)

Chena Desai - Biological and Life Sciences, School of Arts and Sciences, Ahmedabad University

Amit Babu (Biological and Life Sciences, School of Arts and Sciences, Ahmedabad University), Rashmita Ganguly (Social Sciences, School of Arts and Sciences, Ahmedabad University), Krishna BS Swamy (Biological and Life Sciences, School of Arts and Sciences, Ahmedabad University), Ratna Ghosal (Biological and Life Sciences, School of Arts and Sciences, Ahmedabad University)

Abstract - In visually dependent species, phenotypic plasticity plays an important role in adapting visual capabilities across spectrally diverse environments. Plasticity in opsin gene expression may tune visual sensitivity to match the ambient
spectral conditions, thereby maintaining behavioural performances and fitness across environments. To examine this in green chromides, a cichlid that relies heavily on vision, individuals were sequentially housed under white (control) and blue light conditions (both with distinct spectra measured by irradiance), each for 45 days. At 15-day intervals, individuals were assessed for performance in visual tasks (social preferences for conspecifics) and opsin expression was measured. Under control conditions, chromides exhibited a long-wavelength shifted opsin profile, with highest expression of long-wavelength opsin (LWS). However, opsin expression patterns did not shift to match blue light. Short-wavelength opsins (SWS1, SWS2a, SWS2b) showed no significant change under blue light compared to white. Despite this, performance in visual tasks, preference for conspecifics, remained unaffected in blue light.
Interestingly, there was a significant increase in LWS opsin expression under blue light, indicating

that plasticity is possibly restricted to the long-wavelength end of the visual spectrum. Overall, these findings suggest that green chromides maintain broad spectral sensitivity, enabling performance across environments with limited plasticity.

05

COMPARATIVE PATTERNS OF BASKING BEHAVIOUR IN MUGGER CROCODILES ACROSS CAPTIVE AND FREE-RANGING POPULATIONS

Aditya Wadekar - Biological and Life Sciences, School of Arts and Sciences, Ahmedabad University

Tathagata Bhowmik- Biological and Life Sciences, School of Arts and Sciences, Ahmedabad University; Brinky Desai- Mahim Pandhi Wildlife Foundation; Usha Lamani- Biological and Life Sciences, School of Arts and Sciences, Ahmedabad University; Nikhil Whitaker- Madras Crocodile Bank Trust; Ratna Ghosal- Biological and Life Sciences, School of Arts and Sciences, Ahmedabad University

Abstract - Basking is an absolute biological necessity for most reptilian species, though large ectotherms are heavily understudied. Here, we monitored basking behaviours of mugger crocodiles in a free-ranging population in Petli, Gujarat, and in captivity at the Madras Crocodile Bank Trust (MCBT), Tamil Nadu. We collected 6,403 hours of video recordings from January to May, during 2022 for MCBT and 2024 for Petli. We measured basking durations and frequency of basking individuals, along with recording air and water temperatures. We used Bayesian GLMM and GAMM, for statistical analysis to investigate seasonal and daily patterns of basking. Both the populations displayed clear seasonal trends, driven by air-water temperature differential, basking longer during cooler months and shorter during warmer ones. However, daily patterns were quite different. The captive group had broad peaks of basking activity in the late afternoon, while the free-ranging group showed sharp peaks in mid-morning and reduced activity later in the day. These differences were likely driven by proximate factors in their immediate local environment, such as variations in land:water ratio, and anthropogenic disturbances, possibly constraining basking opportunities. Overall, the study showcases plasticity in basking behaviours of muggers, a tropical species living closer to their thermal maxima.

06

MORE THAN HUMAN PRESENCE: UNDERSTANDING THE DRIVERS OF FAECAL CORTISOL IN FREE-RANGING BLACKBUCK POPULATIONS

Sofiya V M - Indian Institute of Science

Dr Maria Thaker, Indian Institute of Science; Dr Abi Vanak, ATREE

Abstract - As ecosystems are transformed into agricultural land and cities, they lose natural habitats and increase wildlife activity in human-dominated areas. In Indian agroecosystems, domesticated animals that use the agroecosystem matrix frequently interact with wild animals. A key example is the high density of free-ranging dogs (FRD) in human-dominated landscapes that now form a potential prey base for large carnivores. The predation of village dogs can also serve as a direct catalyst for conflict between humans and wild carnivores
In this study, we investigate the effects of leopard predation on FRDs by comparing population, behavioural, and physiological (hair cortisol) variation among dogs in Nashik and Pune across a unique gradient, ranging from no leopard regions to areas with recent leopard presence and long-term leopard areas. From preliminary analysis, we find that ranging, group sizes and hair cortisol in FRD show variation across the gradients.

The comparative approach provides a novel opportunity to understand the concept of the landscape of fear in a human-dependent species in human-dominated landscapes. Furthermore, it could help us deepen the understanding of both the positive and negative impacts of FRDs within the human dimensions of dog-wildlife interactions.

07

BEYOND MISTAKEN IDENTITY: USING PROXIMATE MECHANISMS TO RESOLVE THE PARADOX OF SAME-SEX SEXUAL BEHAVIOR

Viraj R. Torsekar - GITAM University

Abstract - Same-sex sexual behavior (SSB) is widespread across the animal kingdom, yet its persistence is frequently dismissed as a Darwinian paradox or a proximate sensory error, labelled as “mistaken identity.” Historically, the scientific community has treated mechanistic failures in sex recognition as a default null hypothesis, overshadowing potential adaptive functions. In this review talk, I synthesize recent literature to propose a conceptual framework that explicitly links proximate mechanisms to behavioral outcomes in SSB. I argue that resolving the evolutionary persistence of SSB requires investigating, rather than assuming, the underlying sensory pathways, hormonal mediation, and neurobiology. By examining how diverse species, from arthropods to mammals, mechanistically process sex discrimination and social intent, a new paradigm emerges. When researchers explicitly test proximate correlates, SSB often reveals itself not as a misdirected sensory constraint, but as a context-dependent strategy co-opted for non reproductive functions, such as mitigating intrasexual aggression or reinforcing social bonds. Ultimately, I highlight how integrating mechanistic approaches is essential for predicting when and why SSB emerges from the interplay of social environments, life history, and ecological contexts.

S3 - CONSERVATION AND COEXISTENCE: MULTIDIMENSIONAL LEARNINGS FROM PRIMATOLOGY

Chairs: Honnavalli N. Kumara, Salim Ali Centre for Ornithology and Natural History (SACON), South India Centre of Wildlife Institute of India; Santanu Mahato, Salim Ali Centre for Ornithology and Natural History (SACON), South India Centre of Wildlife Institute of India; Arijit Pal, Food and Land Use Coalition India

01

RESPONSIBLE AND ETHICAL EXPERIMENTATION CAN OFFER UNIQUE INSIGHTS INTO CONSERVATION ECOLOGY, BEHAVIOR, AND COGNITION – LESSONS FROM INDIAN PRIMATOLOGY

Sayantan Das, University of Mysore

Tejeshwar Dhananjaya, University of Mysore; Monica Harpalani, University of Mysore; Mewa Singh, University of Mysore and Bangalore University

Abstract - The value of experimental approaches is well established in the sciences and the social sciences, but less so in conservation sciences, especially in conservation ecology, conservation ethology, and animal-human studies. While experimental approaches are often infeasible, demanding, and risky, they can be insightful and revelatory, and, with strict adherence to ethical principles and attention to long-term well-being, far less adversarial. When combined creatively with traditional approaches, experimentation can outperform observational studies by discovering causal relationships among correlated variables. Oddly, such mixed approaches have been restricted to a few sub-disciplines in wildlife ecology practiced within India, and the trend is consistent in field-based Indian primatology. In an effort to responsibly perpetuate the value of mixed approaches, I will draw on our published studies on bonnet monkeys in Mysore and on Nicobar long-tailed monkeys in the Nicobar Islands to illustrate how they revealed, respectively, the impact of commensalism (synurbization) on feeding and processing behaviors and the intricate relationship with cultivated coconuts. Although none of these studies solved a conservation problem directly, they revealed the limitations of previous approaches and the inadequacy of existing understandings, offering broader, finer, and hitherto novel perspectives that helped calibrate conservation strategies, including engagement, education, and sensitization.

02

WORKING WITH SECONDARY DATA: DEVELOPMENTS, POSSIBILITIES AND CONCERNS

Zakhiya Pulukkol Cheriyandilakath, National Institute of Advanced Studies

Abstract - The study of primate social behaviour is driven by interests in conservation, coexistence and conflict management in human-modified landscapes, and understanding evolutionary and ecological processes. Sociality, social structures, and dynamics are observed at macro levels, and the required data collection increases sample sizes and variables. Advances in computational power and tools like social network analysis have enabled researchers to ask more diverse and complex questions. These tools, originating from various fields, offer opportunities for nuanced insights but require careful consideration in their application and interpretation in primatology.

Primatologists have accumulated extensive behavioural data across diverse primate habitats in India, since before the advent of modern tools, necessitating revisions in data documentation and future collection. Working with a mix and match of such data raises concerns about ethics, integrity, and rigour, particularly for young researchers. Will discuss approaches to analysing secondary behavioural data, highlighting tools and how to use them and where. We will also introduce MacaqueNet, a global grassroots network, emphasising the importance of engaging across boundaries.

We'll explore the possibilities and limitations of re-examining existing data, addressing questions of data quality, validation, and the potential for new discoveries informing both conservation efforts and our understanding of societies.

03

BEYOND FRAGMENTATION: DIFFERENTIAL DEMOGRAPHIC RESPONSES OF PRIMATE SPECIES TO ANTHROPOGENIC CHANGES IN THE ANAMALAI HILLS, WESTERN GHATS

Santanu Mahato, Sálim Ali Centre for Ornithology and Natural History (SACON), South India Centre of Wildlife Institute of India

Honnavalli N. Kumara (Sálim Ali Centre for Ornithology and Natural History (SACON), South India Centre of Wildlife Institute of India), Mewa Singh (Biopsychology Laboratory and Institution of Excellence, University of Mysore))

Abstract - Biodiversity-rich tropical ecosystems are experiencing burgeoning anthropogenic pressures and continuous modifications. Responses of primates as important indicators are therefore crucial for framing effective conservation strategies. Moving beyond this fragment-centric perspective, the present study synthesizes existing literature alongside our recent demographic data to examine how primate populations differentially respond to human-induced environmental change in the Anamalai Hills. Focusing on four species–lion-tailed macaque, bonnet macaque, Nilgiri langur, and tufted gray langur–we evaluate variation in key demographic attributes, including group size, age-sex structure, and population stability, across gradients of habitat modification. Importantly, these responses cannot be attributed to fragmentation alone but reflect the combined and interacting effects of land use change, infrastructure, tourism, and socio-ecological interactions. By integrating multi-species demographic patterns within a single, heterogenous landscape, this study highlights the limitations of single-factor conservation approaches and emphasizes the needs for integrative, landscape-level strategies that account for species-specific vulnerabilities. Thus, the Anamalai Hills provide a "natural laboratory" or "microcosm" for understanding multifaceted challenges of primate conservation in human-modified tropical landscapes across the Western Ghats.

04

UNLIKELY FRIENDS? COEXISTENCE STRATEGIES OF MACAQUES AND STREET DOGS IN SHARED ANTHROPOGENIC LANDSCAPES

Arijit Pal, Food and Land Use Coalition India, WRI India

Anindya Sinha, Coexistence Studies Group, University of Trans-Disciplinary Health Sciences and Technology, Bangalore Animal Behaviour and Cognition Programme, National Institute of Advanced Studies, Bangalore

Abstract - In an era of extreme anthropogenic niche construction, most nonhuman beings are able to adopt a variety of intra and interspecific behavioural strategies to coexist successfully with humans and other species. Remarkable amongst these are street dogs, arguably our oldest social nonhuman associates, and macaques, the most widely distributed of all nonhuman primates, who occasionally develop effective coexistence strategies within their shared spaces. Surprisingly, the available scientific information on dog–primate relationships is limited to opportunistic observations and heavily skewed toward agonistic interactions, often portraying dogs as imminent threats to synurbic primates. Our study employed a mixed-methods approach, incorporating both quantitative and qualitative behavioural observations, along with people's perceptions, to examine the spectrum of macaque–dog relationships across three macaque species – bonnet macaques, rhesus macaques, and Nicobar long-tailed macaques – in various urban and urbanising habitats. We discovered significant differences in their interspecific behaviours, with varying levels of agonism, tolerance, and affiliation between the respective species. Certain environmental factors – food type and availability, individual behavioural profiles, and human interventions – appeared to influence species' trade offs, leading to context-dependent adaptive strategies rather than consistently prevalent agonistic interactions, without conservation threats.

05

THE BONNET MACAQUE ONE HEALTH PROJECT

Praneetha Monipi, Adhvaya: Beyond Barriers

Abstract - Feeding of bonnet macaques (Macaca radiata) driven by religious and cultural practices has intensified human– primate conflict, altered behaviour, deepened welfare consequences and impacted ecosystem and community outcomes in urban and peri-urban landscapes of southern India. Since January 2024, we have implemented an in-situ, intersectional One Health model across seven troops and multiple stakeholder communities. Our approach integrates ecological research, sociological and ethnographic methods, behaviour change, and co-created interventions, including deployment of prototype monkey-proof waste systems with high field efficiency. We have since, observed clear reductions in provisioning frequency and associated conflict behaviours, alongside a shift from community resistance to active collaboration and co-creation. A key driver of success is the integration of religious and cultural practices into conservation strategies, rather than excluding them.
Approximately 18 months into implementation, the project expanded into agroecological mosaic landscapes to address crop loss, food insecurity, and livelihood risks through human–macaque conflict mitigation.

This model demonstrates a scalable, systems-based framework for addressing root drivers of conflict in human dominated landscapes and can be adapted for other commensal, polarised, and underrepresented species.

06

ECOLOGY OF URBAN DWELLING RHESUS MACAQUES (*Macaca mulatta*)

Taniya Gill, Ashoka Trust for Research in Ecology and the Environment (ATREE)

Abstract - Urban environments across India host large populations of rhesus macaque that exhibit remarkable ecological flexibility. They provide novel resource landscapes characterized by anthropogenic food availability, reduced predation pressure, and fragmented green spaces. Macaques navigate these conditions through shifts in their feeding habits toward high-calorie, sometimes provisioned by humans, thereby influencing their natural foraging patterns and activity budget.This study examines the ecology of rhesus macaques (*Macaca mulatta*), focusing on their behavior, diet, social interactions, individual personalities and interactions with humans. The methodology integrates both primary field based observations and secondary data sources. The social dynamics in urban troops are shaped by resource distribution and human presence, often resulting in changes in intra-group competition, and in their ranging behavior. Additionally, urban macaques display behavioral flexibility such as use of built structures, and foraging strategies that reflect cognitive adaptability. However, these ecological adjustments also intensify human–macaque interactions, due to competition for resources with humans. By combining field-based insights with secondary datasets, this study highlights how urbanization influences macaque ecology in different ways. Understanding these dynamics is critical for developing effective management strategies that promote coexistence while mitigating “conflict” in rapidly urbani

07

SOCIO-ECOLOGICAL DRIVERS OF HUMAN BEHAVIORAL RESPONSES TO HIMALAYAN LANGUR (*Semnopithecus schistaceus*) ENCOUNTERS IN HUMAN-DOMINATED LANDSCAPES

Diganta Mandal, Indiana University/Centre for Ecology Development and Research

Himani Nautiyal123, Avirup Sinha25, Suraj Dungwal2, Rui Diogo1, Anindya Sinha678 , 1 College of Medicine, Howard University, Washington, DC, USA, 2 Himalayan Langur Project, Uttarakhand, India, 3 Centre for Ecology Development and Research (CEDAR), India, 4 Department of Anthropology, Indiana University, Bloomington, USA, 5 Department of Anthropology, University of Florida, Gainesville, USA, 6 National Institute of Advanced Studies, IISc Campus, Bangalore, India, 7 University of Trans-Disciplinary Health Sciences and Technology, Bangalore, India, 8 Centre for Wildlife Studies, Bangalore, India

Abstract - Urban environments across India host large populations of rhesus macaque that exhibit remarkable ecological flexibility. They provide novel resource landscapes characterized by anthropogenic food availability, reduced predation pressure, and fragmented green spaces. Macaques navigate these conditions through shifts in their feeding habits toward high-calorie, sometimes provisioned by humans, thereby influencing their natural foraging patterns and activity budget.This study examines the ecology of rhesus macaques (*Macaca mulatta*), focusing on their behavior, diet, social interactions, individual personalities and interactions with humans. The methodology integrates both primary field based observations and secondary data sources. The social dynamics in urban troops are shaped by resource distribution and human presence, often resulting in changes in intra-group competition, and in their ranging behavior. Additionally, urban macaques display behavioral flexibility such as use of built structures, and foraging strategies that reflect cognitive adaptability. However, these ecological adjustments also intensify human–macaque interactions, due to competition for resources with humans. By combining field-based insights with secondary datasets, this study highlights how urbanization influences macaque ecology in different ways. Understanding these dynamics is critical for developing effective management strategies that promote coexistence while mitigating “conflict” in rapidly urbani

S4 - INTEGRATING MIXED METHODS FOR DEEPER INSIGHTS IN SOCIO-ECOLOGICAL RESEARCH

Chairs: Swapna Nelaballi, Centre for Wildlife Studies; Sruthi Unnikrishnan, Centre for Wildlife Studies

01

BLURRY BOUNDARIES: LEARNINGS FROM TRANS-DISCIPLINARY CROSS POLLINATION

Samira Agnihotri, The University of Trans-Disciplinary Health Sciences and Technology (TDU)

Abstract – This talk introduces the concept of trans-disciplinarity through select case studies from across the world. Dr Agnihotri also shares insights from her own trans-disciplinary journey, across the "natural" and "social" sciences, and beyond academia. Trans-disciplinary work requires a reconciliation of differences in values and a bridging of disciplinary languages to find shared value systems and vocabularies. She advocates that cross-sectoral collaborations enable new emergences that not only help disciplines to evolve, but are also key to understanding the inherent complexity of life on Earth, and to find holistic solutions for Planetary Health.

02

UNDERSTANDING SPATIAL BEHAVIOUR AND ITS DRIVERS: A CASE STUDY FROM INDIA

Abhishek Dudi, Ashoka University

Divya Karnad, Ana Nuno, Nauful Nazium, Chris Kerry, Keerthana, Claire Collins

Abstract – Effective fishery management and the mitigation of transboundary Illegal, Unreported, and Unregulated (IUU) fishing require precise tracking of fleet movements. However, relying solely on satellite telemetry like the Automatic Identification System (AIS) often underestimates fishing activity in developing regions due to frequent signal gaps and voluntary switch-offs. To uncover these hidden spatial footprints and understand the specific pressures compelling fishers into high-risk waters, this study maps the operational range of the mechanized deep-sea fleet operating out of Kanyakumari, South India. We integrate AIS data accessed via Global Fishing Watch with fisher reported participatory mapping and in-depth interviews. Our findings reveal that spatial behavior is heavily dictated by economic necessity and environmental variability rather than regulatory boundaries. Furthermore, fishers readily adopt operational tools offering direct livelihood and safety benefits but resist top-down surveillance systems, which increases tracking blind spots. Ultimately, combining fisher-led datasets with satellite telemetry provides a more robust, comprehensive framework for modeling fleet mobility, equipping policymakers to design equitable and effective transboundary marine conservation strategies.

03

INTEGRATING ETHNOGRAPHIC AND BEHAVIOURAL APPROACHES TO STUDY HUMAN-DOG PARTNERSHIPS IN HIMALAYAN PASTORAL SYSTEMS

Rashmi Singh Rana, University of Technology Sydney

Kulbhushansingh Suryawanshi (Nature Conservation Foundation; Snow Leopard Trust-India), Rosalie Chapple (University of Technology Sydney), Daniel Ramp (University of Technology Sydney)

Abstract – Conservation research on pastoral ecosystems has advanced through ecological indicators such as livestock movement patterns and predator attack incidents, alongside anthropological inquiries into pastoral livelihoods, mobility, and human-animal relationships. However, understanding how everyday relationships between humans and animals influence complex socio ecological dynamics and multispecies coexistence remains challenging when these approaches are not brought into dialogue.

This paper examines multispecies relationships through human-dog partnerships in mobile pastoral systems of the western Himalaya, using an integrated qualitative and observational

approach to understand how livestock protection is shaped in practice. Drawing on ethnographic interviews with 23 Gaddi shepherds alongside videographic behavioural data from 32 Gaddi dogs in Lahaul, Himachal Pradesh, the study focuses on how human-dog partnerships are shaped by interspecies collaboration, reciprocal care practices, and coordinated responses to ecological threats such as predator encounters. These insights help interpret patterns of predator risk management and coexistence in multispecies landscapes.
By foregrounding how everyday human-animal relationships shape coexistence with predators in pastoral systems, this study demonstrates how the use of mixed methods approaches supports understanding of multispecies interactions and informs conservation outcomes.

04

BEYOND ECOLOGY: SOCIO-POLITICAL-ECOLOGICAL DIMENSIONS OF HUMAN-WILDLIFE CONFLICT AND COEXISTENCE

Shweta Shivakumar, Nature Conservation Foundation

Abstract – Human-wildlife conflict, a common but challenging phenomenon, warrants an inter-disciplinary multi-method approach to understand its complexity. Through my research I have used methods from ecology and sociology to examine human-large cat conflict and coexistence. I present three methods examining impacts due to large carnivores: spatiotemporal analysis, experiential narrative inquiry and conflict mediation. I conclude by detailing how in having used these methods we arrived at a deeper understanding of conflict and coexistence.

05

ADOPTING METHODOLOGICAL PLURALITY TO UNDERSTAND ELEPHANT AGENCY IN SHAPING HUMAN-ELEPHANT CONFLICT IN NORTH BENGAL

Akashdeep Roy, Indian Institute of Science Education and Research (IISER), Pune

Abstract – While the human role in human-elephant conflict (HEC) is widely studied, this study explores how nonhumans (elephants) are political actors who shape HEC alike in North Bengal. North Bengal is a part of both global biodiversity and HEC hotspots. Combining 'human eye' (surveys, interviews, and participant observations) with 'animal eye' (camera traps and satellite telemetry) provided a more-than-human pathway into understanding HEC. Each method helped in data triangulation.

Findings show how strict conservation laws have elevated the importance of elephants over that of the locals, which has translated into behavioural changes among both sentient beings. Through all mentioned methods, meek behaviour among locals and bolder mobility among elephants were evident throughout the 18-month fieldwork. Elephants have developed various strategies to breach electric fences and target human spaces for nutrition and retaliation. The difference-in-difference regressions showed that electric fence efficacy was found to only be up to 32% and created a spillover effect in the nearby unfenced/weak-fenced areas. This exemplifies the relational agency of elephants within the landscape, while also highlighting why HEC persists despite interventions aimed at mitigating it. This approach provided a nuanced view on HEC and also bridged the epistemological gap between conservation anthropology and conservation biology

06

A SOCIAL-ECOLOGICAL ASSESSMENT OF THE CONSERVATION POTENTIAL OF COMMUNITY-MANAGED FORESTS OF NORTHEAST INDIA

Varun R. Goswami, Conservation Initiatives

Biang La Nam Syiem, Bhavendu Joshi, Ezra L. Rynjah and Divya Vasudev. Affiliation for all authors is the same as mine: Conservation Initiatives, Guwahati, Assam

Abstract - Holistic engagement with the interplay of social and ecological processes is fundamental to achieving the coupled goals of biodiversity conservation and human well-being. Participatory, community-based conservation is thus gaining traction worldwide, complementing existing protected areas. This model of conservation assumes importance in the context of Northeast India, where local communities in the hill states are the custodians of most forests, managing them through strong self-governance structures. From a conservation planning standpoint, this model needs to be tested at scale, and for locations and strategies to be prioritised for future engagement. We conducted extensive surveys across the state of Nagaland to better understand and engage with the social-ecological potential of community-managed forests for conservation. By combining ecological and social research across 113 sites in 42 villages, we assessed: (a) the distribution of wildlife species, specifically mammals, that are generally vulnerable to overconsumption; and (b) the willingness to conserve among different communities. Our ecological results highlighted spatial variation in forests that support species like Indian muntjac, wild pig, Himalayan serow, small carnivores, and bears. Our social surveys helped us delve into people–nature relationships and measure willingness to conserve in space. We overlay these findings to identify priority sites for community-based conservation.

07

UNRAVELING PATTERNS AND PROCESSES IN SOCIO-ECOLOGICAL SYSTEMS THROUGH TRANS-DISCIPLINARY ENQUIRIES

Aritra Kshettry, WWF-India

Abstract - Coupled social-ecological systems emerge from the philosophy of shared spaces between people and nature. Understanding such systems can lead to macro scale insights such as the relation between climate change and human footprint, as well as on local scale challenges such as interactions between people and 'potentially' dangerous wildlife. Social-ecological systems typically comprise of social dimensions of economy, politics, power, and justice whereas ecological aspects include species distributions, animal adaptations, resource selections, behavioural ecology, population dynamics etc. The diversity of these coupled systems lends to trans-disciplinary enquiries rather than a traditional social-versus-ecological science dichotomy. Even within the social sciences, both quantitative and qualitative approaches hold merit to understand patterns (spatial or temporal) and processes (mechanisms). I draw on an eight-year study on the relationships between large wildlife and people in a shared landscape of tea and forests to blur boundaries between qualitative, qualitative, social, and ecological research. The study posits co-adaptation as a central mechanism for fine-scale space sharing between people and large wildlife such as leopards and elephants. The study also compares and contrasts behavioural, cultural, and ecological dimensions of shared spaces between people, elephants, and leopards. The findings indicate that leopards and elephants adopt strikingly similar strategies in navigating human spaces but have vastly different impacts on local lives and livelihoods. Human casualties and economic losses emerge as a dominant manifestation of adverse human-wildlife interactions but are also complemented by strong cultural coping mechanisms and acceptance towards damage causing species in certain local communities.

08

METHODS TO THE MADNESS: TOOLKITS TO LEVERAGE MIXED METHODS RESEARCH AND DATA FOR BIODIVERSITY CONSERVATION

Kadambari Devarajan, Independent Researcher

Abstract - Mixed methods research integrating quantitative and qualitative approaches and datasets is gaining traction in biodiversity conservation, especially in studies involving coupled socio-ecological systems. Given the potential of mixed methods research for conservation and monitoring, it is critical to develop toolkits and methods explicitly geared towards them as well as harness, repurpose, and adapt existing research tools to optimize limited resources while ensuring complementarity of the methods being used. Simultaneously, it is essential to develop workflows that incorporate appropriate study designs for effectively leveraging mixed methods frameworks for a unified interpretation that centers the research objectives. In this talk, I will highlight some toolkits that can facilitate integrating qualitative and quantitative methods in mixed method approaches and datasets, and showcase some applications for these free tools. I also share best practices and design considerations to keep in mind when employing mixed method approaches and dealing with such mixed methods data in the domains of wildlife ecology and conservation.

S5 - CANIDS AT THE CROSSROADS: COEXISTENCE AND CONFLICTS IN URBANIZING INDIA

Chairs: Nishant Kumar, National Centre for Biological Science-TIFR; Thinkpaws Foundation; University of Oxford; Priyanka Justa, Wildlife Institute of India and Neeraj Mahar, Wildlife Institute of India, Dehradun; Yavdendradev V. Jhala and Arjun Srivathsa, National Centre for Biological Science-TIFR

01

PAWS, CLAWS AND MIDLIFE FLAWS: HOW TWO CANID SPECIES SHAPED MY SCIENCE AND LIFE

Chandrima Home, Srishti Manipal Institute of Art, Design and Technology, Manipal Academy of Higher Education

Abstract – The journey of research is an arduous one and shapes our lives in more ways than one. While the act of research satiates our curiosity and the ability to ask important questions, the journey of research plays a critical role in shaping us as who we are. Chasing the Indian fox in the semi-arid landscape in Gujarat not only taught me about endurance but also allowed me to adapt like the study species itself. Moving up into the Trans Himalaya in some ways flipped the script; the domestic dogs pushed my research into the messy, urgent realities of human-dog interaction and the heavy ecological footprint of domestic predators on vulnerable wildlife. My own personal trials and tribulations inherently shaped this journey and even required me to change my research questions and field sites. This keynote reflects on the chaotic yet organized, important learnings and unlearning spaces that helped me re-write my perspectives in research and help build resilience.

02

REMOVAL, REPLACEMENT, AND RESILIENCE: REVISITING THE VACUUM EFFECT IN FREE-ROAMING DOG POPULATION

Harish Tiwari, IIT Guwahati

Anubha Pathak, Madhu Mishra, Asha Verma, Parimala Mohanty, Jully Gogoi-Tiwari, Harish Kumar Tiwari

Abstract – Management of free-roaming animals in human-dominated environments presents persistent ecological, ethical, and public-health challenges. Animal removal is often assumed to reduce population size and associated risks, yet ecological theory predicts compensatory responses through immigration, increased survival, reproduction, and abandonment. Commonly termed the “vacuum effect”, this process is frequently invoked in debates on free-roaming dog management, although its empirical basis and conditions of operation remain uncertain.
We review the conceptual foundations and available evidence for replacement dynamics in free-roaming dog populations, particularly in resource-subsidised urban environments where food, shelter, and human tolerance sustain high densities. Although replacement following removal is ecologically plausible, direct large-scale evidence in dog populations remains limited. Outcomes depend on the scale and synchrony of removal, reproductive and abandonment-driven recruitment, immigration, anthropogenic resource availability, and institutional regulation. We propose a conceptual framework in which removal does not inevitably produce rapid replacement but generates variable outcomes according to system structure and implementation conditions. This framework helps reconcile conflicting policy positions and supports integrated strategies combining humane population management, regulation of food and shelter resources, responsible ownership, and disease prevention. Identifying the conditions governing replacement dynamics is essential for designing sustainable interventions for free-roaming animal populations in rapidly urbanising environments.

03

REASSESSING LIVESTOCK DEPREDATION: INSIGHTS INTO HUMAN–DHOLE INTERACTIONS IN KANHA TIGER RESERVE

Aditya Rana, Aligarh Muslim University, Aligarh

Sehba Khan, Postgraduate Student, Department of Wildlife Sciences, Aligarh Muslim University, Aligarh-202002, Uttar Pradesh; Dr. Sharad Kumar, Assistant Professor, Department of Wildlife Sciences, Aligarh Muslim University, Aligarh-202002, Uttar Pradesh; Kedar Gore, Director, The Corbett Foundation, Mumbai-400021, Maharashtra.

Abstract - Understanding human–canid interactions is critical for the conservation of the Dhole in human-dominated landscapes. Dholes, with their long history of persecution, still face various challenges from humans while living close to them. Therefore, we assessed livestock depredation, local perceptions, and economic losses associated with dholes in the buffer zone of Kanha Tiger Reserve. We conducted semi-structured surveys across 31 buffer villages comprising 508 households, and 50 forest staff personnel from the buffer zone. We analysed 432 dhole scats collected during the 2024–25 summer and winter seasons. Camera traps were deployed to assess dhole activity near human habitations. Livestock biomass consumption was estimated using the non-linear exponential model Y = 1.382 (1 - exp(-0.021X)). Only 3% (n=16) of recorded livestock losses were attributed to dholes, with an estimated annual economic loss of ₹1.74 lakh. Overall perceptions were largely positive (76%), with few negative responses (5%) and the remainder neutral. Diet analysis indicated minimal livestock contribution (4.44% biomass), primarily buffalo. Low depredation levels and generally positive perceptions suggest that dholes currently pose a limited threat to local livelihoods. However, unreported losses and lack of compensation may influence attitudes, highlighting the need to strengthen reporting and ex-gratia mechanisms for long-term coexistence.

04

SOCIOCULTURAL DIMENSIONS OF HUMAN-JACKAL COEXISTENCE IN URBANIZING ASSAM, NORTHEAST INDIA

Priyanka Borah, Ashoka Trust for Research in Ecology and the Environment (ATREE), MAHE

Asmita Sengupta, Fellow, Ashoka Trust for Research in Ecology and the Environment (ATREE)

Abstract - Humans and wildlife shape their shared social-ecological niches, therein mutually influencing each other. Coexistence in human-modified environments (HME) is thus not only a function of wildlife ecology but also the lived experiences and worldviews of people across these landscapes. Golden jackals are considered ecologically resilient and significant in folklore, yet they are increasingly disappearing across Indian cities. Sociocultural studies could provide critical insights to understand the drivers of these patterns. We conducted semi-structured interviews (n=130) across a (peri)urban-rural gradient in Assam. Respondents (41%) perceived jackal populations to be declining The strongest predictor of jackal sightings was settlement types; villagers reported frequent encounters, while city dwellers reported no sightings (Fisher's exact test:$p<0.00001$). Younger respondents' perceptions seemed to be influenced by digital media and narratives rather than lived experiences. These narratives include lullabies and idioms and depict jackals as cunning or as bad/good omens. While 87% of respondents supported their protection for ecological roles, 53% were unwilling to share space due to perceived risks. Villagers favored community-led conservation, while city dwellers preferred policy-driven interventions. The study highlights the urgency of an eco sociocultural conservation approach in HMEs as lived experiences with "once-common-now-rare" species continue to decline.

05

FREE-RANGING DOG MOVEMENT AND HABITAT USE IN A PROTECTED HUMAN-WILDLIFE LANDSCAPE IN SOUTH INDIA

Sanjana Vadakke Kuruppath, Independent Researcher

Nilanjan Chatterjee, Biodiversity and Climate Research Centre; Ramesh Krishnamurthy, Wildlife Institute of India

Abstract - Understanding free-ranging dog (FRD) movement is fundamental to evaluate their potential negative impacts on wildlife. We compared owned FRD movement between two villages with different levels of human presence in Mudumalai Tiger Reserve. We also aimed to review how human presence affects FRD movement across the world.
We collared FRD and estimated activity ranges using autocorrelated kernel density estimates. We calculated movement metrics and compared them between villages, and quantified fine-scale habitat selection using integrated step selection analysis.
We found that FRD had small activity ranges as in several other studies, primarily remained within 500m of home, and strongly selected for human-modified habitat. We also found that intensity of use was significantly higher in the village with reduced human presence, suggesting those FRD perceived greater risk from wildlife (i.e. a reduced human shield effect) and were more driven to seek refuge.
Our findings suggest that FRD display plasticity in movement characteristics based on human land use type, in addition to limited spatial overlap with wildlife. Our study adds to the highly varied global literature on FRD movement by examining movement and habitat use together. Similar replicates across a spectrum of land use can help reveal large scale dog-wildlife interactions.

06

DAMAGE DOES NOT DICTATE ATTITUDE: CONDITIONAL TOLERANCE TOWARD INDIAN GREY WOLVES IN AGRO-PASTORAL LANDSCAPES

Avril Amanna, Wildlife Institute of India

Dr Salvador Lyngdoh, Scientist E & Project PI, Wildlife Institute of India, Dehradun

Abstract - The Indian grey wolf (Canis lupus pallipes) is increasingly encountered in agricultural areas modified by humans, where survival depends on community tolerance. Conventional theory suggests that losses from wildlife lead to negative attitudes towards them. However, how tolerance is achieved in the high conflict zone continues to remain ambiguous. We examined socio-ecological predictors of wolf–livestock conflict and people's perceptions among 251 agro-pastoralists adjacent to Kappathagudda Wildlife Sanctuary, Karnataka. Conflict was widespread, with 70.5% of households reporting a total of 987 livestock losses, primarily affecting juveniles and most attack during evening hours and the monsoon season. Depredation severity is significantly predicted by the grazing area, wolf pack sighting in the area, and the use of reactive guard dogs. Despite substantial losses, 55.4% of respondents expressed positive attitudes toward wolves (Tolerance to Damage Index = +0.26). Tolerance exhibited no correlation with livestock loss, a result that contradicts conventional conflict theory. A major institutional gap emerged with only 87 cases officially recorded over five years. The findings highlight that socio-cultural values can sustain coexistence even under high conflict. Strengthening reporting systems, promoting community-based mitigation, and integrating local ecological knowledge are essential for sustaining coexistence in agro-pastoral landscapes.

07

CHAI AND CHENNAYI: INSIGHTS FROM LONG-TERM STUDIES OF DHOLES IN FOREST–AGROFOREST MOSAICS IN SOUTH INDIA

Arjun Srivathsa, National Centre for Biological Sciences–TIFR

Abstract - Habitat fragmentation has been isolating carnivore metapopulations, threatening their long-term persistence in human-modified landscapes. Yet agroforest mosaics such as coffee and tea plantations can create novel ecological matrices that, together with protected and multi-use forests, may still support viable populations of wide-ranging predators. In the Western Ghats, the endangered dhole (*Cuon alpinus*) offers a compelling example of such resilience. Drawing on seven years of interdisciplinary research on dhole ecology, this talk synthesizes insights into their population dynamics, social behaviour, chemical communication, diet profiles, interactions with humans and co predators, and the role of vernacular ecological knowledge in understanding their persistence. By examining how dholes navigate fragmented yet connected landscapes, the talk will explore the adaptive capacities of an imperilled and understudied canid in rapidly transforming environments. The findings underscore the importance of integrating ecological and socio-cultural perspectives to understand species persistence beyond protected areas. Building on this framework, I propose a broader blueprint for studying other lesser-known canids, like foxes, jackals, and wolves, across India's diverse novel ecosystems, emphasizing the need for long-term, landscape-scale socio-ecological research to guide conservation in the Anthropocene.

S6 - GRASSLANDS AND SAVANNAS - UNDERSTANDING FUNDAMENTAL DRIVERS AND PREDICTING IMPACTS OF ENVIRONMENTAL CHANGES

Chairs: Mayank Kohli, National Centre for Biological Sciences-TIFR; Jayashree Ratnam, National Centre for Biological Sciences-TIFR; Mahesh Sankaran, National Centre for Biological Sciences-TIFR

01

RELATIVE IMPORTANCE OF PROTECTION AND HABITAT IN DETERMINING SPECIES' ABUNDANCES IN AN OPEN NATURAL ECOSYSTEM

Swapna Lawrence, Wildlife Institute of India

Sutirtha Dutta (Wildlife Institute of India)

Abstract - Habitat extent (eg, forest or grassland cover) is a commonly used metric for monitoring ecological and conservation status. However, this relationship is weak in landscapes with extensive past and ongoing consumptive human use. While protection enhances the effects of habitat area on biodiversity, Protected Area (PA) coverage is small, and human use is widespread across large areas of Open Natural Ecosystems (ONE). Therefore, it is important to understand the influence of habitat and protection on species' abundances. To test this we assessed densities of the great Indian bustard, chinkara, desert fox and nilgai using line transect distance sampling in the Desert National Park and adjacent areas. We tested the effects of proportional grassland cover, human footprint, legal (within / outside PA) and effective (presence of protected grassland enclosures) protection on species' densities. Species' density patterns were best explained by the interaction of protection status and proportional grassland cover. Despite similar habitat extents between the protected and unprotected areas, species' densities were less in the latter. Thus, this study advocates for expanding PA coverage to abate the crisis of biodiversity loss, which is especially sharp in ONEs, and highlights the development of protection-weighted habitat extent as a comprehensive metric for ecological status.

02

UNDERSTANDING GRASSLAND SPECIALIST ABUNDANCES IN NORTHERN DECCAN ONES AND CONSEQUENCES OF AGRICULTURAL INTENSIFICATION FOR BIRD CONSERVATION

Samakshi Tiwari, Nature Conservation Foundation

Shubham Giri, Ashwin Viswanathan

Abstract - Grassland specialist birds are in severe decline globally and in India, as evidenced by the State of India's Birds 2023 assessment based on birdwatchers' observations. However, some of the most extensive and seemingly good-quality Open Natural Ecosystems (ONEs), including grasslands, occur in parts of the northern Deccan, a landscape that has not been well surveyed historically. If these grasslands support strong populations of specialists, they could serve as important conservation hotspots. We therefore systematically surveyed the ONEs of the Deccan to address two questions: (1) What are the abundances of grassland specialists? and (2) how does agriculture influence their abundances within agricultural areas and adjacent ONE patches, given agricultural intensification is a global threat?

We surveyed 11 districts in Maharashtra and Telangana across winter, summer, and monsoon (2024–2025), using 5 × 5 km grids to count birds in agricultural and open habitats. Despite extensive grassland areas, we found low densities of declining specialists such as Great Grey Shrike, Chestnut-bellied Sandgrouse, and Indian Courser. We also provide insights into how much ONE is needed within agricultural landscapes to support specialists, offering recommendations for managing croplands to better conserve grassland bird diversity.

03

THE HISTORICAL DYNAMICS OF THE SHOLA FOREST-GRASSLAND MOSAIC SYSTEM IN THE WESTERN GHATS ACROSS GLACIAL-INTERGLACIAL CYCLES

Praveen P, Indian Institute of Science Education and Research, Tirupati

Arundhati A. Das (Azim Premji University, Bangalore, India), Anupama K (French Institute of Puducherry, India), Mahesh Sankaran (National Centre for Biological Sciences, Bangalore, India), Jayashree Ratnam (National Centre for Biological Sciences, Bangalore, India), and V. V. Robin (Indian Institute of Science Education and Research, Tirupati, India)

Abstract - Over thousands of years, glacial-interglacial cycles have repeatedly shaped global biomes through shifts in climate. Glacial periods favoured grassland expansion and forest contraction, while interglacials reversed this pattern. The Shola forest-grassland ecosystem of the Western Ghats is a unique montane mosaic with alternate stable states in a single climatic zone. However, the response of these habitat types to past climatic fluctuations is poorly understood. Here, we reconstruct the historical dynamics of this system using demographic history of specialist and generalist plant species. We predicted a decline of C3 shola specialists and expansion of C4 grasses during glacial periods, with generalists maintaining relatively stable population. Interglacial periods likely enabled forest re-expansion from refugia. We generated whole-genome data from four species with 25X coverage representing specialists, generalists, and Shola edge species from one sky island - Nilgiris. Demographic history analyses (PSMC and MSMC) showed contraction of Shola specialist, and expansion of grassland specialist during the Last Glacial Maximum, while generalists and edge species remained relatively stable. These findings mirror a global trend suggesting persistence of forest species in refugia alongside widespread grasslands. This study supports the ancient origin of this mosaic and provides a framework to understand the dynamics of associated species.

04

WOODY THICKETS AND SUBSIDIZED PREDATORS: REASSEMBLING FAUNAL COMMUNITIES IN INDIAN GRASSLANDS

Chetan Misher, Wildlife Conservation Trust, India

Abstract - In the drylands of western India, both invasive plants and invasive animals are simultaneously reshaping native wildlife communities. The transformation is not occurring at a single trophic level—it is cascading across predators, prey, and scavengers, altering the very structure of faunal assemblages. In the Thar Desert landscape, woody encroachment by Prosopis juliflora has fundamentally modified habitat structure. Open grasslands that once supported specialist species are increasingly becoming dense thickets. This structural shift favors habitat generalists such as golden jackals and jungle cats, species that can exploit cover. In contrast, open-habitat specialists like the Indian desert fox, Indian fox, and desert cat are disadvantaged as their preferred landscapes shrink and fragment. As woody cover expands, spatial distributions shift, activity patterns change, and community composition begins to tilt toward generalist dominance. The result is not merely a change in vegetation, but a reassembly of the mesopredator guild.

At the prey level, rodent communities respond in complex ways to invasion. Native grasslands and dense Prosopis stands can both sustain relatively high rodent abundance, while sparsely invaded transitional habitats support the lowest numbers. This creates a non-linear, "U-shaped" ecological response. Different rodent species adjust their activity patterns depending on habitat structure, moonlight, and temperature, revealing how invasive-driven habitat change modifies risk perception and resource use. These bottom-up shifts may influence predator distributions and trophic interactions, further reinforcing community restructuring.

Simultaneously, free-ranging dogs—subsidized by human-generated carcasses—are emerging as dominant competitors within carnivore and scavenger networks. Their high densities reshape spatial and temporal niches of native mesocarnivores, which exhibit avoidance behavior to reduce interference. Over time, such avoidance can compress usable habitat and restrict activity windows for smaller native predators, increasing energetic costs and potentially reducing fitness. The impact is equally profound within the scavenger guild. At carcass sites, dogs directly interfere with vultures, reducing feeding time, altering arrival patterns, and limiting effective food intake.

Even when food availability is high, access becomes competitively structured. This shifts the balance within the scavenger community, diminishing the functional role of vultures despite the presence of sufficient resources. In essence, a human-subsidized carnivore modifies trophic pathways that once depended on highly efficient avian scavengers.
When plant invasion restructures habitat and animal invasion restructures interaction networks, their combined effects amplify ecosystem change. Woody encroachment favors generalists and reduces open-habitat specialists. Subsidized dogs alter competitive hierarchies and constrain native carnivores and vultures. Together, these invasions drive a transition from specialist-dominated, functionally diverse grassland systems toward simplified communities characterized by generalist resilience.
This transformation highlights an important message for grassland conservation: invasions do not act in isolation. Plant and animal invasions interact across trophic levels, reshaping ecological networks. Understanding these interconnected processes is essential if we aim to conserve the structural and functional integrity of grassland ecosystems in a rapidly changing world.

05

DOMINANT SPECIES MEDIATE TEMPORAL GRASSLAND STABILITY UNDER SHORT-TERM WARMING

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Mayank Kohli (Biodiversity and Ecosystems Ecology Research Laboratory, National Centre for Biological Sciences, Bangalore, India), Dharmendra Lamsal (Department of Science & Technology, Government of Sikkim, Gangtok, India), Jayashree Ratnam (Wildlife Biology and Conservation Program, National Centre for Biological Sciences, Bangalore, India), Mahesh Sankaran (Biodiversity and Ecosystems Ecology Research Laboratory, National Centre for Biological Sciences, Bangalore, India)

Abstract - High-altitude ecosystems are particularly vulnerable to global climate change. Warming has largely been found to promote plant diversity in rangelands, and theory suggests that community stability should increase with diversity. Much of the knowledge on the impacts of warming in montane ecosystems originates from European mountains and Tibetan Plateau, while studies from The Himalayas, one of the fastest warming regions of the world, remain scarce. Leveraging a five-year long experimental warming setup along a 2000m elevational gradient in the Sikkim Himalayas, we explored how warming alters temporal community stability of montane rangelands. We found that community stability of plant cover increased with increasing species asynchrony. However, despite a substantial increase in plant species richness, warming did not alter temporal community stability across the elevational gradient. This was because dominant species, which most strongly influenced community stability, remained largely unaffected by warming. Our results underscore the importance of dominant species pool in mediating the generality of diversity-stability relationships and highlights their role in maintaining ecosystem resilience under global change.

06

VALUING TRADITIONAL LITERATURE AS ARCHIVES OF BIOCULTURAL HISTORIES COULD CATALYZE TROPICAL SAVANNA CONSERVATION

Ashish Nerlekar, IISER-Pune

Digvijay Patil, Indian Institute of Science Education and Research, Pune

Abstract - The antiquity of tropical savannas is attested by the unique biodiversity they support. Yet, many tropical savannas continue to be misinterpreted as recently formed degraded forests—a misinterpretation that is accelerating the ongoing global biodiversity loss. Clearly, there is an urgent need to improve the recognition of tropical savannas as ancient ecosystems among the public and policy spheres. Addressing this time-sensitive challenge, we propose that valuing nature descriptions in traditional literature set in savannas could improve the public and policy recognition of India's most widespread biome. We reviewed 28 traditional literature excerpts—e.g., songs, poems, myths—dating back to 750 years for georeferenced nature descriptions set

in savannas of western Maharashtra. Analyzing these excerpts, we show that a clear majority of the plant species mentioned were savanna-indicator species. We then compared data from the traditional literature with 11 other lines of evidence and highlight temporal changes. Findings of our study, alongside data from the other lines of evidence, refute the popular claim of a forested past for the Indian savannas. Going forward, our work draws attention to the fact that traditional literature, despite being culturally resonant, is a remarkably underutilized line of evidence in understanding ecological histories.

07

CONSERVATION POLITICS AND ECOLOGICAL INSIGHTS: THE GRAZING BAN IN SIKKIM

Rashmi Singh, IIT Hyderabad

Abstract - Conservation research on pastoral ecosystems has advanced through ecological indicators such as livestock movement patterns and predator attack incidents, alongside anthropological inquiries into pastoral livelihoods, mobility, and human-animal relationships. However, understanding how everyday relationships between humans and animals influence complex socio ecological dynamics and multispecies coexistence remains challenging when these approaches are not brought into dialogue.

This paper examines multispecies relationships through human-dog partnerships in mobile pastoral systems of the western Himalaya, using an integrated qualitative and observational approach to understand how livestock protection is shaped in practice. Drawing on ethnographic interviews with 23 Gaddi shepherds alongside videographic behavioural data from 32 Gaddi dogs in Lahaul, Himachal Pradesh, the study focuses on how human dog partnerships are shaped by interspecies collaboration, reciprocal care practices, and coordinated responses to ecological threats such as predator encounters. These insights help interpret patterns of predator risk management and coexistence in multispecies landscapes. By foregrounding how everyday human-animal relationships shape coexistence with predators in pastoral systems, this study demonstrates how the use of mixed methods approaches supports understanding of multispecies interactions and informs conservation outcomes.

S7 - THE ECONOMICS OF WILDLIFE CONSERVATION

Chairs: Sumeet Gulati, University of British Columbia

01

MAKING MARKETS FOR ECOSYSTEM SERVICES: LESSONS FROM THE BOBOLINK PROJECT

Dr. Anwesha Chakrabarti, Krea University

Dr. Stephen Swallow, University of Connecticut

Abstract - The Bobolink Project presents a market-based Payment for Ecosystem Services scheme that connects private donors with agricultural landowners to protect grassland nesting bird habitat in the north-eastern United States. On the supply side, hayfield owners with a minimum of 10 acres of suitable habitat were invited to participate in a Uniform Price Auction (UPA), submitting bids for the lowest per-acre compensation they would accept to delay hay harvesting during the bird breeding season. The UPA incentivized truthful cost revelation and ensured all winning bidders received the same price which was determined by the lowest rejected bid. On the demand side, a novel Lindahl-pricing-inspired multi-part pledge solicitation asked donors to make outcome-contingent contributions across incremental acreage levels. The pledging process was supported by the use of provision points and money back guarantees to reduce free-riding. Over three pilot seasons in Vermont and Rhode Island (2013–2015), the project raised over $109,000 and protected 1089 acres, documenting consistent growth in nesting bobolink populations. Per-acre landowner payments declined from $160 to $90 as seller competition increased. The success of the project demonstrates that carefully designed experimental markets that combine competitive procurement auctions with outcome-based donations hold significant potential for creating scalable, privately-funded markets for ecosystem services on working agricultural landscapes.

02

FROM "CRIMINALS" TO CONSERVATIONISTS: PARDHIS AND THE WILDLIFE PROTECTION ACT

Chinmayi Srikanth, Indian Statistical Institute Delhi

Agnij Sur (Indian Statistical Institute, Delhi)

Abstract - This project focuses on a blanket hunting ban and its distributional consequences for communities that depend on forests.

The study aims to evaluate the impact of the Wildlife Protection Act 1972 on both wildlife and forest-dependent communities, particularly the Pardhis, using theoretical and empirical methods. Hunting for subsistence regulated the population growth of various wildlife species, and a blanket ban is likely to have led to unchecked population growth of those species that constituted the diet of hunting communities.

The project also explores how the lack of livelihood options for communities whose livelihoods the WPA 1972 disrupted, could nudge them towards illegal activities such as poaching where there is a market for their skills. This is assessed using a list experiment to elicit the average incidence of poaching among various communities settled near the buffer zones of the Panna Tiger Reserve.

Furthermore, this study explores the role of forest-related employment on the ease of social integration for the Pardhis. The Last Wilderness Foundation's (LWF) 'Walk with the Pardhis' programme helps the community reconnect with the forest, reclaiming their role as naturalists, and educators. We compare social and economic outcomes between Pardhis in forest-related employment and those in other forms of employment to assess whether such roles aid social integration and foster pro-conservation attitudes

03

BURDEN OF MORTALITY AND MORBIDITY CAUSED BY SNAKEBITES CONTRIBUTE TO ECONOMIC LOSS IN A RURAL POPULATION IN INDIA

Swapnil Kiran, CSIR - Centre for Cellular and Molecular Biology

Siripuram Srinivas, CSIR- Centre for Cellular and Molecular Biology; Dr. Karthikeyan Vasudevan, CSIR- Centre for Cellular and Molecular Biology

Abstract - The human–snake interface poses a pervasive public health challenge which intersects with fundamental ecological roles, necessitating approaches that integrate conservation, disease prevention, and livelihood security. The disproportionate risks associated with venomous snake encounters shape community perceptions, often driving indiscriminate negative responses towards non-venomous snakes. Snake envenoming imposes a profound economic burden, disproportionately affecting agricultural and marginalized households. We quantified the disease burden and economic costs of snakebite in 205 villages of Jagtial district, Telangana over 11-year period (2010-2020). Data from 541 respondents, collected through community-based snowball sampling, revealed age specific morbidity and mortality rate of 24.21% and 12.75% respectively, with agricultural workers being at highest risk. The estimated annual burden was 31.96 Disability-Adjusted Life Years per 100,000 people. The estimated mean annual earning opportunity cost was INR 26,528.30 per people, while the mean mortality-associated economic loss was INR 19,83,093.36 per people. The findings highlight the dual nature of snakebite as both a health and economic crisis, trapping rural families in cycles of poverty and loss. Improved healthcare access, and livelihood security is essential to mitigate its long-term socio-economic consequences in rural population.

04

EMPATHY FOR ELEPHANTS: INVESTIGATING HOUSEHOLD WEALTH DISPARITIES AND DIVERGENT PERSPECTIVES TOWARDS ELEPHANTS IN SOUTHERN INDIA

Dr. Simran Prasad, Centre for Wildlife Studies (CWS)

Dr. Jennifer Solomon (Colorado State University), Dr. Sumeet Gulati (The University of British Columbia) and Dr. Krithi K. Karanth (Centre for Wildlife Studies, and Duke University)

Abstract - Elephants worldwide face threats from human conflict, particularly in agricultural areas, harming rural livelihoods, safety, and economic stability. To address these challenges, we analyzed human–elephant conflict across income groups using regression models and perception surveys. Using opportunistic and snowball sampling, we identified 440 households in Kerala and Karnataka, India.Our findings show that conflict damages fall disproportionately on low-income households, with significant wealth disparities across conflict types. Higher crop damages correlate with larger land ownership and primarily affect subsistence farmers. Property damage is similarly linked to land ownership, with agriculture-dependent households facing the greatest financial losses. Human injury was more prevalent among commercial and subsistence farmers living near forests, while lower-income households faced a higher risk of mortality from elephant conflict.Despite bearing the heaviest burden, lower-income households surprisingly expressed positive emotions including respect and appreciation, toward elephants, reflecting deep emotional and cultural attachments likely rooted in empathy and prosocial behaviour. These findings highlight a critical paradox: those most harmed by conflict also deeply empathize with elephants. Leveraging the perspectives of marginalized communities and co-creating alternative livelihood opportunities with them can help mitigate human– elephant conflict in the long-term.

05

COMMUNITY FOREST MANAGEMENT AND BIODIVERSITY: EVIDENCE FROM BIRD COUNTS IN NEPAL

Agnij Sur, Economics and Planning Unit, Indian Statistical Institute, Delhi

E. Somanathan, Professor, Economics and Planning Unit, Indian Statistical Institute, Delhi

Abstract - Community-led forest management primarily focuses on forest conservation and poverty reduction but can also have unintended effects on biodiversity. We leverage the timing variation in community forest creation along with repeated sightings by birdwatchers to estimate the effect of community forest user group on bird species richness in a Village Development Committee (VDC) in Nepal. We measure the level and intensity of CFUG in a VDC using cumulative CFUG area and its share in the VDC area (CFUG share). We find that one additional sq.km. of CFUG area in a VDC is associated with 1-2.5 percentage point increase in bird species richness and one percentage point increase in share is associated with 1 percentage point gain relative to the mean. The relationship is highly non-linear over the CFUG exposure. Our estimates are not affected by the proximity to protected areas and are robust to spatio temporally corrected standard errors. We find suggestive evidence that forest specialist species benefited from the community forests while estimates by other habitat specialization were inconclusive. CFUG has primarily increased locally common species. Our results highlight the need for rigorous evaluation of community forests on bird diversity which indicates biodiversity functionality of forest ecosystems.

06

HUMAN-WILDLIFE INTERACTIONS AND THE ECONOMICS OF CROP LOSS OUTSIDE PROTECTED AREAS IN NORTH-WESTERN HIMALAYA.

Mehreen Khaleel, Cluster University, Srinagar

Tahir Gazanfar, Swapnil Kiran, Rekha Warrier, Kartikeyan Vasudevan

Abstract - Human-wildlife conflict is a growing concern globally. With climate change and increased anthropogenic threats faced by natural wildlife habitats, human-wildlife interactions have been known to increase drastically, causing serious economic concerns and loss of lives. The significant factors contributing to the extensive conflicts between humans and wildlife include the expansion of human populations into wildlife habitats, intensified agricultural practices, alterations in cropping patterns, and an increasing reliance on natural resources. This study examines the mounting economic toll from crop raiding, livestock predation, and human fatalities resulting from these interactions, while also delving into human perceptions of the issue and potential mitigation strategies. Based on data from 72 grid (i.e., 1,800 sq km) locations and 468 respondent interviews, the study found annual crop damage valued at 1 billion INR, livestock losses amounting to 82.8 million INR, and compensation costs for human injuries and deaths totaling 3 million INR. Black bears and rhesus macaques were identified as the primary conflict species, with 66% and 9% involvement, respectively. Despite the high incidence of conflict, 96.1% of respondents were unaware of or had not claimed compensation. Results highlight an urgent need for targeted mitigation strategies, improved policy frameworks, and enhanced community engagement to alleviate conflict, protect livelihoods, and conserve large mammals in the re

S8 - A NEW ERA IN INDIAN BAT RESEARCH & CONSERVATION

Chairs: Rohit Chakravarty, Nature Conservation Foundation; Baheerathan Murugavel, Kerala Forest Research Institute & Vaaval-Centre for Indian Bat Research on Ecosystem Sustainability; Melito Pinto, GITAM Visakhapatnam

01

KNOWLEDGE SHORTFALLS IN SOUTH ASIAN BAT CONSERVATION

Aditya Srinivasulu, Zoo Outreach Organization

Abstract – Effective biodiversity conservation is beset by lacunae in knowledge, known as 'knowledge shortfalls'. These shortfalls impact highly diverse groups, such as bats, which are ecologically vital, providing unique ecosystem services. Consisting mainly of India and its neighbouring countries, South Asia is a region with exceptional diversity, supporting 150+ bat species. However, it is also highly populated and has been predicted to experience extreme future climate change. Bats in India and South Asia as a whole are threatened by habitat loss, climate change, and persecution due to cultural superstitions and negative perceptions. Despite their importance and sensitivity, only some bats are protected by law (only in India), exacerbating the cultural 'othering' and knowledge gaps, impacting effective conservation. This study investigates knowledge shortfalls in the conservation of Indian and other South Asian bats, particularly in relation to distributions (Wallacean shortfall), ecological tolerances (Hutchinsonian shortfall), and functional traits (Raunkiæran shortfall). It explores cutting-edge techniques including ensemble ecological niche modelling of bat distributions against climate and land-use data, and systematic review of literature combined with trait data collation to assess the depth of knowledge shortfalls in bat conservation in this megadiverse region, emphasising the urgent need for region-specific data-driven biodiversity research and conservation.

02

LIFE INSIDE THE CULM: CCTV INSIGHTS INTO THE ACTIVITY PATTERNS OF BAMBOO BATS IN THE SOUTHERN WESTERN GHATS

Sreehari Raman, Kerala Forest Research Institute

Baheerathan Murugavel, Mundarappilly R Jagannathan, Anjaly Jose, Abhishek V Unnikrishnan & Peroth Balakrishnan [Affiliation of authors: Department of Wildlife Biology, Kerala Forest Research Institute, Peechi, Thrissur, Kerala, India; * Equally contributed]*

Abstract – Bamboo bats are a group of tiny insectivorous bats found in Oriental zoogeographic region specialised for roosting inside bamboos culms and characterised by distinctive adaptations. The genus is represented by six species globally, and the subspecies Tylonycteris pachypus aurex is endemic to the montane forests of the Western Ghats. The species remain elusive and often underreported in bat surveys, probably due to their tiny home range and restricted habitat. To understand their temporal activity pattern, 19 roosts in Anamalai landscape of southern WG were closely monitored using CCTV surveillance between Nov 2025 and Jan 2026. The study shows that bat activity was initiated at 18:18±11 minutes, with the first foraging bout beginning during civil twilight and ending within nautical to early astronomical twilight, indicating predominantly crepuscular behaviour. The first foraging bout lasted 44.5±18 minutes, typically concluding before nightfall. These findings highlight the preference of bamboo bats to specifically twilight periods. Being a habitat specialist species, bamboo bats are likely at conservation risk due to increasing pressure on bamboo resources due to unsustainable harvesting. Understanding the activity patterns is crucial to quantifying the time spent by these bats in bamboo. Thus, the findings not only quantify the importance of bamboos but also throw valuable insights in their behavioural ecology.

03

FORAGING ECOLOGY OF THE CRITICALLY ENDANGERED HIPPOSIDEROS HYPOPHYLLUS IN KOLAR, KARNATAKA, INDIA USING RADIO TELEMETRY

Asmita Shukla, Bat Conservation India Trust

Rajesh Puttaswamaiah

Abstract - Understanding the foraging ecology of bats is vital for shaping conservation strategies, particularly for critically endangered, point-endemic species. Hipposideros hypophyllus, a little-known endemic bat in India, faces imminent threats from habitat fragmentation and land-use change. Using radio telemetry in the rocky landscapes of Kolar, Karnataka, we investigated this species' foraging behavior and habitat use. Six individuals were tagged and three tracked over 60 days, revealing that H. hypophyllus navigates a complex matrix of habitats, rocky outcrops, fallow lands, farms, tree-lined streams, and scattered tree groves to meet nightly energy demands. Some individuals traveled up to 5 km from their roosts across multiple foraging bouts, and most utilized secondary roosts during foraging or daytime rest. These findings highlight the critical need to conserve diverse landscape features surrounding roosts. This first telemetry-based study of H. hypophyllus provides a scientific cornerstone for habitat management, policy recommendations, species recovery, and conservation of threatened microchiropteran bats worldwide.

04

ROOSTING-CAVES SELECTION OF ENDEMIC AND ENDANGERED RHINOLOPHUS COGNATUS IN TROPICAL CAVES OF ANDAMAN ISLANDS

Avimanyu Mukherjee, Sálim Ali Centre for Ornithology and Natural History (South India Centre of Wildlife Institute of India)

Rima Sadhukhan, Diya Banerjee, Dhanusha Kawalkar, Manchi Shirish S. (Sálim Ali Centre for Ornithology and Natural History (South India Centre of Wildlife Institute of India))

Abstract - Most bats spend their life cycle roosting resting, mating, and raising offspring underground. Yet, there is lack of information on the roosting habitat of several bats. Hence, we attempted to gather preliminary evidence on the roosting habitat selection of R. cognatus. From February to July 2025, we collected the species occurrence data from 29 caves across three sites in the North and Middle Andaman Islands (Baratang Island, Chalis-Ek, and Interview Island) using Audiomoths. The measurements of 14 micro-climatic and 10 micro-habitat parameters were obtained using Kestrel 5000 and a Leica Distometer (S710) respectively. Out of 29 surveyed sites R. cognatus was found in 13 caves (Baratang- 3; Chalis Ek-7; Interview- 3). The collinearity ($r>0.70$) between the variables were checked followed by binary logistic regression. Deeper and larger caves having microclimate stability can apparently influence the roosting conditions in the species ($R^2 = 0.24$; $p<0.05$). However, further efforts of exploring cave structure, microclimate and site-specific data will provide better understanding of roosting and breeding habitat requirements of the species. The study provides inputs to initiate efforts to protect the priority caves towards species conservation. Further, it will also provide recommendations for ex-situ conservation of the endangered R. cognatus.

05

ACTIVITY OVERLAP AND TEMPORAL SEGREGATION IN SYMPATRIC BATS IN A TROPICAL ISLAND ECOSYSTEM

M.K.Shalini, Pondicherry University

1) Irfan Mubarak PP- Research Assistant, Nature Conservation Foundation (NCF), Bengaluru; Pondicherry University, Puducherry 2) Sreehari Raman - Assistant Professor, Kerala Agricultural University (KAU), Thrissur

Abstract - The study aimed to document temporal activity patterns of two sympatric bat species inhabited in Kalpeni island of Lakshadweep Archipelago, south west India. During March–April 2024, bats were monitored at 11 sites along a north–south transect (≥500 m apart) using a passive acoustic detector (Song Meter Mini BAT recorder), with each site sampled for one or two nights, yielding a total effort of 20 sampling nights. Analysing 110,602 pulses using Bat Explorer software, revealed four distinct peak frequency ranges, suggesting the presence of four bat species. Two Alionoctula species namely A.coromanda and A.dhofarensis , consistently recorded across all 11 sites, were selected for temporal activity analysis. Both species exhibited strictly nocturnal behaviour with a high temporal overlap coefficient of 0.879. However, the species demonstrated temporal niche differentiation through distinct peak activity periods, suggesting partitioning of foraging time in a resource limited island ecosystem. This study provides insights into temporal niche partitioning between sympatric bat species, improving our understanding of species coexistence and informing conservation strategies in ecologically fragile and resource limited island ecosystems.

06

OH BAT, WHERE ART THOU? DRIVERS OF INSECTIVOROUS BAT ACTIVITY IN AN URBAN LANDSCAPE

Melito Prinson Pinto, GITAM Deemed to be University

Anushka Goturu, Department of Biotechnology, GITAM School of Technology, GITAM Deemed to be University, Visakhapatnam; Rohan Kumar, Centre for Ecological Sciences, Indian Institute of Science, Bengaluru; Arevalli Predeep, Department of Physics, GITAM School of Science, GITAM Deemed to be University, Visakhapatnam; Harish Prakash, Department of Life Sciences, GITAM School of Science, GITAM Deemed to be University, Visakhapatnam;

Abstract - Increasing urbanization creates drastic changes in natural habitats. Such changes along with prevalence of artificial light at night (ALAN) can alter the community composition and the activity of species inhabiting these habitat patches. Bats occupy a wide variety of habitats including urban areas and respond to urbanization in a species specific manner. Previous studies have shown that these responses vary with the scale of the study conducted. We carried out this study with the objective of investigating the responses of insectivorous bats towards different habitat composition and artificial lights at a microhabitat scale. Using passive acoustic monitoring, we recorded bat call activity at 53 unique sites across the city of Visakhapatnam. We quantified habitat composition in a buffer radius of 20m at sampled sites. Additionally, microclimatic variables and light intensity were measured. Our results revealed species specific responses to predictors. Contrary to our expectations vegetation had no effect on bat call activity, while tar-road, artificial light levels, builtup areas and season impacted some species negatively. Additionally, higher light levels were found to reduce bat ca

S9 - WILDLIFE DISEASES AND SIGNIFICANCE FOR ECOLOGY AND CONSERVATION

Chair: Bindu Raghavan, Wildlife Trust of India and Karthikeyan Vasudevan, Centre for Cellular & Molecular Biology

01

EVERYTHING EVERYWHERE ALL AT ONCE: LIMITED EFFECTIVENESS OF DOG-FOCUSED MITIGATION STRATEGIES ON MANAGING CANINE DISTEMPER RISK AMONG TRANS-HIMALAYAN CARNIVORES

Divyajyoti Ganguly, Nature Conservation Foundation; Manipal Academy of Higher Education

Herman Ramesh (Nature Conservation Foundation), Munib Khanyari (Nature Conservation Foundation), Aniket Banerjee (Sarbonne University), Benjamin Rice (Princeton University), Jessica Metcalf (Princeton University), Kulbhushansingh Suryawanshi (Nature Conservation Foundation)

Abstract - Increasing human modification of landscapes promotes interactions between free-ranging domestic animals and wildlife, creating novel pathways for cross-species pathogen transmission. Generalist pathogens such as canine distemper virus (CDV) can infect multiple host species, posing significant conservation risks to wild carnivores. Yet the mechanisms driving cross-species transmission and the effectiveness of domestic animal-focused management strategies remain unclear. This is especially relevant in India's Trans-Himalaya, where free-ranging dogs, red foxes, and snow leopards overlap spatio-temporally. Using large-scale camera-trap data and epidemiological modelling, we quantified inter- and intra-specific contacts at anthropogenic food hotspots (garbage dumps and livestock carcasses) and non-hotspot sites, and integrated these with published parameters in a multi-host compartmental epidemiological model. Contact rates between dogs and foxes were several times higher at food hotspots, potentially acting as key transmission hubs. Simulations showed sustained multi-species infection cycles, with sequential peaks from dogs to foxes to snow leopards. Single interventions had limited impact; high-coverage vaccination or sterilization reduced but did not eliminate spillover risks. Only the combined, high-intensity strategy–contact reduction, vaccination, and sterilization–substantially suppressed CDV transmission, eliminating snow leopard infection risk.

02

LESSONS LEARNT FROM STUDIES ON CHYTRIDIOMYCOSIS IN AMPHIBIANS: IT IS TIME TO TAKE THE DISEASE SERIOUSLY

Karthikeyan Vasudevan, CSIR-Centre for Cellular and Molecular Biology

Yashwant Singh Panwar, Gayathri Sreedharan, Krishna Pavan Komanduri, Akash M Dev, Suchetana Sengupta

Abstract - The emerging infectious disease chytridiomycosis, caused by the fungus Batrachochytrium dendrobatidis (Bd), threatens amphibian populations globally. However, little is known about its status in India, a region with high amphibian diversity and endemism. Initial countrywide surveys detected Bd throughout, but they showed that existing diagnostic assays produced false negatives due to a primer-binding site mutation in certain Bd haplotypes. To overcome this, we designed a novel nSYBR qPCR assay that delivers a universally sensitive, affordable, and highly efficient tool to drive widespread surveillance of amphibian chytridiomycosis. Over a seven-year period, we monitored populations of stream-dwelling anurans in the Western Ghats using Capture-Mark-Recapture, collecting data from 5,214 individuals and 3,769 swabs. In years 1-3 there was high prevalence with low pathogen loads, with no mortalities or symptoms. In seven years, the prevalence declined from high levels (0.43–0.94) to lower levels (0.01–0.32), however, the pathogen loads were low. Survival of Euphlyctis cyanophlyctis was negatively influenced by prevalence, and robust models indicated strong resistance and frequent recovery from infection. The findings show that amphibian populations persist with the pathogen and survival of frogs are impacted by it. We highlight the critical need for long-term data on host-pathogens in a natural setting.

03

FEEDING FAITH, FOSTERING AMR (ANTIMICROBIAL RESISTANCE): IDENTIFYING ECOLOGICAL DETERMINANTS AND IMPLICATIONS ON RHESUS MACAQUES IN DELHI

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Sanath Krishna Muliya, Lalan Kawalnii, Qamar Qureshi (WII Dehradun) Neil Anderson (University of Edinburgh)

Abstract - Religious sentiments in South Asia foster human-animal associations, supporting dense populations in human dominated landscapes. The costs of such interactions are relevant to the emerging antimicrobial resistance in pathogens, responding to the indiscriminate usage of antibiotics. India has been designated as a hotspot for antimicrobial resistance (AMR) due to the excessive and indiscriminate use of antibiotics. The present study, the first of its kind in India, aimed to assess the prevalence of Escherichia coli and its associated AMR levels in free-ranging rhesus macaques within a highly human-utilized landscape in India. Additionally, it explored ecological determinants of AMR in urban macaques to enhance understanding of the epidemiology of AMR microbes at the human-wildlife interface. We not only confirmed the circulation of AMR in E. coli isolated from the macaques, but also evidenced the prevalence of 46.1% multi-drug resistant strains in the population. Molecular analysis highlighted the existence of ESBL-producing genes, with a bla TEM gene prevalence of 19.49% and a bla SHV gene prevalence of 8.47%. The study also revealed a complex relationship between environmental factors and AMR in macaque E. coli, suggesting that urbanization, macaque-behavior driven by resource availability, and human-macaque contact all play crucial roles in the epidemiology of AMR in this species.

04

INVESTIGATING TEMPORAL CORONAVIRUS PERSISTENCE, EXPOSURE, AND DIVERSITY ACROSS LIFE-HISTORY STAGES OF BATS

Darshan S, National Centre for Biological Sciences - TIFR, Bengaluru

Ansil BR [National Centre for Biological Sciences - TIFR, Bengaluru, SchoolofBiological Sciences, University of Oklahoma,Norman,Oklahoma,USA], Rajesh Puttaswamaiah [Bat Conservation India Trust, Bengaluru], Uma Ramakrishnan [National Centre for Biological Sciences- TIFR, Bengaluru]

Abstract - Understanding viral maintenance within zoonotic hosts is critical for pandemic preparedness and conservation. Longitudinal studies suggest seasonal coronavirus shedding in bat assemblages is driven by the influx of immunologically naive juveniles and subadults, a cyclical process tied to host life-history dynamics. However, such patterns remain poorly characterised in tropical South Asian bats. We investigated monthly viral shedding in a Hipposideros speoris (Schneider's leaf-nosed bat) roost near Bengaluru, India, over 33 months of under-roost sampling (guano, n=1789; urine, n=1010) and 16 months of catch-and-release invasive sampling (rectal swabs, n=273; oral swabs, n=274; serum, n=234). Our preliminary RT-PCR analysis revealed a basal prevalence of ~10%, with bi-annual spikes peaking at 48.0% in September and 50.8% in January. The September pulse coincides with seasonal recruitment of subadult bats, providing empirical support for life-history-driven shedding cycles. While maintenance in these assemblages appears predictable and tied to host life-history stages, the driver for the January peak requires further investigation. Our findings provide a framework for timing surveillance and mitigating spillover risk during predictable peak periods.

S10 - STATE OF BIOGEOGRAPHY, DIVERSIFICATION AND PHYLOGEOGRAPHY RESEARCH IN THE INDIAN SUBCONTINENT

Chairs: Maitreya Sil, Jain University (Deemed-to-be University); Aniruddha Datta-Roy, National Institute of Science Education and Research (NISER)

01

PATTERNS AND DRIVERS OF DIVERSIFICATION RATES ACROSS GEOGRAPHIC SPACE IN WESTERN GHATS

Pragyadeep Roy, CSIR-Centre for Cellular and Molecular Biology

Dr. Jahnavi Joshi, CSIR-Centre for Cellular and Molecular Biology

Abstract – The global biodiversity hotspot, the Western Ghats (WG), India has complex geological history and geoclimatic heterogeneity. Temporal patterns of diversification for WG biota have been studied recently, however, the spatial patterns of diversification remain to be explored. Here, we explored the role of geography, climate and range size in shaping in situ diversification patterns in endemic radiations. We computed species-specific diversification rates of ~500 species from 17 distinct radiations of chordates and arthropods using two birth-death models. We then constructed species ranges using dynamic alpha-hulls using occurrences from fieldwork and were supplemented by records from GBIF. These range polygons were then used to decipher patterns of speciation rates across the geographical space. We tested the relative influence of climatic predictors and range sizes in driving these patterns using Spatial Mixed Models. Our preliminary analyses suggest a strong influence of temperature seasonality on diversification rates in chordates and arthropods. Additionally, diversification rates were found to be negatively associated with range sizes in chordates and with precipitation of the coldest quarter and annual temperature in arthropods. To summarize, latitudinal and climatic gradients at the regional scale are shaping the diversification patterns in the Western Ghats, unlike those observed in global-scale analyses.

02

VARIATION IN ELEVATIONAL INFLUENCE IN GENERATING PATTERNS OF INTRASPECIFIC GENETIC DIVERSITY AND DIFFERENTIATION IN INDIVIDUALS OF PHILAUTUS FROGS

Debjyoti Dutta, Indian Institute of Science Education and Research, Pune

Ramana Athreya. Indian Institute of Science Education and Research, Pune.

Abstract – Elevational gradients encompass steep environmental changes over short geographic distances, with a 750 m increase approximating a ~5 ºC temperature shift, equivalent to ~1000 km of latitudinal change. Such gradients expose montane populations to proximal suboptimal conditions, influencing range limits and local adaptation. Weak dispersal barriers, especially for low vagility species, may facilitate environmental selection to drive increasing genetic differentiation with elevation. We investigated patterns of intraspecific genetic diversity and differentiation in Philautus frogs along an elevational transect (400–2400 m) in the eastern Himalayas. Using ~7 kb mitochondrial DNA sequences, phylogenetic analyses revealed three elevationally segregated clades (low, mid, high), each exceeding 5% divergence and thus treated as distinct species. Intraspecific genetic diversity was estimated as mean pairwise branch length, while differentiation was measured as branch length difference between intraspecies individual pairs. Mid-elevation species exhibited the highest intraspecific genetic diversity. Genetic differentiation increased with elevational distance only in high-elevation species. We suggest that mid-elevation populations are buffered against climatic fluctuations, whereas low- and high-elevation populations experience allele loss during

periodic climatic cycles. Elevated differentiation at high altitudes likely reflects adaptation to harsh conditions that restrict gene flow.

03

ORIGIN, EVOLUTION, AND SPECIATION PATTERNS OF WOODY PLANTS IN WESTERN GHATS, INDIA

Abhishek Gopal, CSIR-Centre for Cellular and Molecular Biology, Hyderabad

Madhumithraa NR 1 , Navendu Page 3, Jahnavi Joshi 1,2 1 CSIR-Centre for Cellular and Molecular Biology, Uppal Road, Hyderabad, India 2 Academy of Scientific and Innovative Research (AcSIR), Ghaziabad, India 3 Thackeray Wildlife Foundation, Mumbai, India

Abstract - The Western Ghats (WG) are an ancient mountain system with high diversity and endemicity of woody plants. However, the examination of historical processes that have shaped its extant diversity has been less explored. Using primary and published genus-level data (N = 16 clades), we examined the origin and evolution of its woody flora. Additionally, using well-sampled primary data (N=5 clades, 50 species), we investigated how lineages have accumulated and diversified within the WG using phylogenetic comparative methods. Our results show that most extant plant lineages are young, having originated from Indo-Burma during the Oligocene-Miocene. However, the WG also holds relictual lineages from the Late Cretaceous onwards. Within the WG, lineages diverged from a widespread ancestor into narrow ranging endemics, with younger lineages being more speciose and showing a more rapid accumulation of species than older lineages. With the exception of the northern WG, the biogeographic regions spanning the central and southern WG had similar age, richness patterns, and frequent dispersal between them. The asymmetric diversity patterns were determined primarily by water availability, in addition to heterogeneous topography and climatic stability, which likely allowed for higher species accumulation in the southern regions. Our results highlight the dual role of the WG as both refugia as well as an engine for diversification for woody plants.

04

PHYLOGENOMIC INSIGHTS INTO LINEAGE DIVERGENCE AND POPULATION STRUCTURE IN THE INDIAN SPECTACLED COBRA (*Naja naja*)

Paulomi Dam Kanunjna, Indian Institute of Science, Bengaluru

1) Vivek Suranse, Indian Institute of Science, Bengaluru 2) Kartik Sunagar, Indian Institute of Science, Bengaluru

Abstract - The spectacled cobra (Naja naja) is an iconic species of the Indian subcontinent. It is one of India's 'big four' medically relevant snakes with a wide distribution and substantial variation in morphology and venom composition across its range. These variations could reflect local adaptations or result from the underlying speciation processes. However, the phylogenetic relationships among these geographically disparate populations and the level of connectivity across them remain poorly understood. This study investigates the phylogeography and population structure of N. naja using whole-genome data and broad geographic sampling. We evaluate species monophyly, assess genetic diversity, and examine population substructure and its connectedness. We use ancestral area reconstruction to understand the geological and climatic events that have shaped their current distribution. Our results confirm the monophyly of N. naja and genetic divergence between the Sri Lankan and mainland populations. Mainland populations from India show clear geographic structuring, albeit with signatures of gene flow. We also observe moderate genomic diversity, a signal of expansion and a pattern of isolation-by-distance within the populations. These findings highlight the extent of regional differentiation and the underlying evolutionary processes shaping the diversity in this species.

05

CONTRASTING BIOGEOGRAPHIC HISTORIES IN CO-OCCURRING OPEN-HABITAT BIRDS OF PENINSULAR INDIA

Vishwa Jagati, Indian Institute of Science Education and Research Tirupati

Archita Sharma (Indian Institute of Science Education and Research Tirupati, India), Naman Goyal (Indian Institute of Science Education and Research Tirupati, India; University of Copenhagen, Denmark), V. V. Robin (Indian Institute of Science Education and Research Tirupati, India)

Abstract - Peninsular India is characterised by complex biogeographic patterns shaped by historical climatic oscillations and topographically diverse regions, including the Eastern and Western Ghats, the Satpurs, and the Deccan Plateau. We investigated how these processes have influenced diversification in two open-habitat species complexes, the Long
tailed Shrike and the Paddyfield Pipit, each represented by multiple subspecies across the Peninsula. Using ultraconserved elements and whole-genome data, we examined phylogenomic relationships, population structure, and demographic history in a comparative framework. Phylogenomic analyses did not recover well-supported lineages corresponding to subspecies in either species complex. However, genome-wide variation revealed three clusters in the Long-tailed Shrike, broadly concordant with major peninsular biogeographic zones: Western Ghats, the Eastern Ghats, and the Satpuras. In contrast, the Paddyfield Pipit showed no genetic structure, indicating ongoing gene flow. Shrike demographic reconstructions showed shared population trajectories until the Last Interglacial, followed by divergence, whereas Pipit populations showed concordant patterns across all sampled populations. These contrasting patterns highlight how co-occurring taxa can differ substantially in their biogeographic responses to climatic shifts, and underscore the importance of comparative phylogeographic approaches for understanding diversification in heterogeneous landscapes.

06

GULLIVER'S SHIPWRECK: A CASE OF MINIATURISATION IN THE GENUS ASANADA (CHILOPODA, SCOLOPENDRIDAE).

Karunakar Majhi, CSIR-Centre for Cellular and Molecular Biology (CSIR-CCMB)

Additional Authors: Pragyadeep Roy (CSIR-CCMB), Aniruddha Marathe (CSIR-CCMB), Jahnavi Joshi (CSIR-CCMB)

Abstract - Body size is a key evolutionary trait that influences diversification rates, dispersal ability, and geographic range size. However, its evolutionary dynamics remain poorly understood in small-bodied and cryptic soil arthropod lineages. The centipede genus Asanada, one of the smallest in the family Scolopendridae, provides an opportunity to investigate patterns of miniaturisation. Here, we reconstruct the molecular phylogeny of Scolopendridae, sampling all major lineages, and examine the placement of Asanada within the family. We then use an integrative approach to develop robust species hypotheses and perform historical biogeographic analyses to infer evolutionary origins. Finally, we compare patterns of body size evolution across the family, comprising 70 species. We recover Asanada as a monophyletic lineage nested within Scolopendra, rendering the latter paraphyletic. Integrative taxonomy reveals ten distinct lineages, far exceeding previous morphology-based estimates and indicating substantial cryptic diversity. Ancestral area reconstruction suggests an origin on the Indian Plate. Trait evolution models consistently infer a medium-sized ancestor, with multiple independent shifts towards larger body sizes and a single instance of miniaturisation in Asanada, a relatively rare event among animals. Our findings demonstrate that small-bodied lineages can harbour substantial hidden diversity and elucidate patterns of body size evolution in these lesser-known centipedes.

S11 - CAN THE PALEOSCIENCES INFORM LANDSCAPE AND BIODIVERSITY CONSERVATION?

Chair: Ramya Bala Prabhakaran, National Institute of Advanced Studies and Renee Borges, Indian Institute of Science

01

MALLOTUS-MACARANGA POLLEN AS PROXIES FOR FOREST DYNAMICS AND DISTURBANCE REGIMES

Mahi Bansal, National Centre for Biological Sciences, Bengaluru, Karnataka, India

Vandana Prasad (Retd. Director, Birbal Sahni Institute of Paleosciences, Lucknow, Uttar Pradesh, India)

Abstract – The paleotropical Mallotus-Macaranga plant group (family Euphorbiaceae) is widely distributed across deciduous and evergreen forests, particularly in open, disturbed, and burned habitats, and can tolerate conditions ranging from dry to swampy. Owing to its ecological importance, the group serves as a reliable indicator of habitat disturbance. Many species, especially Macaranga, form symbiotic associations with ants that protect them from herbivory and plant competition, enabling their success as pioneer species during early forest succession. These taxa frequently colonize forest gaps and contribute to canopy closure. This study evaluates whether members of Mallotus-Macaranga group can be distinguished from related taxa based on pollen morphology. The identified diagnostic features were applied to deep-time fossil pollen assemblages, improving their utility in reconstructing past vegetation dynamics and successional stages. The findings extend the value of Mallotus-Macaranga fossil pollen from the Quaternary for tracing long-term disturbance patterns in modern forest systems. Their presence reflects varying disturbance regimes, from primary and secondary forests to logged and repeatedly burned areas. At the same time, their affinity for degraded soils supports soil enrichment and forest regeneration. Overall, the group serves as a natural ecological signal of forest change, and removal is only recommended under specific restoration objectives.

02

WHO WAS THE MALABAR CIVET?

Uma Ramakrishnan, National Centre for Biological Sciences, TIFR

Kritika M. Garg (Indian Institute of Science Education and Research Mohali, SAS Nagar, India), Devkant Singha (National Centre for Biological Sciences, TIFR, Bengaluru, India), Ajith Kumar (deceased, wildlife biologist and mentor), Arun Zachariah (Chief forest Veterinary Officer, Kerala Forest Department), Pramod Krishnan (PCCF and CWLW, Kerala Forest Department), James Zachariah (retired Indian Forest Service officer, Kerala Forest Department), Uma Ramakrishnan (National Centre for Biological Sciences, TIFR, Bengaluru, India)

Abstract – The Malabar civet is/was a critically endangered small carnivore from India. Sighting and specimen evidence are ambiguous, and suggest that the Malabar civet may not even be a valid taxonomic species. Understanding the phylogenetic affinity of the Malabar civet is hence critical. If it was a valid and distinct species, it exemplifies one of India's extinct mammals. Alternatively, if the Malabar civet was simply a traded and escaped Large spotted civet (Viverra megaspila) and not a unique species, it highlights long term biodiversity exchange between India and southeast Asia. The only way to resolve this mystery is through museomics, or temporal population genomics. With experimental precaution, we extracted DNA from two historical Malabar civet specimens. We were able to acquire a small amount of highly fragmented civet DNA from one of them. Genetic distance based on 300 bp of mitochondrial DNA suggests that this specimen is closest (~3.8% different) to Vivvera megasplila, indicating a potentially unique population (but not species). We are currently implementing various laboratory protocols to acquire additional DNA sequence to better understand the Malabar civet and its relationship to sister taxon. We caution that our results are preliminary, but for the first time in several decades, we are close to understanding who the Malabar civet really was.

03

FIRE-VEGETATION INTERACTIONS IN THE HIGH-ELEVATION SHOLA-GRASSLAND MOSAIC OF THE NILGIRIS

Ramya Bala Prabhakaran, National Institute of Advanced Studies

Ankit Yadav, University of Goettingen; Elisabeth Dietze, University of Goettingen; Raman Sukumar, Indian Institute of Science

Abstract - The high-elevation shola-grassland vegetation mosaics of the upper Nilgiris have intrigued ecologists for over a century. The presence of the grasslands here is attributed to either a natural stable climax state maintained by frost or an anthropogenic fire-maintained sub-climax. Studies in the Sandynallah valley peatland (>50,000 years old) confirm the presence of grassland through high numbers of grass pollen even as far back as 35,000 years. We investigated biomarkers – n-alkanes, polycyclic aromatic hydrocarbons (PAHs), sterols and anhydrosugars – from a peat-core with high-resolution chronology dating back to >30,000 years. Our results show multiple fire peaks represented in total PAH concentrations with a cluster of peaks between 25-30,000 years ago, and other prominent peaks in samples dated ~14,000, ~6000 yr BP and modern. A subset of the samples was screened for sterol compounds; they show human presence only in the past 2-3 centuries. This indicates a naturally high fire occurrence predating human arrival in this ecosystem. We also recorded the presence of anhydrosugars although they were not in sufficient concentrations to be quantified. n-alkanes of 33, 35 and 37 chain lengths indicative of grass were present throughout the peat profile. However, grass presence seems to steadily increase in the past 6000 years, following a fire peak. Our results suggest vegetation potentially respond to short-term disturbances apart from long-term climatic change.

04

THE PALEOECOLOGY OF POLLINATION AND ITS RELEVANCE TO CONTEMPORARY POLLINATION SERVICES

Renee M. Borges, Centre for Ecological Sciences, Indian Institute of Science, Bengaluru

Abstract - Fossil evidence of gymnosperm pollination (Gnetales, Cycadales) is available from the Upper Jurassic (~163 Mya) to the Upper Cretaceous (~75 Mya), after which angiosperm pollination is recorded. Dipterans (e.g. thrips) and beetles are the most ancient pollinators. Ancient pollination systems likely involved plant volatiles and infrared radiation as long- and short-range attraction modalities respectively. With the rise of angiosperms, colour vision in pollinators involved trichromacy in beetles and other pollinator taxa such as Hymenoptera, and pentachromacy in Lepidoptera. Colour vision in pollinators was concomitant with the availability of floral pigments. Ancient plants and early angiosperms had white or monochromatic floral organs which corresponded with the sensory systems of their pollinators. Thermal attraction is restricted to only few extant thermogenic angiosperm families since other less costly advertising tactics, i.e. colour and scent, are available to contemporary angiosperms. Thus, paleoecology informs us about early constraints and newer possibilities in plant and pollinator evolution.

05

THREE CENTURIES OF PRECIPITATION VARIABILITY IN THE KASHMIR HIMALAYA: A TREE-RING RECONSTRUCTION REVEALS TEMPORAL INSTABILITY AND EXTREME HYDROCLIMATE EVENTS

Rayees Ahmad Malik, Department of Botany, University of Kashmir

Raman Sukumar, Centre for Ecological Sciences, Indian Institute of Science IISc, Bangalore

Abstract - The Kashmir Himalaya represents a climatically sensitive mountain region where understanding long-term hydroclimate variability is critical for water resource management and climate change adaptation, yet instrumental climate records are limited to recent decades. We developed a 274-year tree-ring width chronology from Abies pindrow at Hirpora Wildlife Sanctuary, Kashmir, to reconstruct May–June–July precipitation and examine long-term climate-growth dynamics. The reconstruction captured extreme hydroclimate events, including a catastrophic six year drought (1821–1826), and identified significant periodicities linked to ENSO, AMO, and solar variability. Critically, moving window analyses revealed pronounced temporal instability in climate-growth relationships after 1960, likely reflecting warming-induced moisture stress. Since radial growth is mechanistically coupled to carbon assimilation and biomass accumulation, this divergence carries direct implications for the carbon sequestration capacity of Himalayan forests and their role in climate change mitigation. A forest increasingly decoupled from historical precipitation signals will respond unpredictably under future climate scenarios, complicating projections of productivity and carbon sink strength. These findings underscore the urgency of integrating long-term dendroecological records into forest management frameworks for the Himalaya, providing ecologically grounded strategies for forest conservation under climate change

06

RESTORATION GOALS: INSIGHTS FROM ANTIQUITY AND DYNAMICS OF FOREST-SAVANNA MOSAICS IN CENTRAL INDIA DURING THE HOLOCENE

Meghna Agarwala, Ashoka University, Haryana

Krishna Pavan Komanduri, University of Newcastle (now); M. F. Quamar (BSIP); Jayashree Ratnam (NCBS); Charuta Kulkarni (IIT-Madras)

Abstract - Forest-savanna mosaics are important for biodiversity but are targeted for tree planting. These mosaics may be naturally bistable systems, wherein disturbance regimes such as fire and herbivory create alternative stable states of forest and savanna. We conduct a meta-analysis of paleo-ecological studies in Central India to address this question. We find that alternate states of low and high tree cover have been present in Central India since the early Holocene, and that the tree cover is explained by the interaction of precipitation and fire. We find no statistical evidence for bimodality or hysteresis—conditions that are required for alternative stable states— although patterns suggestive of alternative stable states are present. Further, contrary to the hypothesis of stable states, this system transitions between alternate states of high and low tree cover at time periods ranging from ~40-220 years. Our study lends support to the idea that savannas have been created or maintained through interactions between climatic conditions and disturbance regimes such as fire, and that tree cover can increase when either of these factors changes. Restoration should focus on maintaining the ability to switch between low and high tree cover rather than increasing tree cover or grass cover in Central India.

S12 - ADVANCING BIODIVERSITY MONITORING AND CONSERVATION THROUGH eDNA

Chairs: G Umapathy, CSIR-Centre for Cellular and Molecular Biology and Mukesh Thakur, Zoological Survey of India

01

ENVIRONMENTAL DNA FOR BIODIVERSITY MONITORING IN INDIA: STATUS, OPPORTUNITIES AND CHALLENGES.

G Umapathy, CSIR-Centre for Cellular and Molecular Biology

Abstract - Biodiversity monitoring in complex, heterogeneous ecosystems is hampered by uncertain species detection and overlooked elusive taxa, while conventional survey methods demand substantial labour and are constrained by imperfect detectability, sampling bias, and observer error. Environmental DNA (eDNA), the genetic material continuously shed by organisms into water, soil, and air offers a transformative, non-invasive alternative. Coupled with quantitative PCR, metabarcoding, and real-time nanopore sequencing, it enables rapid detection, estimation of relative abundance, and, for pathogens, resolution of circulating variants. This talk examines eDNA for integrated biodiversity assessment and One Health surveillance, drawing on recent work from our laboratory: a large-scale eDNA survey across 149 locations in the Eastern Ghats, and ongoing environmental surveillance in Telangana spanning avian influenza monitoring. I will trace end-to-end workflows and critical analytical considerations, translating environmental genetic signals into actionable indicators of ecosystem health and public-health preparedness.

02

METABARCODING APPROACHES FOR UNRAVELING SOIL FUNGAL COMMUNITIES IN THE WESTERN GHATS, INDIA: CONSERVATION IMPLICATIONS AND FUTURE DIRECTIONS

Manikandan Ariyan, Institute of Ecology and Earth Science, University of Tartu Tartu, Estonia

Abstract - Soil fungal communities are fundamental to ecosystem functioning, yet remain poorly characterized in biodiversity hotspots such as the Western Ghats, India. This study applies high-resolution metabarcoding of the ITS region using PacBio sequencing to investigate soil fungal diversity across elevation gradients, land-use types, and varying soil characteristics. A total of 52 soil samples were collected following standardized Global Soil Mycobiome protocols from conserved forests and plantation ecosystems. Our findings demonstrate that fungal diversity varies significantly with elevation and soil properties, with clear shifts in community composition along environmental gradients. Conserved forest sites consistently exhibited higher fungal diversity compared to plantation areas, indicating the negative impact of land-use change on belowground biodiversity. Soil factors such as pH, organic matter, and nutrient availability were also key drivers shaping fungal assemblages. Metabarcoding revealed a wide range of fungal taxa, including potentially novel lineages, highlighting the Western Ghats as a reservoir of hidden microbial diversity. These results underscore the importance of conserving intact forest ecosystems to maintain both aboveground and belowground biodiversity. Overall, this study provides critical baseline data for microbial conservation and informs sustainable land management strategies in tropical montane ecosystems.

03

INVISIBLE TO VISIBLE: UNRAVELLING AQUATIC BIODIVERSITY OF THE EASTERN GHATS USING ENVIRONMENTAL DNA

Dr. Manisha Ray, CSIR-Centre for Cellular and Molecular Biology

Neeldeep Ganguly (CSIR-Centre for Cellular and Molecular Biology, Hyderabad 500007, India; Academy of Scientific and Innovative Research (AcSIR), Ghaziabad 201002, India), Abhilash Nair (CSIR-Centre for Cellular and Molecular Biology, Hyderabad 500007, India), Govindhaswamy Umapathy (CSIR-Centre for Cellular and Molecular Biology, Hyderabad 500007, India; Academy of Scientific and Innovative Research (AcSIR), Ghaziabad 201002, India)

Abstract - The Eastern Ghats is an underexplored yet biodiverse region with limited data on its aquatic life. This discontinuous landscape, intersected by the Godavari, Krishna, Mahanadi and Kaveri river systems, hosts diverse waterbodies shaped by varied hydrological, physicochemical and anthropogenic factors.

To bridge this knowledge gap, we sampled 68 sites across 49 locations (204 samples). Environmental DNA (eDNA) was extracted from filtered water and bacterial (16S rRNA V4) and metazoan (COI Leray fragment) communities were sequenced using Illumina NovaSeq 6000.

Cyanobacteriota and Pseudomonadota dominated bacterial communities. Vulcanococcus was widespread, suggesting a stabilizing role, while bloom-forming genera (Planktothrix and Microcystis) indicated localised eutrophication. Alpha and beta diversity were largely driven by regionally rare taxa. Among metazoans, no single phylum dominated. Green algae, diatoms, dinoflagellates, arthropods and chordates were major contributors, with differences in diversity between freshwater and brackish systems.

Species-level assignments were constrained by incomplete reference databases. To address this, we barcoded over 500 fish samples (198 species) from 2,000+ tissue collections, improving genus-level resolution and highlighting the critical need for custom regional databases.

This study provides comprehensive eDNA-based assessments of both invisible bacterial diversity and the visible metazoan diversity of the Eastern Ghats.

04

OPTIMIZATION OF SEDADNA METABARCODING APPROACH TO INVESTIGATE CHANGES IN THE NATURAL ENVIRONMENT IN DEEP TIME AT MUDUMALAI WILDLIFE SANCTUARY, SOUTHERN INDIA

Ramya Bala Prabhakaran, National Institute of Advanced Studies

Charline Giguet-Covex, Laboratoire EDYTEM; Nadine Curt Grand-Gaudin, Laboratoire EDYTEM ; Lise Alonso, Laboratoire EDYTEM ; Stanislav Jelavic, Institut des Sciences de la Terre

Abstract - Tropical biomes are widely regarded as the first frontier of human occupation in addition to being hotspots of biodiversity and speciation. However, they are thought to be unsuitable for ancient DNA studies.Sedimentary ancient DNA (sedaDNA) gives us access to unexplored dimensions in the creation of the 'hotspot' itself by targeting DNA from plants and mammals. Optimization of DNA metabarcoding approach for assessing plant and mammal diversity is critical since no previous work has been done in India. We know that composition in taxa and history deduced could depend on protocols applied. Through literature review, we identified 3 sedaDNA protocols that targeted different DNA fractions: extracellular (exDNA), intracellular (inDNA) and total DNA (totDNA). exDNA from literature typically targets DNA bound to particles (often clays), but when swelling clays are present, exDNA can be intercalated. For this second fraction, a new protocol was developed. We tested 15 samples from across a ~8000-year-old peat core from the Mudumalai Wildlife Sanctuary in NBR. NMDS ordination of sequence dissimilarities suggests protocol-dependent differences in recovered DNA composition, with samples clustering primarily by extraction method rather than by sample identity. We are currently analysing our results to establish the "best" method for DNA recovery and appropriate "multi-DNA" method for maximum taxonomic richness, with potential for application in other tropical biomes and beyond.

S13 - BIOACOUSTIC FRONTIERS IN BEHAVIOUR, ECOLOGY AND CONSERVATION

Chairs: Manjari Jain, Indian Institute of Science Education and Research Mohali, Divya Panicker, Ashoka University and Satyam Gupta, Ashoka University

01

EFFECTS OF OPIOID NEUROMODULATION ON SINGING AND SONG LEARNING IN ZEBRA FINCHES

Soumya Iyengar, BRIC-NBRC, Manesar, India

Abstract – Male zebra finches are excellent models to study vocal learning since they learn their songs from their fathers during a sensitive period in development. Songs are memorized and practiced until juvenile males produce almost perfect copies of their fathers' songs at adulthood. We found that song-control regions in adult male zebra finches express opioid receptors (ORs), which are components of the endogenous opioid system. Besides changes in the motivation to sing to females or in isolation, blocking ORs in male zebra finches altered the acoustic features of song such as changes in the pitch, frequency and length of songs, which appear to result from the effects of opioid neuromodulation on neural circuits important for song production. Furthermore, recent results have demonstrated that blocking ORs during the sensitive period for vocal learning for a short duration leads to alterations in songs produced at adulthood in treated birds versus those sung by controls. Taken together, our results demonstrate that opioid neuromodulation affects both singing and song learning in zebra finches. Given the similarities between neural circuits involved in song control and speech, our results suggest that opioid neuromodulation may be important for vocal learning and vocalization across different species.

02

WHEN SEEING FAILED, LISTENING WORKED: FROM WOLF HOWLS TO BIOACOUSTIC INDICATORS FOR HABITAT MANAGEMENT

Sougata Sadhukhan, Institute of Environment Education and Research, Bharati Vidyapeeth University, Pune

Abstract – Wildlife assessment has traditionally relied on visual encounters, camera trapping, and indirect signs, an approach that often fails for cryptic, wide-ranging, or nocturnal species, particularly in human-dominated landscapes. These limitations have left population status and habitat condition poorly quantified for many species of conservation concern. Bioacoustics offers an alternative perspective by shifting the focus from visual detection to ecological information embedded in sound.

This narrative begins with the Indian wolf (Canis lupus pallipes), a Schedule I species whose population remained largely unassessed for decades due to its elusive behaviour and fragmented habitat. Characterisation of the harmonic vocal repertoire demonstrated that wolf howls possess consistent acoustic structure and individual-specific information, enabling their use as non-invasive data sources. By integrating howl response behaviour, detection probability, and spatial uncertainty into survey design, an active howl survey framework enabled one of the first statistically supported density estimates for Indian wolves, illustrating how listening succeeded where seeing failed.

The wolf case study further revealed that vocal behaviour varies with anthropogenic pressure, including proximity to human settlements and habitat fragmentation, highlighting the need to incorporate behavioural adaptation into assessment frameworks. Building on this insight, bioacoustics extends beyond species-specific population estimation towards habitat assessment using passive acoustic monitoring, automated detection, and indicator species. Together, these approaches demonstrate how listening can support robust wildlife assessment and inform habitat management in landscapes where visibility is limited but sound persists.

03

BIOACOUSTIC INSIGHTS INTO WETAS, KATYDIDS, AND TREE CRICKETS OF THE INDIAN SUBCONTINENT

Swati Diwakar, University of Delhi

Abstract - This talk explores the acoustic communication on the stridulatory behaviors of wetas, katydids, and tree crickets in the Indian Subcontinent. I will be discussing ecological information on a little known yet intriguing Indian weta species Gryllacropsis magniceps. The talk will address acoustic communication in both sexes of the Indian weta, their calling activity, taxonomic difficulties in recognizing male and female wetas and their host plant association. The talk will then explore katydid diversity and acoustic communities from subtropical evergreen forests in Northeast India and Western Ghats. The talk will explore diverse call structures of the katydid species from the Indian subcontinent as well as unique habitat and seasonal variations present in the katydid communities. I will also discuss patterns of temporal and habitat-partitioning in some of the co-occurring katydid species. Towards the end, the talk will focus on tree crickets of the Indian subcontinent and their association with invasive plants.

04

COMBINING ACOUSTIC AND VISUAL PLATFORMS TO ESTIMATE INDIAN OCEAN HUMPBACK DOLPHIN POPULATION SIZE

Isha Bopardikar, IISER Tirupati & Foundation for Ecological Research Advocacy and Learning (FERAL)

Danielle Harris (Centre for Research into Ecological and Environmental Modelling, University of St Andrews), Tina Yack (Duke University, EcoSound Bioacoustics, LLC), Mahi Mankeshwar (Coastal Conservation Foundation), VV Robin (IISER Tirupati), Holger Klinck (Cornell University)

Abstract - Conventional methods for estimating cetacean populations, like visual distance sampling, assume perfect trackline detectability. However, these surveys face limitations when applied to coastal species inhabiting turbid waters. Indian Ocean humpback dolphins off the west coast of India are one such example. In addition to environmental and weather conditions affecting detectability, visual surveys in India are severely constrained by a lack of trained personnel. Given the endangered status of humpback dolphins, rapid and reliable population assessments are critical to inform conservation and management efforts. Our study integrates acoustic-visual detections in a mark-recapture distance sampling (MRDS) framework to calculate a correction factor for visual trackline detectability. These data are then used to estimate humpback dolphin densities along a 376 km² area off the Sindhudurg coast, India. Acoustic and visual line transect surveys were conducted between January 2020 and March 2023. Our study provides a framework for integrating acoustic and visual data to estimate population size for a data-deficient species.

05

USING BIOACOUSTICS TO ASSESS GIBBON CONSERVATION STATUS IN COMMUNITY-MANAGED FORESTS OF NORTHEAST INDIA

Divya Vasudev, Conservation Initiatives

Biang La Nam Syiem, Aishanya Sarma, Rohan Sharma, N T Uthaiah, Varun R Goswami. Affiliation: Conservation Initiatives

Abstract - The western hoolock gibbon Hoolock hoolock is an endangered ape found across parts of Northeast India, Bangladesh and Myanmar. A specialist to closed-canopy tropical forests, gibbons serve as a flagship species for conservation in large swathes of heterogeneous community-managed landscapes. We used passive acoustic monitoring, complemented with questionnaire surveys, within a grid-based sampling framework across >3,500 km2 of government-protected and community-managed forests in three states of Northeast India. Here, we present three findings. One, we discuss learnings obtained while conducting passive acoustic

monitoring in community-owned and managed forests. Two, we map and show patterns of reported local extinction, highlighting that we have lost gibbon populations in multiple locations in the past two decades, and correlate these with spatial patterns of forest loss. Lastly, we assess gibbon occupancy, while accounting for imperfect detection, across a part of this above-mentioned area, demonstrating the influence of local forest cover and landscape fragmentation metrics on current gibbon presence. Our work provides insights into the conservation status of a species of global and national conservation concern, the western hoolock gibbon. We also highlight the use of passive acoustic monitoring for biodiversity assessments in community-managed forests in a manner that is participatory and impactful for conservation.

06

DETECTING ELEPHANT VOCALISATIONS USING CNN-LSTM IN DHENKALAL FOREST DIVISION FROM ACOUSTIC RECORDINGS

Devesh Bajaj, Ashoka University, Haryana

Aditya Aeri (Ashoka University), Rehmat Kaur (Ashoka University), Shambhavi Shastry (Ashoka University), Shikhar Srivastava (Ashoka University), Nadia Hejab (Ashoka University), Seema Lokhandwala (Elephant Acoustics Project), Aalok Thakkar (Ashoka University), Meghna Agarwala (Ashoka University)

Abstract – Human-elephant conflict is a growing cause of mortality in India, with Odisha's Angul Forest Circle recording among the highest rates of human and elephant deaths nationally. Acoustic monitoring offers a promising mitigation strategy, since elephant infrasonic rumbles propagate up to 3 km through dense forest, enabling detection before visual contact. However, existing machine-learning algorithms show significant performance degradation when transferred to Indian environments, with Cornell's Elephant Listening Project models, trained on African elephants, dropping from 80% recall to 63.6%. We present a locally-calibrated detection system using YAMNet-based feature extraction fed into a Bidirectional LSTM model, achieving 89.19% accuracy on held-out test data from Dhenkanal Forest Division with only 363 training recordings. Our system outperforms BirdNET plus Random Forest (80.82%), Zeppelzauer's GFCC+SVM approach (78.38%) on the same dataset. We attribute this performance to LSTMs temporal modelling. To address nighttime passive deployment we implemented a two-stage classification architecture: a first-stage LSTM separates ambient silence from acoustic events with 100% accuracy on held-out data, and a second-stage LSTM classifies surviving segments as elephant or control at 90% accuracy. This approach eliminates the ambient noise problem that caused issues with our original model that only separated elephant sound from control.

07

CONTEXT-DEPENDENT VOCAL REPERTOIRE AND FUNCTIONAL ANALYSIS OF PALM SQUIRREL VOCALISATIONS

Rakesh Muni, Indian Institute of Science Education and Research (IISER) Tirupati

Dr. Nandini Rajamani, Indian Institute of Science Education and Research (IISER), Tirupati

Abstract – Squirrels are highly vocal mammals; however, vocal communication in palm squirrels remains unexplored despite their presence across diverse ecological habitats. We provide a comprehensive functional analysis of vocalisations of four Funambulus species(F. palmarum, F.pennantii, F.tristriatus, and F.sublineatus) to understand acoustic variation, drivers of behavioural context, and multimodal signalling. Across multiple sites in India, we collected audio recordings and focal behavioural observations, including visual responses and immediate environmental variables. We extracted and compared spectrographic features and used Random Forest classification to differentiate calls across alarm, contact, and mating contexts. Our findings showed that F.tristriatus utilised lower frequency and a complex note repertoire, while F.pennantii used high-frequency, temporally dense call clusters. F.palmarum used repetitive lower-frequency tonal calls, whereas F.sublineatus used mid-frequency calls. Alarm calls were conserved, contact calls showed tonal stereotypy, whereas mating calls were highly

diverse across species. Multimodal communication(vocalisations paired with tail-flagging) was prominent in alarm calls across F.tristriatus and F.palmarum, whereas F.pennantii relied primarily on acoustic signals. We find that while Funambulus squirrels share a conserved vocal framework, they have evolved distinct acoustic and multimodal signalling strategies driven by environmental and biotic pressures.

08

FANTASTIC BEASTS AND WHEN TO FIND THEM: EVALUATING THE EFFECT OF ENVIRONMENTAL VARIABLES ON KATYDID ACTIVITY

Dr. Chandranshu Tiwari, Shyama Prasad Mukherji College for Women, University of Delhi

Prof. Swati Diwakar, Department of Environmental Studies

Abstract - Ambient light can have a marked influence on the behavior of many species, particularly prey animals, where increased illumination may raise the risk of predation while offering limited advantages for activities such as foraging and mating. Katydids, which depend on species-specific acoustic signals for long-distance communication, are known to be sensitive to environmental conditions. However, the impact of ambient light on paleotropic katydids remains unexplored. The current study explored the effect of ambient light, temperature, and humidity on katydid assemblages at two locations, one in Northeast India, and the other in the Western Ghats, over 5 years (2015-2020). We examined possible differences across seasons and between ecosystems at each site. A total of 537 encounters through psychoacoustic monitoring were used for the analysis. The results showed that temperature and humidity had no significant impact. Ambient light had a significant effect on katydid activity, with overall activity peaking near the waxing phase thereby indicating a strong influence of light.

09

BIOACOUSTIC DATA WITH MACHINE LEARNING METHODS INDICATE SYNCHRONY IN A SONGBIRD'S BREEDING PHENOLOGY ACROSS A CLIMATICALLY VARIED LANDSCAPE

Chiti Arvind, Indian Institute of Science Education and Research (IISER) Tirupati

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Abstract - Phenological responses to environmental variation are central to an organism's fitness. For instance, in birds, breeding is closely linked to rainfall. Phenological mismatches remain poorly studied in the tropics, unlike the temperate region, where subtle differences in rainfall timing can drive reproductive asynchrony. We use singing intensity as a proxy for breeding activity to study the breeding phenology of a tropical songbird with complex vocalisations across a known asynchronous rainfall gradient (west-east, 60km apart) at two levels: across the landscape for one year and within a location across multiple years. We used passive acoustic monitoring (PAM) data from six locations (10 km apart). We developed a species-specific classifier using BirdNET with a high performance (AUROC = 0.871) and analysed 40,117 hours of data across five years. At the landscape level, we find song intensity correlates with rainfall, but anomalous annual data from 2024-2025 revealed an absence of the east-west rainfall asynchrony. Across years within a location, singing intensity tracked rainfall peaks that shifted annually. A landscape-level phenological mismatch was not detected in our targeted year, but PAM, coupled with custom classifiers, has the sensitivity to detect it and is a valuable tool for assessing phenology patterns in remote environments.

S14 - BEHAVIOUR UNDER PRESSURE: HOW DISTURBANCE SHAPES WILDLIFE ECOLOGY

Chair: Ahmad Masood Khan, Aligarh Muslim University

01

COEXISTENCE IN A CROWDED LANDSCAPE: SPATIAL AND TEMPORAL ECOLOGY OF SMALL CARNIVORES

Siddhi Damle, Wildlife Institute of India, Dehradun; Salim Ali Centre for Ornithology and Natural History, Coimbatore

Shomita Mukherjee (Sálim Ali Centre for Ornithology and Natural history, South India Centre of Wildlife Institute of India, Coimbatore); Jehan Bhujwala (Maharao Pragmulji Nature Conservation Trust, Bhuj), H. S. Sushma (Foundation for Ecological Research Advocacy and Learning, Auroville; The University of Transdisciplinary Health Sciences and Technology, Yelahanka)

Abstract - Competition avoidance among sympatric species is enabled through spatial, temporal, and trophic niche partitioning. Small carnivores often persist in human-dominated areas, making them vulnerable to disturbances that influence how sympatric species use space and time. We investigated these dynamics in a semi-arid pastoral landscape, Chadva Rakhal and surrounding human settlements in Kachchh, Gujarat.

Camera trapping from May to August 2024, covering summer and monsoon, along with field surveys and satellite imagery analysis, was used to quantify human activity and landscape-structure variables. Habitat-use patterns were evaluated using occupancy modelling, while the Relative Abundance Index (RAI) compared detections between areas with higher and lower human and livestock activity.

Vulpes indica showed the highest habitat-use probability, followed by Herpestes edwardsii, Felis chaus, and F. lybica. Species showed positive associations with human and cattle detections, indicating tolerance to human presence. Seasonal variation in detections near human settlements was observed in H. edwardsii and F. lybica, whereas F. chaus was mostly detected near settlements. Most species were primarily nocturnal, resulting in temporal overlap, while diurnal species overlapped with humans and domestic dogs.

These findings indicate some amount of behavioural flexibility that enables small carnivores to persist in human dominated landscapes.

02

FEEDING ON THE EDGE: DIET AND MOVEMENT OF LION TAILED MACAQUES ACROSS FOREST-HUMAN INTERFACE IN KUDREMUKH NATIONAL PARK

G Maria Christie Lawrencia, Bharati Vidyapeeth Institute of Environment Education and Research, Pune

Dr Meena Venkataraman, Adjunct Faculty, Bharati Vidyapeeth (Deemed to be University), Institute of Environment Eduction and Research, Pune

Abstract - Endemic and endangered in the Western Ghats, lion-tailed macaques (*Macaca silenus*) are habitat specialists increasingly exposed to human-modified landscapes. Human land-use effects on foraging were studied by following a single troop (n = 12) from July to September, spanning monsoon to post-monsoon phenological changes. The Kerekatte Range, with its mosaic of villages, roads, and plantations, represented forest-edge conditions. Feeding patterns, diet, activity, and ranging were recorded using scan and focal sampling. Spatial data was recorded using GPS tracking. The troop travelled 2.65 km/day, with reduced movement near settlements and on rainy days and increased distances during Garcinia gummi-gutta and Caryota urens fruiting. The home range was 1.5 km²- smaller than reported ranges- with ~40% of area aligning with anthropogenic factors. Resting and vigilance were higher in human-use areas, while foraging and movement increased in forests. Nine of ten foraging hotspots were near settlements. The diet included wild and cultivated fruits, with occasional atypical items. These dietary and activity shifts at the interface suggest stronger responses under fully anthropogenic conditions.Endemic and endangered in the Western Ghats, lion-tailed macaques

(*Macaca silenus*) are habitat specialists increasingly exposed to human modified landscapes. Human land-use effects on foraging were studied by following a single troop (n = 12) from July to September, spanning monsoon to post-monsoon.

03

SCAVENGING BEHAVIOUR OF VERTEBRATES AT HUMAN-MEDIATED CARCASS DISPOSAL SITES IN THE ARAVALLI LANDSCAPE OF HARYANA

Hitesh Kumar, Sálim Ali Centre for Ornithology and Natural History

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Abstract - Introduction: In semi-arid landscapes of northern India, livestock carcass disposal provides a vital feeding opportunity to the diverse community of scavengers. Carcass, being an ephemeral resource intensify competition, yet coexistence can be sustained through spatio-temporal resource partitioning. However, their functional dynamics at the carcass site are overlooked.
Methods: We investigated the influence of livestock carcass disposal on the scavenging behaviour of vertebrates through camera trapping in the Aravalli landscape of Haryana. We monitored 48 carcasses over 354 trap-nights, yielding 5,251 independent detections of 28 species across frequent, infrequent, and single carcass disposal sites.
Results: Species richness was highest at infrequent sites. Free-ranging dogs and Indian grey mongooses exploited all sites, while leopards and hyenas were associated with frequent and infrequent, respectively. Temporal overlaps showed low synchrony between large predators and dogs (Δ leopard–dog = 0.22; Δ hyena–dog = 0.19). Dog activity reduced by ~37% in leopard presence, indicating a top-down effect, whereas high overlaps with treepie (Δ = 0.80) and mongoose (Δ = 0.72) suggested commensalism. Key predictors included forest type for striped hyena and human-settlement for Indian grey mongoose.
Conclusions: The study highlights how carcass disposal frequency, top-down effects, and interspecific interactions shape the spatio-temporal behaviour of scavenging vertebrates.

04

THE ALTERED SOCIAL BEHAVIOUR OF ASIAN ELEPHANTS IN A HUMAN-DOMINATED LANDSCAPE

Parvathi Krishna Prasad, Conservation Initiatives, Deakin University

Dr. Varun R. Goswami (Senior Scientist, Conservation Initiatives); Dr. Divya Vasudev (Senior Scientist, Conservation Initiatives); Dr. Don A. Driscoll (Professor, Deakin University); Dr. Matthew Symonds (Professor, Deakin University)

Abstract - Living in groups of conspecifics provides animals several advantages—security in numbers, exchange of ecological information, ability to defend resources and increased mating opportunities. Human-dominated landscapes, characterised by novel and dynamic resource and risk conditions, alter animal social behaviour and the benefits associated with group-living. We examined the impact of human-modified habitat conditions on the social behaviour of the Asian elephant Elephas maximus—a species that has a complex social system and overlaps in space with people considerably. In a human-dominated landscape in Northeast India, we compared the social organisation and structure of elephants within and outside a protected area using data on individually identified elephants and social network analysis. Our findings suggest that both female and male adult elephants alter their social strategies in human-use areas with modified risk and resources conditions. Elephants form larger groups, maintain stronger associations with each other and form better-connected social networks in human-

use areas. The modified social strategy likely allows elephants to find security in numbers in areas that they perceive as risky. The well-connected social networks may also allow efficient transfer of ecological and social information, enabling elephants to navigate anthropogenic disturbances and novel resource conditions in our human-dominated landscape.

05

LIGHT SLEEPERS: EFFECTS OF ARTIFICIAL LIGHT AT NIGHT ON THE BEHAVIOUR AND PHYSIOLOGY OF THE INDIAN ROCK AGAMA

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Abstract - Animals use photoperiodic cues to maintain their circadian rhythm and physiological processes. However, these can be disrupted by Artificial Light at Night (ALAN), especially in diurnal animals. We examined how ALAN impacts the behaviour and physiology of the Indian Rock Agama, Psammophilus dorsalis. We hypothesized that ALAN will a) reduce and fragment sleep, b) elevate stress levels, and c) lower locomotory performance, disproportionately affecting rural lizards compared to their urban counterparts. Wild-caught lizards from urban (n = 20) and rural (n = 22) sites within and outside Bengaluru city were fitted with biologgers to record electrooculogram (to quantify sleep) and actimetry. Lizards were then placed in a mesocosm for 10 days where they were allowed to habituate for five days under 12H light:12H dark cycle, after which the treatment group was subjected to ALAN (white LED) for five days whereas the control group remained undisturbed. We recorded sleep throughout the experiment, measured feacal corticosterone levels and performance (sprint speed and endurance) post ALAN exposure. Our preliminary findings suggest that ALAN exposure elevates physiological stress. Analyses for other responses are currently underway. Our study is among the first to highlight the impact of ALAN on sleep, physiology, and wake performance in reptiles.

06

RISK, RESOURCES, AND REPERCUSSIONS: CONTEXT-DEPENDENT COSTS OF FEAR IN DESERT LIZARDS

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Nimish Subramaniam (IISc), Maria Thaker (IISc)

Abstract - Human-induced changes in predator assemblages can reshape prey ecology, yet their effects on prey fitness remain poorly quantified. In parts of the Thar desert, carcass provisioning for vulture conservation attracts feral dogs, creating hotspots of high predation risk for the range-restricted Saara hardwickii. These predominantly herbivorous lizards also occupy landscapes that vary in resource availability, providing a natural system to test how risk and resources interact to influence fitness. We quantified behavioural (foraging time and range) and physiological (glucocorticoid levels) responses to risk, along with health (body condition) and fitness (offspring number). Using structural equation models, we evaluated how behaviour and physiology mediate risk effects on fitness. Lizards reduced foraging time and range in high-risk habitats, but this behavioural response translated into poorer body condition only in high-risk, low-resource habitats, where individuals also produced fewer offspring. In contrast, access to abundant food buffered the fitness consequences of reduced foraging. Despite elevated risk, glucocorticoid levels did not vary across habitats, indicating limited physiological response. Overall, S. hardwickii respond to human-induced predator pressure primarily through behavioural changes, with fitness consequences emerging when resource limitation constrains food intake, highlighting how introduced predators can shape prey behaviour, physiology, and fitness.

07

AMBER OR WHITE, DIM OR BRIGHT: EFFECTS OF ARTIFICIAL LIGHT AT NIGHT ON CHAMELEON BEHAVIOUR, MORPHOLOGY, AND PERFORMANCE

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Abstract - Artificial Light At Night (ALAN) leads to changes in animal fitness and behaviour. However, evidence remains limited for diurnal species sleeping at night which are particularly vulnerable to ALAN, especially with respect to different light spectra and intensities. We explored the effects of different intensities of amber and white lights on the morphology (night-time colour), behaviour (sleep disruption), and downstream performance (sprint speed, bite force, courtship, foraging, mass) of chameleons in Madagascar. We conducted experiments on urban and rural populations, exposing them to ALAN followed by moonlight conditions to study their ability to recover. Individuals resting under ALAN, especially amber lights compared to white, were significantly darker and more disturbed than those under control conditions. Moreover, when ALAN was removed, those exposed to it slept deeper than control individuals suggesting a sleep deficit. The differences in colour were less pronounced for urban populations, which implies potential adaptation towards ALAN in the cities. However, we observed no effects of short-term exposure to ALAN on chameleon performance. These results, where we provide the first evidence of low intensity white lights being better than amber lights, can help inform future development policies in urban environments for conservation, including for the Indian chameleon species.

08

"BEYOND THE 'SUPER-PREDATOR' PARADIGM: ATTENUATED FEAR RESPONSES TO HUMAN PRESENCE IN HIMALAYAN CARNIVORES IN INDIA"

Pooja Chand, Ashoka University, Haryana

Beatrice Caimi (ERM, Italy), Abraham Pious (Ashoka University, India), Jens-Christian Svenning (Aarhus University, Denmark), Manvi Sharma (Ashoka University, India)

Abstract - Human presence can disrupt animal activity patterns, affecting survival, reproduction, and range distributions of animals. The dominant paradigm, based largely on studies from the Global North, suggests that Humans are far more lethal "Super predators" than apex carnivores. Despite recent documentation of variation in animal responses to human presence, no alternatives to the Human Super Predator paradigm has been proposed. In this study, we test the Human habituation hypothesis, that goes beyond the Super Predator hypothesis to include attenuated fear-responses in animals that co-exist with humans at high densities. India and the high diversity of carnivores co-existing with high densities of human populations, presents a unique opportunity to test the human habituation hypothesis. Here, we investigated fear responses measured as Escape probability within size-structured carnivore guild using call playback experiments in Great Himalayan National Park using 37 automated behavioural recorders. Leopards showed low (25%), red foxes exhibited moderate (50–75%), whereas leopard cats showed zero escape probability (0%) when exposed to human playbacks. This species-specific response underscores the need to move beyond single-species studies to understand how entire carnivore guild negotiate human-dominated landscapes and also gives context-dependent lens to Super-predator hypothesis especially landscapes which are characterised by long-term human-carnivore coexistence.

09

EDGES OF RISK: BEHAVIORAL ADAPTATION OF ASIAN ELEPHANTS IN A MINING-DOMINATED LANDSCAPE OF KEONJHAR, ODISHA

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Abstract - Across disturbed landscapes, behavioral change often signals early ecological stress. In Odisha's Keonjhar district, a principal iron ore region, Elephants navigate a complex matrix of mines, railways, highways, and diminishing forests. Here, behavioral adaptation is essential for persistence.

The study examined how disturbance affects habitat use beyond typical ecological suitability. An ensemble SDM was constructed (biomod2; ROC = 0.904, TSS = 0.632) using 4,842 presence records. This, combined with a spatial Threat Index, produced a Habitat Vulnerability Index that distinguishes ecological potential from realized accessibility. The study also used Manly's Selection Ratios to quantify behavioral responses, distinguishing active selection from passive occurrence.

Results demonstrate Elephant's strong selection for agricultural edges and consistent attraction to railway corridors, which are high-risk environments seldom classified as suitable. Although NDVI was the dominant ecological predictor, behavioral responses often superseded these patterns in disturbed areas.

By integrating behavioral selection with vulnerability, the study identified Critical Action Zones. These are areas where adaptive behavior and elevated risk overlap. Findings show that behavioral plasticity enables persistence while potentially masking vulnerability. This underscores the need to explicitly incorporate behavioral plasticity in conservation planning.

10

DYNAMICS OF SCAVENGER VISITATION AND COMPETITION AT CARRION RESOURCES IN THE THAR DESERT

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Varun Kher, Wildlife Institute of India

Abstract - Scavenger assemblages at carrion resources are structured by both resource characteristics and human disturbance, yet their effects on visitation and competitive interactions are poorly studied in arid ecosystems. This study examines how carcass size and human disturbance can influence scavenger community dynamics in the Thar Desert. Between 2024-26, camera traps (n=102) were deployed at different carcass sizes across varying distances from villages. Presence data was used to estimate variation in visitation probability across seasons, while behavioural observations derived from time-lapse images, motion-triggered captures, and videos were used to quantify exploitative and interference competition through feeding efficiency and displacement interactions. Vultures and eagles exhibited higher visitation probabilities at smaller carcasses located farther from settlements. In contrast, synanthropic scavengers, particularly free-ranging dogs and pigs, were more likely to visit carcasses near villages. Behavioural analyses indicate that mammalian scavengers and migratory raptors achieve higher feeding efficiency and displacement success relative to resident raptors, suggesting effects of exploitative and interference competition. These patterns are consistent with the interpretation that both disturbance and resource size mediate access to carrion, with implications for structuring scavenger assemblages and competitive hierarchies in human-dominated desert landscapes.

S15 - BIODIVERSE'CITY IN THE ANTHROPOCENE: PATHWAYS FOR RESILIENT URBANSCAPES

Chairs: Seshadri K S, Ashoka Trust For Research In Ecology And The Environment, Harish Prakash, GITAM University and Sudhira HS, GubbiLabs

01

AVIAN DIVERSITY AND THEIR NESTING SUCCESS ACROSS URBAN WETLANDS OF BENGALURU

Varsha Kari, Bharati Vidyapeeth Institute of Environment Education and Research (BVIEER)

Dr. Taej Mundkur, Adjunct Faculty, BVIEER

Abstract - Urban wetlands are critical habitats for birds in fast-developing cities, supporting diverse species and essential ecological functions. This study assessed bird diversity and nesting success in four urban wetlands in Bengaluru (Jakkur, Rachenahalli, Madiwala, and Kaikondrahalli) during the 2025 monsoon (June–September). We conducted point count surveys (n=34) and nest monitoring (n=156) to assess species richness and diversity, as well as reproductive success of important species of colonial waterbirds. Additionally, we used 40 semi-structured interviews and a disturbance scoring index to assess human interaction and local perception.
Non-waterbirds had higher Shannon and Simpson index values across the study, demonstrating higher evenness in terrestrial habitats. Overall species richness and density was highest at Kaikondrahalli, likely due to high vegetation and low disturbance, while Madiwala exhibited low densities, corresponding with high human activity. Apparent nesting success was high for most species, including several (e.g., Painted Stork, Black-headed Ibis) that had 100% success across multiple sites. Bias-reduced logistic regression indicated a weak positive influence of tree height on nesting success and a negative effect of proximity to trails, highlighting disturbance sensitivity. Floating and emergent vegetation showed a mild but uncertain relationship with success.
Overall, habitat structure and disturbance gradients shaped the breeding outcome.

02

PULLED INTO CITIES: RESOURCE STABILITY DRIVES FLYING-FOX URBANISATION

Ram Mohan, Western Sydney University

Dr. Jessica Meade (Western Sydney University), Dr. Caragh Threlfall (Mcquarie University), Prof. Justin Welbergen (Western Sydney University)

Abstract - Urban expansion often viewed as harmful to biodiversity, can create novel niches for adaptable species to colonise and persist in cities, a process known as biological urbanisation (synurbisation). We studied synurbisation in the grey-headed flying-fox (Pteropus poliocephalus) across eastern Australia using long-term roost surveys and GPS tracking. We found higher flying-fox densities in urban areas, with increasing numbers in smaller towns, stable populations in cities, and declines in non-urban areas. Tree cover, a measure of food quantity, was greatest around non-urban roosts and increased across time in all urban categories, providing little support for habitat loss ("push" factors) driving synurbisation in P. poliocephalus. Instead, flying-foxes are likely attracted to cities by reliable, year round food supplies, as reflected in shorter foraging distances and repeated use of feeding sites across seasons, with urban environments offering a diverse mix of native and non-native food plants. Overall, synurbisation in P. poliocephalus may be driven by "pull" factors associated with the predictability, temporal stability and quality of urban resources. These globally applicable insights can guide urban planners to implement year-round stable floral plantings and strategically distribute vegetation to support biodiversity while reducing human-wildlife conflict, particularly in rapidly urbanising regions like India.

03

INSECTIVOROUS BAT ASSEMBLAGE IN BENGALURU CITY ACROSS LEVELS OF URBANIZATION

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Caroline Troy (University of Virginia), Rohit Chakravarty (Nature Conservation Foundation, Bengaluru), Seshadri KS (Ashoka Trust for Research in Ecology and the Environment, Bengaluru)

Abstract - Urbanization is a complex and dynamic socio-economic process that results in altered landscapes. It leads to homogenization, fragmentation and loss of habitat, and poses challenges to the survival and persistence species in urban ecosystems. Among the mammals that persist in an urbanized landscape, bats are the most common. They serve important ecological functions such as pollination and seed dispersal. Insectivorous bats regulate ecosystem balance keeping insect populations in check. Despite bats being the most diverse in the tropics, limited studies have examined urban bat assemblages in tropical cities and attempted to understand how they continue to persist in the urban matrix. To address this gap, we quantify urbanization across the city of Bengaluru and surrounding regions and using acoustic monitoring methods, we documented the insectivorous bat assemblage in different levels of urbanization categorised based on percentage of built-up area at two spatial scales i.e., 2 km and 4 km. We find that species richness and diversity is higher in lower levels of urbanisation at both spatial scales. However, responses to urbanisation and the habitat and environmental characteristics associated with it, are species specific and scale dependent.

04

ANT GENUS DIVERSITY ALONG FOREST-URBAN GRADIENTS OF GUWAHATI

Prachaya Sarma, Cotton University

Dr Aavika Dhanda, Independent Researcher and Dr Narayan Sharma, Assistant prof Environmental Biology and Wildlife Sciences, Cotton University, Assam.

Abstract - Rapid urbanization has led to forest loss in fast-growing cities like Guwahati. While larger forests often receive conservation focus, forest patches within cities are overlooked despite their role in sustaining local biodiversity. Ants are highly sensitive to environmental changes, making them suitable bioindicators for subtle ecological shifts in green patches. Yet, ants remain highly understudied in the urban ecosystems of Northeast India. We investigated ant genus abundance and diversity, and community composition across an urbanization gradient in Guwahati. We selected 12 forest sites, with four surrounded by contiguous forests, four by urban, and four by suburban habitats. Using pitfall traps, a total of 21 genera were recorded.Odontoponera was dominant across all habitats, while Technomyrmex was restricted to contiguous forests. Ant abundance was the highest in suburban (n = 317) and the lowest in urban habitats (n = 168). Genus diversity was the highest in contiguous forests (Shanon H'= 2.54) and the lowest in forest-urban matrix (H'=1.90). The communities were found to be highly dissimilar (ß= 0.98).
Our findings show that both contiguous forests and forest patches surrounded by suburban habitats maintain ant diversity in a fast-growing city, thus potentially supporting important ecological functions that often go unnoticed.

05

EXAMINING ECOLOGICAL INTERACTIONS BETWEEN URBAN TREE AND VERTEBRATE SPECIES IN BENGALURU

Vallari Sheel, North Carolina State University, USA

Samyamee Sreevathsa (Centre for Ecological Sciences, Indian Institute of Science, Bengaluru), Madhusudan Katti (Associate Professor, Department of Integrative Humanities and Social Sciences, North Carolina State University, USA) Jayanti Ray-Mukherjee (Associate Professor, Azim Premji University, Bengaluru)

Abstract - Urban treescapes, composed of native and non-native species, support diverse vertebrates, yet their ecological interactions remain poorly understood in the Global South. We investigate interactions between diurnal vertebrates (birds and arboreal mammals) and tree species in Bengaluru.
We ask: (a) which vertebrates depend on which tree species for food (nectar, fruit); (b) what drives vertebrate visitation and diversity on flowering and fruiting trees; and (c) whether any tree species function as "keystone" food resources. Focal species were identified using a multipronged approach, selecting species known as important food resources, those ornithophilous or ornithochorous, and those widely distributed. We selected nine species as potential nectar resources and eight as potential fruit resources.
We monitored 6–20 individuals per species (1–3 hours each, within four hours of sunrise), recording vertebrate abundance, diversity, and habitat variables. We observed 94 flower-resource and 71 fruit-resource trees, documenting 11 species feeding on nectar/flower and 17 on fruits. Preliminary analyses indicate Spathodea campanulata and three native Ficus species support the highest vertebrate diversity amongst the flower-resource and fruit-resource species respectively. Ongoing analyses (GLM, NMDS, and food-web network) will identify drivers, vertebrate species composition, and keystone roles, with implications for urban tree management and biodiversity conservation.

06

INTEGRATING REMOTE SENSING AND BIRD ATLAS DATA TO PREDICT URBAN BIRD DISTRIBUTIONS WITHIN A WEST INDIAN CITY.

Ankitha Jayanth, Ahmedabad University, Gujarat

Michael Wimberly (Department of Geography and Environmental Sustainability, University of Oklahoma, Oklahoma, USA and Data Institute for Societal Challenges, University of Oklahoma, Oklahoma, USA) , Devvratsinh Mori (School of arts and sciences, Ahmedabad University, Gujarat, India), Andrews Korah (Department of Geography and Environmental Sustainability, University of Oklahoma, Oklahoma, USA and Data Institute for Societal Challenges, University of Oklahoma, Oklahoma, USA) and Shomen Mukherjee (School of arts and sciences, Ahmedabad University, Gujarat, India)

Abstract - Urban areas serve as a heterogenous habitat for animals like birds by providing them an unnatural niche, with anthropogenic food sources and habitats. While many studies in temperate countries have examined the relationship between land use patterns and urban bird species richness, very few have combined citizen science ecological data and high-resolution remote sensing data to explain community composition and species distribution in tropical cities. We combine Ahmedabad city bird atlas data (181 species) with remote-sensing data on land cover, building heights, and land surface temperatures, along with bird trait data to understand distribution patterns and community structures. Species distribution modelling indicates a positive correlation with distance from the city center and species richness. However, in the city's core areas, we find a positive correlation between tree cover and richness. We are currently performing joint species distribution modelling to understand species coexistence across different environmental gradients by including trait-level and phylogenetic-level data.
We aim for this study to help understand how bird coexistence mechanisms operate in the complex urban landscape. Additionally, this study will provide insights to the city municipality to help conserve urban bird-friendly habitats.

S16 - INSECTS IN A CHANGING WORLD

Chairs: Pritha Dey, National Centre for Biological Sciences, Gauri Gharpure, Independent Researcher and Mansi Mungee, Azim Premji University

01

RUTACEAE-LEPIDOPTERA-PARASITOID FOOD WEBS ALONG A GRADIENT OF AGRICULTURAL MANAGEMENT SYSTEMS

Anaswar P, Indian Institute of Science, Bengaluru

Additional Authors: Saskya van Nouhuys (Indian Institute of Science), Prakruti Mehta (Indian Institute of Science, Bengaluru)

Abstract - Human agricultural practices are one of the most important causes of biodiversity loss, but its effects on multitrophic interactions on a human management gradient remain understudied. The stability and complexity of multitrophic interactions, such as plant-Lepidoptera-parasitoid communities, are particularly sensitive to human management practices. In this study, we are examining how the foodweb complexity in Rutaceae-Lepidoptera-parasitoid systems responds to agricultural land-use intensity, from low management systems to pesticide-treated cultivated areas.
We sampled Lepidoptera from cultivated Rutaceae (citrus and curry) monthly for two years over an agricultural gradient. The immature stages were reared until adult Lepidoptera or parasitoids emerged and were identified. We found that insect diversity and foodweb structure differed between sites, and was likely to be related to agricultural practices, but not along the gradient we expected. Instead, the foodweb was ostensibly complex where other agricultural crops were cultivated, and least complex where predatory ants were extremely common.

02

FROM IMAGES TO INSIGHTS: A MULTI-SCALE INVESTIGATION OF MORPHOLOGY-ENVIRONMENT RELATIONSHIPS IN MOTHS

Divya Raj, Indian Institute of Science Education and Research Pune.

Dr. Mansi Mungee (Assistant Professor, Azim Premji University, Bhopal); Dr. Ramana Athreya (Associate Professor, IISER Pune)

Abstract - Morphological traits vary along environmental gradients and play a key role in structuring communities. Understanding how environmental variation influences morphology is therefore a key objective in community ecology. While many studies have documented morphological variation across latitudinal and elevational gradients in diverse taxa, the generality of these patterns and their underlying mechanisms remain poorly understood, even within a single taxonomic group. Moreover, most studies focus on interspecific or assemblage level patterns, often overlooking intraspecific variation, despite growing evidence that morphology-environment relationships can differ across taxonomic scales. My PhD research addresses these gaps by investigating the relationships between key morphological traits and a steep elevational gradient across a broad taxonomic scale in moths. Using photogrammetry, I have measured body size in approximately 7500 individuals of moths spanning 30 families and around 700 morpho-species. Results so far show idiosyncratic relationships indicating that different processes shape morphology-environment relationship in different lineages. This is the first dataset of its kind from the highly biodiverse yet under explored region in Eastern Himalayas and will provide a foundation for long-term monitoring of moth communities in the region.

03

TRACING FUNCTIONS IN THE CITY: PATTERNS OF FUNCTIONAL DIVERSITY CHANGES IN ANTS

Ankita Sharma, National Institute of Advanced Studies

Paul Antony Mangaly (St. Joseph's University, Bangalore, India), Suraj Kumar Singha Deo (Animal Behaviour and Cognition Programme, National Institute of Advanced Studies, Bangalore, India) Anindya Sinha (1. Animal Behaviour and Cognition Programme, National Institute of Advanced Studies, Bangalore, India 2. Coexistence Studies Group, Trans-Disciplinary University of Health Sciences and Technology, Bangalore, India)

Abstract - Urban environments lead to the loss of local species richness and diversity. Assessing the effects of urbanisation on sensitive arthropods like ants is crucial for understanding changes in ecosystem functioning. We evaluated the impacts of urbanisation on taxonomic and functional diversity of ant communities across an urban gradient in South Guwahati, Assam. Twenty sites were sampled, representing (from 2023-2024) forest, park, semi-urban, and urban habitats, using pitfall traps and hand collections. We analysed taxonomic and functional diversity,β-diversity, indicator and Synanthropic Index (SI) values, and functional trait variations.
Taxonomic diversity was lowest in urban sites and highest in semi-urban habitats. Turnover was the primary driver of taxonomic β-diversity, while functional β-diversity was driven by nestedness. Thus, urban filtering causes trait loss, although species are replaced. Functional richness decreased significantly from forest to urban areas. There were significant reductions in body size, Weber's, and scape lengths in urban habitats. Specialised predators and arboreal taxa dominated forests, while urban sites favoured surface-active omnivores, as revealed by SI and Indicator values. These results showcase how urbanisation simplifies ant communities and favours smaller, more generalist species. Therefore, there is a need to maintain vegetation complexity in urban landscapes to preserve ecosystem structure and functioning.

04

LIGHT DRIVES CHEMICAL DEFENSE-DEPENDENT INSECT HERBIVORY ON TREE SEEDLINGS IN A FRAGMENTED TROPICAL FOREST

Rishiddh Jhaveri, Centre for Cellular and Molecular Biology (CCMB); National Centre for Biological Science (NCBS)

Devi Tejaswini (University of Montana), Lisa Rutuparna (IISER Behrampur), María-José Endara (University of the Americas Quito, Ecuador), Meghna Krishnadas (National Centre for Biological Sciences)

Abstract - Herbivorous insects play a key role in shaping plant diversity. Recent studies suggest that plant defences, particularly chemical defences, play a significant role in shaping plant communities and promoting co-existence. Herbivory imposes strongest selection at the seedling stage, a crucial bottleneck in population dynamics of trees. But, seedlings can overcome herbivory where light increase, typical of human-modified forest edges. While evidence for plant chemical defences shaping plant community is increasing, it remains unexplored in the context of influencing plant community dynamics in fragmented forests. In Kadumane, fragmented forest in Western Ghats, we examine the role of leaf chemical defences in shaping insect herbivory and if seedling survival outcomes depend on available light. For 2 years, we monitored herbivory and survival for 1461 seedlings of 42 species across 134 1x1 m plots along edge-to-interior gradient varying in available light. Using untargated metabolomics to characterise leaf defence chemical diversity we find that seedlings of low chemical diversity species are eaten by insects more in lower light habitat leading to lower survival. High chemical diversity species are eaten more in higher light habitat, but their survival did not depend on herbivory. Unequal outcome of insect herbivory for species varying in chemical defences can potentially counter the top-down processes maintaining plant species co-existance in a changing world.

05

SPECIALIZATION OF PLANT-INSECT HERBIVORE INTERACTIONS VARY WITH FRAGMENTATION AND RESOURCE ACQUISITION STRATEGY: EVIDENCE FROM A TROPICAL EVERGREEN FOREST OF INDIA

Gayathri M, National Centre for Biological Science (NCBS)

Muzahid Ansari(Wildlife Institute of India- Dehradun), Rishiddh Jhaveri(CSIR-Center for Cellular and Molecular Biology),Meghna Krishnadas(National Centre for Biological Sciences Banglore)

Abstract - Habitat fragmentation alters plant-insect herbivore interactions, resulting in a loss of specialized interactions. Edges of fragmented forests promote the spread of resource-acquisitive, weakly defended plant species that host generalist insect herbivores, while interiors are characterised by resource-conservative, well-defended plant species hosting more specialised insect herbivores. Fragmentation disrupts specialised interactions; however, we do not know if it differs across plants with different resource-acquisition strategies.
In Kadumane, a fragmented moist-evergreen forest in the Western Ghats, we studied whether specialized insect herbivore interactions on acquisitive and conservative plants vary across forest edge to interior. We sampled insect herbivores from 40 saplings of seven plant species, selected to capture a gradient of resource-acquisition strategies based on leaf traits, in edge and interior habitats over 5 months. We measured herbivore specialization using bipartite networks and found that edges witnessed lower specialisation compared to interiors. Further, resource-conservative plants lost more specialised herbivores near the edges compared to interiors, driving the emaciation at edges, whereas resource-acquisitive plants remained unaffected. Our results depict the joint effect of fragmentation and plant functional traits on specialized interactions and thus herbivores, leading to long-term impacts on community structure and biodiversity.

06

CONTRASTING MECHANISMS FOR USING HUMIDITY AS CUE FOR SEASONAL POLYPHENISM IN TWO TROPICAL BUTTERFLIES

Tarunkishwor Yumnam, IISER Thiruvananthapuram & IISc Bengaluru

Freerk Molleman (Adam Mickiewicz University Poznań, Poland); Urszula Walczak (Adam Mickiewicz University Poznań, Poland); Ullasa Kodandaramaiah (IISER Thiruvananthapuram))

Abstract - Many tropical butterflies exhibit seasonal wing pattern plasticity, producing cryptic dry-season morphs with small or no ventral eyespots and conspicuous wet-season morphs with large wing-marginal eyespots that deflect predator attacks away from vital body parts. Eyespot size is influenced by temperature during larval development. However, many tropical regions lack a predictable temperature-rainfall correlation, limiting temperature's reliability as a cue. Relative humidity (humidity), which increases with wet season's approach, presents a potential environmental cue. We tested whether humidity modulates eyespot-size plasticity in two sympatric butterflies experiencing similar ecological pressures. High humidity directly induced larger eyespots in Mycalesis mineus, compared to those from low humidity. In contrast, Melanitis leda showed no direct effect; instead, humidity modulated eyespot size indirectly through induced changes in host plant quality. Since late larval and prepupal stages are temporally closer to the adult environment, selection may favour greater sensitivity during these stages. Using a humidity switching experiment at different developmental stages, we demonstrated that, in M. mineus, wandering larval and prepupal stages are sensitive to humidity, while M. leda remained insensitive. This study highlights how two diverging species, evolving under similar ecological pressures, integrate environmental cues in distinct ways to modulate wing pattern plasticity.

S17 - INVASIVE PLANTS AND WILDLIFE HABITAT: MAPPING THREATS TO INDIA'S ECOSYSTEMS

Chairs: Milind Bunyan, Ashoka Trust for Research in Ecology and the Environment and VV Robin, Indian Institute of Science Education and Research Tirupati

01

INVASIVE SPECIES MAPPING USING CITIZEN SCIENCE

Keerthikrutha Seetharaman, Independent

Dr. Anita Varghese (Keystone Foundation), Dr. Ankila Hiremath (ATREE), Dr. Aparna Watve (IUCN SSC Western Ghats Plant Specialist Group), Ms. Harshavardini Angappan (Keystone Foundation), Mr. Rohit George (Independent), Dr. Shiny Rehel (Keystone Foundation)

Abstract - Invasive alien plants are species introduced—intentionally or unintentionally—outside their native ranges that spread rapidly and negatively impact biodiversity, ecosystem services, and human well-being. Despite decades of research, a major limitation in understanding invasion drivers remains the lack of high-quality, high-resolution occurrence data. The Mapping Invasive Alien Plants (MIAP) project, hosted on iNaturalist, addresses this data gap by leveraging citizen science. Its long-term goal is to develop a comprehensive atlas of invasive plants across India. MIAP promotes public awareness and participation through social media, training workshops and networking at conferences.

Until March 2026, the MIAP project had 130,917 invasive plant records from all the states in India, but ~9% of districts (65/755) lack records. Notable gaps remain, particularly in north-western, northern, and north-eastern regions of the country. Lantana camara, Tridax procumbens, Parthenium hysterophorus, Mimosa pudica, and Prosopis juliflora are the five most-recorded species.

To help address these gaps, MIAP has begun engaging with local communities and liaising with existing citizen science initiatives, and institutional partners, including horticulture and botany departments. These efforts are intended to strengthen data coverage and support the development of a more comprehensive, high-quality dataset.

02

PREDICTING INVASION RISK OF LUPINUS POLYPHYLLUS IN THE HIMALAYAN REGION USING NATIVE-RANGE SPECIES DISTRIBUTION MODELS AND FUTURE CLIMATE SCENARIOS

Rayees Ahmad Malik, Department of Botany, University of Kashmir

Suhail Bashir (Department of Botany, Government Degree College Women, Kupwara, J&K, India), Manzoor A Shah (Department of Boatny, University of Kashmir)

Abstract - Biological invasions pose a growing threat to mountain ecosystems, yet tools for anticipating invasion risk ahead of establishment remain underutilized. Species distribution models (SDMs) offer a promising framework for a priori prediction of habitat invasibility by leveraging climatic niche information from a species' native range. In this study, we therefor modelled the climatic niche of Lupinus polyphyllus Lindl., a highly aggressive North American perennial species invading high-elevation sites in the Kashmir Himalaya, using occurrence records from its native range. An ensemble modelling approach implemented in R was used to project habitat suitability under current climatic conditions and multiple future climate scenarios across the Himalayan region.

Transfer of the native-range model to the Himalaya identified areas of high suitability under current climatic scenario, a prediction strongly corroborated by documented occurrence records from high-elevation localities including Gulmarg and Pahalgam in Kashmir. Projections under future climate scenarios further indicate potential expansion and intensification of suitable habitats across elevational gradient in Himalaya, thereby indicating high invasion risk under warming conditions.

Our findings demonstrate the efficacy of ensemble SDMs as early-warning tools for anticipating plant invasions in novel biogeographic regions and underscore the urgent need for proactive monitoring and management in Himalayan ecosystems.

03

A DATA-DRIVEN LOOK AT INDIA'S ALIEN FLORA

Achyut Kumar Banerjee, Azim Premji University

Abstract - Invasion of alien species represents one of the major environmental challenges for global biodiversity and ecosystem services. Easy and open access to quality data on these species is of paramount importance for informed decision making and effective management of biological invasions. We created the Indian Alien Flora Information (ILORA) database, the first of its kind in India, containing curated data for 14 variables of 1747 alien vascular plant species. In this presentation, I will talk about the conceptualization of ILORA, the selection of socio-ecological, socio economic, biogeographic, and bioclimatic variables, and the data curation process following a structured and reproducible methodology. ILORA is dynamic, and I will discuss how we have periodically updated ILORA with new information, especially with fine-scale occurrence records. ILORA's use in identifying invasion drivers and developing policy interventions, both by us and others, will also be highlighted. I will also share the works in progress, including the upcoming release of ILORA version 2.0, with updated taxonomy and information on online trade and functional traits. Finally, ILORA is envisaged to become a nationwide collaborative platform for a wide spectrum of stakeholders, and therefore, calls for community engagement to increase the data resolution and expand its capacity.

S18 - CONSERVATION OF RIVER ECOSYSTEMS

Chairs: J.A. Johnson, Wildlife Institute of India, Biju Kumar, University of Kerala, Biju Kumar, University of Kerala and Ruchi Badola, Wildlife Institute of India

01

STAKEHOLDER ENGAGEMENT THROUGH CAPACITY BUILDING FOR RIVERINE WILDLIFE CONSERVATION

Alankrita Sharma, Wildlife Institute of India

Simran Aggarwal, Sheetal Pal, Sangeeta Angom, Ruchi Badola, SA Hussain (All associated to Wildlife Institute of India)

Abstract - Ganga River has a community of biodiversity that is under threat by anthropogenic interventions due to habitat destruction and other factors. Conservation of threatened aquatic wildlife includes species such as Gangetic dolphins, gharials, freshwater turtles and otters among others. Such efforts requires both ecological measures as well as enhanced capacities of various stakeholders for successful implementation. Targeted stakeholders are forest officials, fisheries authorities, educators, researchers and community representatives across five states of Uttarakhand, Uttar Pradesh, Bihar, Jharkhand, West Bengal. Study evaluates capacity building framework based on an approach involving the identification of stakeholders, determination of training needs, preparation of training modules, implementation, and evaluation. Training needs were assessed using a participatory method and five training modules developed focusing on different areas such as monitoring of the diversity, wetland management, rescue and rehabilitation, participatory conservation and conservation education. There were 114 training sessions that brought together 7,582 participants. Training effectiveness was evaluated using the Kirkpatrick Model with pre and post assessments, showing significant knowledge gains (Wilcoxon test, $p < 0.001$; Cohen's $d = 2.04$). Carry forward surveys ($n = 2,123$) indicated 82% of participants applied acquired skills. The results demonstrate effectiveness of a structured training.

02

DANCING WITHOUT A FLOOR: A TALE FROM THE WESTERN GHATS' MONTANE STREAMS

N. V. Rajiv, Wildlife Conservation Society India

Vishnupriya Sankararaman (Wildlife Conservation Society India); Vivek Ramachandran (National Centre for Biological Sciences)

Abstract - Tropical hill streams are among the most threatened freshwater ecosystems, while they support highly specialised and vulnerable species. Understanding the influence of stream health and surrounding land-use on stream-dependent organisms is crucial for their effective conservation. This study examined the habitat preferences of Micrixalus kottigeharensis (Kottigehara dancing frog), an evolutionarily distinct and globally endangered species, across a mixed-use landscape in the Western Ghats biodiversity hotspot. We surveyed 67 hill stream segments and recorded frog count along with key habitat features and analysed them using Generalised linear mixed modelling approach. We found that an interplay of hydrological features, microclimatic conditions and land-use shaped the habitat preferred by the species. Their habitat requirements closely reflected overall stream health, indicating its potential value as an indicator of well-functioning hill stream ecosystems. Our findings highlight that the condition of hill streams is closely linked to land-use and riparian management. Simple, habitat-based conservation actions, such as maintaining natural stream flow, avoiding mining, and protecting riparian vegetation within production landscapes, can support the persistence of stream dependent organisms. These insights are particularly relevant for landowners and managers in agroforestry landscapes seeking to balance production with biodiversity conservation.

03

CATCHMENT-DRIVEN SOIL EROSION DYNAMICS AND IMPLICATIONS FOR RIVER ECOSYSTEM SERVICES IN THE LOWER NARMADA BASIN

Soumyadeep Choudhury, The Maharaja Sayajirao University of Baroda

Dr. T.M.V. Suryanarayana, The Maharaja Sayajirao University of Baroda

Abstract - Rivers are majorly influenced by catchment-scale processes. Soil erosion and sediment transport are among them, and they have significant effect in shaping river morphology and ecosystem health. Soil erosion prevention is a vital regulating ecosystem service and supports riverine biodiversity. This study assesses soil erosion dynamics of lower Narmada River over a 30-year period (1994-2024), focusing on the section downstream of Sardar Sarovar Dam. The study uses Revised Universal Soil Loss Equation (RUSLE) model integrated with multi-temporal land use and land cover changes to study the dynamics in erosion factors.
Results show a substantial decrease in soil loss from 38.7 tons per hectare per year (t/ha/year) in 1994 to 23.44 t/ha/year in 2024 (~39% decrease), despite an increase in rainfall erosivity over the same period. This reduction is mainly due to improved vegetation cover and conservation practices. Spatial variability also decreased, indicating a reduction in high-erosion hotspots.
The observed reduction in soil erosion enhances regulating ecosystem services by stabilizing riverbanks, which in turn supports biodiversity along river corridors and reduces risk of further degradation. By linking watershed-scale processes to riverine changes, the study highlights a critical but often overlooked driver of freshwater ecosystem degradation and identifies crucial areas for conservation.

04

CASCADING EFFECTS: STREAM MACROINVERTEBRATE COMMUNITIES IN DIFFERENT LAND USE TYPES IN THE HEADWATERS OF RIVER AGHANASHINI IN THE WESTERN GHATS

Deepti Bajaj, Ashoka University

Mihir Kulkarni (Indian Institute for Human Settlements, Centre for Cellular and Molecular Biology), Balachandra Hegde (Independent Researcher), Gajanan Hegde (Indian Institute for Human Settlements), Jagdish Krishnaswamy (Indian Institute for Human Settlements)

Abstract - Headwater streams obtain energy through organic matter input from the riparian canopy cover, processed by different functional feeding groups of aquatic macroinvertebrates. This makes headwater streams vulnerable to changes in the riparian zone, and anthropogenic land use disturbances in the form of agro-plantation can drastically impact macroinvertebrate communities and stream ecosystem functioning. Despite increasing land use change in the Western Ghats, studies to understand its impact on headwater streams are limited. We investigated the effects of land use change on stream water quality and macroinvertebrate functional groups in the headwaters of River Aghanashini in the Western Ghats. We found that disturbed agro-plantation (arecanut, paddy, betta) streams showed lower water quality and functional diversity of macroinvertebrates than undisturbed evergreen forest streams. This community in disturbed streams was largely dominated by generalist collector-gatherers with low abundances of other functionally important groups, which can impact ecosystem functioning and energy flow to downstream reaches of the river network. We thus highlight the need to conserve forest cover in the catchments of headwater streams, and emphasise the use of sustainable practices to reduce harmful impacts in lands that have been converted.

S19 - THE FARM-FOREST FRONTIER

Chairs: Asmita Kabra, Ashoka University; Budhaditya Das, Azim Premji University Ranchi

01

TREE TENURE IN CHANGING TIMES: HOW COMMUNITIES NAVIGATING THROUGH AND ITS EFFECT ON ECOLOGY - A CASE STUDY ON MAHUA TREES

Abhijit Dey, Ashoka Trust for Research in Ecology and the Environment, Bengaluru

Abstract - Global research on decentralization of forest governance showed the importance of customary tree tenure (CTT) for forest-dependent communities. For them, trees are often more relevant than land, yet this is not usually recognized by legal land tenure (LLT), leading to weakening of traditional forest management.
Using Social-Ecological Systems framework, we explore the intricacies within CTT & its interaction with LLT. We focus on Madhuca indica, a tropical tree & source of multiple resources with different user groups in India to ask: what determines access of local communities to different mahua resources? How does the access regime impact mahua ecology & associated livelihoods? How does LLT influence customary tree ownership? We conducted semi structured qualitative interviews, FGDs & go-along techniques. Employed inductive thematic analysis for data interpretation.
We found: CTT is a complex web of customs evolved over time & are mediated by rule-making institutions under the observance of the community members. Changes in tree tenure customs shape ecological & social outcomes, not all of which appear to be ecologically or socially beneficial. In the study area, LLT receives precedence over traditional systems in conflict situations, diluting traditional ways of managing natural resources. Legitimization of CTT will make it eligible for legal consideration in conflict situations & can further empower local communities, bolster forest governance.

02

MISALIGNED FIRE NARRATIVES AND THE POLITICAL ECONOMY OF LIVELIHOOD VULNERABILITY IN CENTRAL INDIA

M. Amin Khan, Dept. of Planning, Govt. of Arunachal Pradesh, GoI

Abstract - Forest fire governance in India is increasingly framed through crisis narratives that position fire as a primary driver of rural livelihood vulnerability. This article challenges that assumption through a political ecology analysis of fire impacts and community perceptions in Central India. Drawing on mixed-methods research, including household surveys and qualitative interviews across 48 forest-fringe villages in the Hoshangabad forest division of Central India, the study reveals a clear divergence between state fire-centric framings and lived realities. Findings show that fire is not locally perceived as the principal driver of livelihood decline. Instead, respondents emphasize climatic variability, declining non-timber forest products, market asymmetries, and institutional constraints as more significant stressors. While fire causes localized and seasonal disruptions, its impacts are mediated by livelihood diversification, spatial separation of land use, and adaptive burning practices. Despite this, governance remains suppression-oriented and technocratic, often criminalizing customary fire use while obscuring structural precarity. The article advances the concept of crisis substitution, arguing that fire serves as a visible and administratively legible proxy that legitimizes regulatory expansion, while slower processes of vulnerability remain under-addressed. It calls for a shift toward climate-attuned, community-informed, and structurally grounded forest governance.

03

A UNIFIED MODEL FOR TESTING POSSIBLE CAUSAL HYPOTHESES AND DESIGNING MITIGATION MEASURES FOR FARMER-HERBIVORE CONFLICT

Mohini Patil, Farmer and Independent Researcher

Ashwini Visave, Annasaheb Kularni Department of Biodiversity, A.G. College, Pune, India. ashwinivisave05@gmail.com Anuya Kanhere, Annasaheb Kularni Department of Biodiversity, A.G. College, Pune, India. kanhereanuya04@gmail.com Milind Watve, Independent Researcher, Pune, India. milind.watve@gmail.com

Abstract – The question why wild herbivores invade agricultural lands causing substantial loss to farmers remains inadequately addressed. Increasing human pressures, habitat fragmentation and agricultural encroachment is the most often stated cause, but appropriate causal analysis by testing differential predictions of alternative hypotheses is lacking. The set of underlying assumptions for such analysis also remains uncertain. We construct a unified model here that, at different parameter values, accounts for all the alternative sets of assumptions and alternative causal hypotheses. The model is able to make differential testable predictions from alternative causes which can help us deciding which factors are important in a given context and accordingly implement the right set of mitigation measures. Across the parameter sets, the loss of human avoidance behaviour in animals appears as the strongest cause of crop raiding. As a mitigation measure reinstating human fear is the most efficient way of minimizing crop damage. Human avoidance behaviour allows sustenance of a larger wild animal population with minimized conflict. With low levels of fear even small populations can cause larger damages. Other measures without reinstating human fear can lead either to population extinctions or collapse of agricultural economics. Fear of humans appears to be the key to minimum conflict-coexistence.

04

TERRA NATURA: PROPERTY, TERRITORY, AND IDEOLOGY IN (RE)MAKING THE FARM-FOREST FRONTIER IN INDIA

Asmita Kabra, Ashoka University, Haryana

Abstract – Conservation regimes that seek to protect charismatic species in pristine ecosystems mask an inescapable truth: strictly protected areas are socio-natures actively produced through deception, violence, dispossession and physical manipulation of biota. Theorising India's protected areas as terra natura, this chapter demonstrates the combination of economic logics, class interests and hegemonic ideology that produced a stable regime of dispossession for conservation (DfC) from 1972 to 2005. Regimes are preceded and succeeded by interregnums i.e. periods of instability and contestation when they face crises of legitimation and non-alignment. The chapter focuses on the contemporary interregnum (2006—present) in India where the DfC regime has been materially disrupted by unruly natures and challenged by narratives of coexistence and conviviality in and around protected areas.

05

CONNECTIVITY CONSERVATION, LIVELIHOODS, AND BUILDING RELATIONAL BRIDGES

Amrita Neelakantan, Network for Conserving Central India (NCCI) and Coexistence Consortium (CC)

Abstract - Much of my work is rooted in the forested landscapes of central India, where conservation operates within densely inhabited and intertwined socio-ecological systems. Working across networks, institutions, and on-ground initiatives, I engage with questions of connectivity conservation, livelihoods, and human–wildlife coexistence in and around protected areas. My work spans collaborative scientific studies and practice that bring together communities, researchers, practitioners, and state agencies around shared landscapes. It involves navigating relationships that connect sites and scales, and holding space for shared visions of conservation, particularly where ecological goals intersect with livelihood realities. I focus on understanding what diverse livelihood portfolios can be supported over the long term in these landscapes, and how to engage across institutional and disciplinary siloes in advancing connectivity conservation. This includes working with diverse knowledge systems and responding to the frictions and alignments that emerge in practice. Across these experiences, conservation comes into view as a lived, relational process—shaped as much by how we work, and with whom, as by the ecological outcomes we seek.

06

THE CASE OF THE POACHED LEOPARD AND OTHER (SIMILAR) TALES: "CONSERVATION" IN THE MAIKAL HILLS OF MADHYA PRADESH

R. Venkat Ramanujam, Shiv Nadar Institution of Eminence

Abstract - Legal actions carried out in the name of conservation may serve as cover for other motives. Drawing on long-term ethnographic fieldwork since 2010 in the Maikal Hills of eastern Madhya Pradesh, this paper closely examines the application of the Wildlife Protection Act, 1972, in a forested region that has been identified as a potential wildlife corridor connecting two prominent Protected Areas with tiger populations. Using a case of leopard-poaching, the paper traces the journey of four men, including three Adivasis, as they grapple with the law. As the case proceeds with twists and turns, it highlights the wider use of the law to "show people their place" rather than a genuine concern for biodiversity. The paper suggests that conservation may serve as a fig-leaf for mundane score-settling that performs the important work of reinforcing existing social hierarchies. In the process, the use of the law serves neither the cause of conservation nor does it build popular support for it.

S20 - BIOLOGICAL INVASIONS IN A CHANGING WORLD: FROM EXCITING SCIENCE TO CHALLENGING MANAGEMENT

Chairs: Alok Bang, Azim Premji University and Manzoor A Shah, University of Kashmir

01

BIOLOGICAL INVASIONS IN A CHANGING WORLD: GLOBAL PERSPECTIVES, INDIAN REALITIES, AND FUTURE CHALLENGES

Zafar Reshi, University of Kashmir

Abstract - Biological invasions are increasingly recognized as a major component of global environmental change and a leading driver of biodiversity loss. Recent global initiatives, including the IPBES Invasive Alien Species Assessment and the Kunming–Montreal Global Biodiversity Framework, have reinforced the urgency of preventing biological invasions and mitigating their impacts. At the same time, accelerating globalization, climate change, land-use transformation, and expanding transportation networks continue to create new opportunities for the introduction, establishment, and spread of alien species across ecosystems worldwide.

Against this global backdrop, the status and development of invasion science in India provide an important opportunity to evaluate regional research progress and identify future priorities. As one of the world's megadiverse countries, India encompasses a wide range of ecosystems that are increasingly vulnerable to biological invasions driven by trade, infrastructure expansion, urbanization, tourism, and climate change. Drawing on a bibliometric assessment of scientific literature indexed in the Web of Science and Scopus databases, this presentation examines the growth, structure, and thematic evolution of invasion research in India and evaluates its alignment with broader international trends in invasion science.

The analysis reveals an increase in research activity during the past two decades, accompanied by growing national and international collaborations. However, scientific effort remains unevenly distributed across taxa, ecosystems, and geographic regions. Much of the literature has focused on a relatively small number of invasive plant species, while invasive animals, microorganisms, ecological interactions, ecosystem processes, and socio-economic dimensions have received comparatively less attention. Significant geographic gaps also persist, particularly in ecologically sensitive and rapidly changing regions such as the Himalaya, arid landscapes, freshwater ecosystems, coastal zones, and island systems.

The synthesis further highlights several knowledge gaps that continue to constrain effective management and policy development. These include limited understanding of introduction pathways and propagule pressure, inadequate long-term ecological monitoring, insufficient quantification of ecological and economic impacts, poor assessment of invasion dynamics under future climate scenarios, and a lack of comprehensive evaluations of management interventions. The need for stronger integration of ecological, social, economic, and governance perspectives is increasingly recognized as essential for developing effective and sustainable responses to biological invasions.

Future progress in invasion science and management in India will depend on strengthening national monitoring and surveillance networks, developing risk-based prevention and early-detection systems, improving data accessibility and research collaboration, integrating emerging analytical and technological tools, and enhancing science–policy interfaces to support evidence-based decision-making. By situating Indian invasion research within the broader context of contemporary invasion science, this assessment identifies key research priorities and opportunities for interdisciplinary collaboration while contributing to a strategic framework for addressing one of the most significant biodiversity challenges of the twenty-first century.

02

THE PROBLEM OF PLENTY: HOW OVER-REPRESENTED BIOGEOGRAPHIC REGIONS BIAS REGIONAL INVASIVE SPECIES MODELS

Riya Pakhre, University of Delhi

Arunava Datta Raja Narendra Lal Khan Women's College (Autonomous), Department of Botany, Vidyasagar University, Medinipur -721102, West Bengal, India. Gyan Prakash Sharma Department of Environmental Studies, University of Delhi, New Delhi -110007, India

Abstract - Management of non-native invasive species is indispensible for biodiversity conservation. Data repositories such as Global Biodiversity Information Facility offer massive datasets, however spatial sampling bias can undermine their utility for underrepresented region-specific projects. This study analyses the sufficiency of global and local datasets for species distribution modelling of four invasive plant species in India - Cytisus scoparius (L.) Link, Leucaena leucocephala (Lam.) de Wit, Mesosphaerum suaveolens (L.) Kuntze and Neltuma juliflora (Sw) Raf. Models were trained on global and local data (India-specific) using MaxEnt and made predictions for India to assess data sufficiency. Results indicate despite very high number of global occurrences, the models failed to adequately represent the known regional distribution in India. High concentration of records in specific biogeographic regions introduce bias in model fitting, violates the assumption of environmental equilibrium constrains model transferability leading to inaccurate species distribution estimates in underrepresented regions. Developing datasets that are locally/regionally representative is essential for building reliable species distribution models. Incorporating local citizen science with systematic monitoring is crucial to fill data gaps and develop robust invasion risk assessments. The study highlights that local data density is more critical than global volume for effective regional invasion management.

03

ALIEN COFFEE MODIFIES FRUGIVORE-MEDIATED NATIVE SEED DISPERSAL AND REGENERATION IN ABANDONED COFFEE AGROFORESTS, WESTERN GHATS, INDIA

Abhirami C, Nature Conservation Foundation

Orvill Nazareth (Wildlife Conservation Society), Abhinav K N (Government Arts College, Ooty), Anand M Osuri (Nature Conservation Foundation)

Abstract - Alien plants can disrupt interactions between native plants and frugivores, altering frugivory and seed dispersal, and reshaping plant community dynamics. Their effects may be negative, when alien species outcompete natives for dispersers, or positive, when frugivores attracted to alien fruits also disperse native seeds. We examined these effects in Coffea canephora, a fleshy-fruited alien species dispersed by civets and macaques in its introduced range. We compared frugivore activity, seed dispersal, and regeneration between a discontinued coffee agroforest (DC) and a mature rainforest (RF) in the Western Ghats across fruiting and post-fruiting seasons. Using trail cameras, we estimated disperser encounter rates, analysed civet scat composition, and quantified seedling communities. Frugivore encounter rates and scat encounter frequencies were similar or lower in DC than RF and showed no consistent seasonal differences, suggesting that frugivores were not tracking coffee fruit availability. However, civet scats in DC, though dominated by coffee seeds, contained twice as many native seeds and 1.5 times more species than RF scats. Seedling communities in DC also had higher abundances of mammal-dispersed natives. Our findings suggest a role for controlling coffee regeneration and planting diverse native trees spanning multiple dispersal modes for restoration of tropical forests in coffee-growing landscapes.

04

INDUSTRIAL FARMING OF EDIBLE INSECTS IN INDIA: BIOGEOGRAPHIC TRENDS, ECOLOGICAL RISKS AND REGULATORY GAPS

Kaneez Fatima, Azim Premji University, Bhopal

Alok Bang, Faculty, Biology Department, Azim Premji University, Bhopal

Abstract - Edible insect farming is proposed as a sustainable alternative to traditional meat. Our study investigates taxonomic identities, biogeographic origins, and emerging ecological risks, as well as the spatiotemporal distribution of companies and biosecurity practices they follow. Out of the 13 species across five orders commonly farmed in India, order Diptera, Coleoptera, and species,Black soldier fly,Mealworm,and Superworm are the most widely cultivated. The native ranges of most species are Neotropical and Palearctic regions. Most companies were founded in 2018-2025, concentrated in Southern and Central Indian states. Edible insect use in India largely occurs in the feed sector, led by the aquaculture, aviculture, pet, and livestock industries. These insects have high invasion potential, climate change potential, and are reservoirs of pathogens. When approached about biosecurity protocols, farming companies failed to follow up, casting doubts on regulatory practices.We propose that a continued rise in the edible insect industry, in the absence of an adequate regulatory framework, poses a significant, multi-dimensional risk to India's environment. The complete ambit of ecological consequences remains unclear, as edible insect farming is recent, but much can be learnt from substantial ecological impacts, evident in other countries. Failure to address this would be inconsistent with India's commitments under Sustainable Development Goal 11 (Sustainable Cities and Communities.

05

PREDICTING FUTURE VECTOR-BORNE DISEASE THREATS IN THE KASHMIR VALLEY, INDIA: AN INTEGRATED ECOLOGICAL, EPIDEMIOLOGICAL, AND CLIMATE-DRIVEN PERSPECTIVE

Tahir Gazanfar, Integrated Disease Surveillance Program, Directorate of Health Services, Kashmir

Dr Hashmat Sultana, Dr Omair Aziz, Dr J Bhakshi

Abstract - Vector-borne diseases (VBDs) are increasingly expanding beyond their traditional geographical limits due to climate change, ecological alterations, and human mobility. The Kashmir Valley, historically regarded as a low-risk temperate region for mosquito-borne diseases, has begun to show ecological and epidemiological signals suggestive of rising vulnerability. This paper synthesizes available evidence from mosquito vector studies conducted in the Kashmir Valley, reported cases of vector-borne diseases among resident and traveller populations, predictive modelling literature, and observed shifts in disease trends across India to forecast future VBD threats in the region. The analysis suggests that climatic warming, altered precipitation regimes, urban expansion, and increased human movement are likely to enhance vector survival, extend transmission seasons, and facilitate the emergence of arboviral diseases such as dengue and chikungunya. The paper highlights the need for proactive surveillance, climate-informed early warning systems, and integrated vector management to mitigate future public health risks in the Kashmir Valley.

OPEN SESSIONS

OS 1- EVOLUTIONARY BIOLOGY: LINKING GENOMES, TRAITS, AND LANDSCAPES

Chairs: Kritika Garg and Preeti Hebbar

01

WHAT'S UP WITH THE BLACK TIGERS?: EVOLUTIONARY DYNAMICS OF THE PSEUDOMELANISTIC TIGER POPULATION

Abhijit Santra, National Centre for Biological Sciences

1Vinay Sagar, 2Samrat Gowda, 2Prakash C. Gogineni, 2Manoj V. Nair, 1Uma Ramakrishnan 1National Centre for Biological Sciences, 2Odisha Forest Department

Abstract – The Similipal Tiger Reserve in India hosts the only wild population of pseudomelanistic tigers. It's also India's first site for preemptive genetic rescue, with two tigresses translocated in 2024. Our study explores genomic diversity, demographic history, inbreeding, drift and selection in this population, placed in the context of genetic rescue. We estimated changes in pseudomelanistic allele frequency with field-collected faecal samples (2023). We conducted fieldwork in Similipal (2024) and collected shed hair samples. We sequenced high-depth genomes for 18 individuals. We then analysed the genomic data to estimate genomic heterozygosity (Hobs), runs of homozygosity (FROH), effective population size (Ne), and other population genetics parameters. Our analyses indicate that the mutant allele's frequency increased from 0.58 to 0.68 between 2018 and 2023. Genome analyses reveal low Hobs = 0.28, long FROH>1MB = 0.4, and low Ne= 14, indicating reduced genetic diversity in this small, isolated tiger population. Our results confirm ongoing drift, high relatedness, and recent inbreeding in Similipal tigers, justifying the importance of genetic rescue. We will track this population to investigate the genomic effects of rescue on long-term survival. Broadly, this study provides a better understanding of science-driven conservation with continuous assessment for success or failure.

02

WHEN MORPHOLOGY MISLEADS: CONVERGENT MORPHOLOGY AND SPECIES-GROUP POLYPHYLY IN THE ARMY ANT GENUS AENICTUS SHUCKARD, 1840 (HYMENOPTERA: DORYLINAE)

Bikash Sahoo, National Institute of Science Education and Research

Bikash Sahoo1, Weeyawat Jaitrong2, Benoit Guénard3, Riou Mizuno4, Kiko Gomez5, Aniruddha Datta-Roy1 1 School of Biological Sciences, National Institute of Science Education and Research, An OCC of Homi Bhabha National Institute, Khordha, Jatni, 752050, Odisha, India. 2 Office of Natural Science Research, National Science Museum Thailand, 39, Moo 3, Khlong 5, Khlong Luang, Pathum Thani, Thailand. 3 School of Biological Sciences, University of Hong Kong, Hong Kong SAR, China. 4 Biodiversity and Biocomplexity Unit, Okinawa Institute of Science and Technology Graduate University, Onna, Okinawa, Japan. 5 Independent researcher, Barcelona, Spain. Presenting author- Bikash Sahoo*

Abstract – The army ant genus Aenictus (Insecta, Hymenoptera) is among the most dominant predatory ants. They exhibit a distinctive "army ant syndrome," marked by nomadic behavior, mass foraging raids, and a highly specialized, wingless queen. Aenictus species from Asia and Australia are classified into 12 species groups, and African species into 7, based solely on shared morphological traits. These groupings lack molecular validation. We tested the phylogenetic relationships within Aenictus, focusing on the monophyly of Asian species groups. We constructed a global, genus-level phylogeny using a multigene (Cytb, 18s, 28s, and Wg) dataset. Our findings indicate the non monophyly of many Asian species groups, with individuals from one species group often nested within clades of another. This indicates that these species do not share a common recent ancestor. A possible explanation for the non monophyly is the use of labile characters in classification. Such traits may be influenced by environmental or genetic variation, making them unreliable indicators of evolutionary relationships. Consequently, morphological similarities used to define groups may not reflect true phylogenetic relatedness. Similar patterns of non-monophyly have been reported in other ant genera. This study highlights the need for integrative, molecular-based classification and a revised framework for understanding evolutionary relationships within Aenictus.

03

DIVERGENT VENOMS AMONG TWO CLOSELY RELATED CO-DISTRIBUTED CENTIPEDE SPECIES, SCOLOPENDRA MORSITANS AND S. HARDWICKEI IN TROPICAL ASIA

Aditi, CSIR-CCMB

Pragyadeep Roy (CSIR CCMB) Richard Parikh (CSIR CCMB) Aniruddha Marathe (CSIR CCMB), Karunakar Majhi (CSIR CCMB), Ronald Jenner (NHM UK), Jahnavi Joshi (CSIR CCMB)

Abstract - Venom is an important functional trait that helps predatory animals capture prey. Centipede predatory venoms are complex cocktails of multiple proteins, such as neurotoxins (scoloptoxins), cytotoxins, β-pore-forming toxins, and enzymes. We examined venom phenotypes in two closely related and co-occurring centipede species, Scolopendra morsitans (n=28) and S. hardwickei (n=11), in peninsular India to determine whether their venoms are similar or dissimilar. An integrated proteo-transcriptomic approach was used to characterise the venom phenotypes of the two species across multiple individuals in peninsular India. We used species occurrence records and species distribution models to assess the distributional overlap among these species within the peninsular Indian region. The species showed significant overlap in their current and projected geographical ranges, corresponding with their co-occurrence. We characterised the venom profiles of both species and found that the venoms were cocktails of enzymes, β-pore-forming toxins, and neurotoxins comprising 110 and 84 proteins in S. morsitans and S. hardwickei, respectively. However, the venom composition of both species differed significantly in toxin abundance and species-specific protein repertoires. This indicates trait divergence in venom phenotypes, suggesting that distinct venom compositions may facilitate coexistence among ecologically similar predatory centipedes.

04

AN INTEGRATIVE LANDSCAPE GENOMICS FRAMEWORK TO DISENTANGLE SPATIAL EVOLUTION

Vivek Premnath Suranse, Indian Institute of Science, Bengaluru

Kartik Sunagar, Indian Institute of Science, Bengaluru

Abstract - Eco-evolutionary dynamics strongly underpin species distribution. Spatial demographics, when investigated in the context of environmental heterogeneity, could provide novel insights into their evolutionary histories. Using the Indian red scorpion Hottentotta tamulus as a model, we propose a tripartite framework that delineates the ecological niche, identifies genomic correlates of local adaptation, and models spatial features that elucidate barriers to gene flow. We leveraged genome-wide SNP data generated from samples spanning the near-countrywide distribution of H. tamulus, occurrence data from public repositories, as well as ecoclimatic data from global climate repositories to evaluate competing resistance surfaces, such as topography, bioclimatic variables, and anthropogenic land use against the genomic background.

Our findings reveal that while certain bioclimatic variables (bio03 - isothermality) influence the niche of H. tamulus, the localised genomic adaptation is governed by a completely different variable (bio15 - precipitation seasonality). Furthermore, in contrast to the expectation, instead of terrain, land use was uncovered as a significant barrier. The framework thus provides deeper insights into both natural and anthropogenic factors affecting species distributions.

05

ASSESSING THE INFLUENCE OF MACROHABITAT ON THE GENETIC STRUCTURE IN TWO WIDESPREAD AMPHIBIANS OF INDIA

Priti Hebbar, Manipal Academy of Higher Education

Aravind C K, Manipal Institute of Technology Bengaluru, Manipal Academy of Higher Education, Sona M Sebastian, Manipal Institute of Technology Bengaluru, Manipal Academy of Higher Education

Abstract - Genetic variation and genetic structure are fundamental parameters of evolutionary biology. They are influenced by past climatic variations, however species-specific attributes as well as ecological constraints can also influence genetic distribution in a species. Amphibians have been model organisms to understand genetic structure as they are relatively poor dispersers and one of the threatened vertebrates across the globe. In this study, we compared the genetic variation between two widespread species Nyctibatrachus kempholeyensis and Microhyla ornata that occupy different macrohabitats. N. kempholeyensis is widespread endemic to the Western Ghats region and distributed in the forest streams with high canopy cover. M. ornata is also widespread but found in the open areas of Western ghats and Deccan regions of India. We hypothesized that macrohabitat will govern the genetic structure such that forest specialist like N. kempholeyensis will show higher genetic structure compared to generalist species like M ornata. Using 16S rRNA gene, we compared the haplotypic diversity among populations of the two species. N. kempholeyensis exhibited higher genetic structure as compared to M. ornata with eight and five haplotypes respectively. Specific habitat and reproductive requirements of forest dependent species could be one of the reasons for higher intraspecific divergence in N. kempholeyensis

06

THE GENOMIC LEGACY OF ASIATIC CHEETAH FROM THE INDIAN SUBCONTINENT

Kritika M. Garg, Indian Institute of Science Education and Research Mohali

Balaji Chattopadhyay (Department of Biology, Trivedi School of Bioscience, Ashoka University, Sonipat, India), Devkant Singha (National Centre for Biological Sciences, TIFR, Bengaluru, India), Yadvendradev Vikramsinh Jhala (Wildlife Institute of India, Dehradun, India and Indian National Science Academy, National Centre for Biological Sciences, Bangalore, India), M. K. Ranjitsinh (Wildlife Trust of India, Nodia, India), Divyabhanusinh Chavda (Independent Researcher, New Delhi, India), Uma Ramakrishnan (National Centre for Biological Sciences, TIFR, Bengaluru, India)

Abstract - The population of the critically endangered Asiatic cheetah have been reduced to a fraction with less than 20 individuals surviving in Iran. Once occurring widely across western and southern Asia, the Asiatic cheetah is at the brink of extinction. Historic samples can provide a glimpse into their past genomic diversity and help identify the factors responsible for local extirpation. In this study, we sequenced three historic individuals of presumably Asiatic cheetah samples from the Bombay Natural History Society from the Indian subcontinent to understand the genomic legacy of this sub-species. All work was carried out in a specially designed ancient DNA facility. We were able to successfully sequence two individuals and provide the first complete mitogenome of the Asiatic cheetah lineage. One of the samples based on the mitochondrial sequence, belonged to the South African sub-species, highlighting the historic import of African Cheetah. We are generating additional genomic data from two historic trophy samples to understand the genomic diversity of historic Asiatic cheetah. The genome-wide data will provide a better understanding regarding the genome-wide heterozygosity and inbreeding and a peak into the genomic diversity of locally extinct South Asian cheetah population.

07

PHYLOGEOGRAPHY OF GREAT HORNBILL

Pooja Yashwant Pawar, Nature Conservation Foundation

Rohit Naniwadekar, Nature Conservation Foundation, Mysore ; Jahnavi Joshi, CSIR- Centre for Cellular and Molecular Biology, Hyderabad

Abstract - The Pleistocene epoch was marked by repeated cycles of wet-dry climate that influenced lineage diversification. In Asia, mountain uplift and island formation during the Pliocene were followed by Pleistocene climatic oscillations, promoting lineage diversification in birds, consistent with the "Pleistocene pump" hypothesis. Biogeographic barriers such as the Isthmus of Kra, River Brahmaputra, and Palghat Gap have contributed to population divergence across
taxa, including birds. The Great Hornbill (Buceros bicornis), a forest-dependent species, has a disjunct distribution across the Western Ghats, Himalaya, and Southeast Asia. This study investigates the role of geography and paleoclimate on its phylogeographic patterns and population divergence using mitochondrial and genomic data. Phylogenetic analysis of 28 mitogenomes (11,049 bp; 13 PCGs) and 8 genomes (4.2 million SNPs) revealed two major clades: Western Ghats and Indo-Burma. STRUCTURE and PCA analyses supported this division, indicating permeability of biogeographic barriers for the Great Hornbill. The historical demographic scenario of Indo-Burma being the ancestral population was supported by the Approximate Bayesian Computation method. Divergence estimates from hPSMC (220–100 kya; using genomes) and StarBEAST (900–400 kya; using mitogenomes) place separation in the mid–late Pleistocene, plausibly due to contraction of wet forests that isolated WGs populations from a large, continuous Indo-Burma population.

OS2-SPECIES DISTRIBUTION AND LANDSCAPE ECOLOGY

Chairs: Aritra Kshettry

01

BRIDGING DATA GAPS IN SQUIRREL DISTRIBUTION: IMPORTANCE OF COMMUNITY-COLLECTED DATA

Swati Udayraj, Independant Researcher

Nandini Rajamani, Indian Institute of Science Education and Research Tirupati

Abstract - Understanding a species' current distribution and habitat suitability is critical for assessing threats posed by anthropogenic landscape modifications. Spatial gaps in traditional data can impede understanding of species distribution. Using complementary community-collected data (such as citizen science and social media records) to fill these gaps can improve our understanding of species distributions. We aim to assess suitable habitats for 34 squirrel species in South Asia and assess their current and future distributions, incorporating traditional data (TD), citizen science (CS), and social media (SM) data.
We found that habitat models built from spatially filtered community-collected data performed better than those built from TD, filling more gaps and yielding more comprehensive distributions. Further, we estimated two key spatial metrics used to evaluate species' extinction risk, the Extent of Occurrence and Area of Occurrence for all the squirrels and reassessed the IUCN distribution along with threat status assessment. Species ranges were over- and underestimated for most, and IUCN threat levels were under-evaluated for several species, indicating the importance of filling spatial data gaps for more accurate assessments.
These findings underscore the significance of incorporating diverse data sources to improve the precision and reliability of species distribution models and threat assessments.

02

DISTRIBUTION, DENSITY AND ENVIRONMENTAL CORRELATES OF REPTILES ON THREATENED MONTANE ROCK OUTCROP IN THE NORTHERN WESTERN GHATS

Vaishnavi Apte, Nature Conservation Foundation

Chinmay Bhoyar, M.Sc. Life Science student, Centre for Ecological Sciences, Indian Institute of Science; Jithin Vijayan, PhD student, Department of Biodiversity Sciences, University of Turku; Dr. Aparna Watve, IUCN SSC Western Ghats Plants Specialist group; Dr. Varad Giri, Scientist, Reliance Foundation; Dr. Rohit Naniwadekar, Scientist, Nature Conservation Foundation

Abstract - Montane herpetofauna are vulnerable to climate change and habitat degradation, making conservation dependent on identifying population hotspots, species–environment relationships, and human impacts. We studied four reptile species, including the Critically Endangered Hemidactylus sataraensis, on the 45 km² Chalkewadi plateau in the northern Western Ghats. These lateritic rock outcrops are threatened open ecosystems undergoing rapid transformation due to infrastructure expansion, particularly roads and wind turbines. We conducted plot-based surveys and time-constrained searches across three seasons, sampling 330 plots (across 66 (1 km²) grids) in the monsoon and 200 plots (40 grids) each in summer and winter. For H. sataraensis, we found restricted distribution within the Chalkewadi plateau, very low densities (monsoon: 22/km²; summer: 62/km²), and a strong dependence on elevation (occurring above 1100 masl). We detected no association between four reptile species' presence and roads or wind turbines. H. sataraensis was detected only in two of the 26 plateaus above 1000 m elevation surrounding Chalkewadi. The study demonstrates how conservation prioritization can be achieved for range-restricted and endangered herpetofauna in Western Ghats. The narrow elevational range for H. sataraensis further suggests potential vulnerability to climate change, underscoring broader implications for the conservation of range-restricted reptiles in undervalued ecosystems globally.

03

TERRAIN, HABITAT, AND CONNECTIVITY: A LANDSCAPE-LEVEL ANALYSIS OF HIMALAYAN TAHR IN WESTERN HIMALAYAN LANDSCAPE

JAYANT GUPTA, Amity Institute of Forestry and Wildlife, Amity University Noida

Dr. Sujeet Kumar Singh (Amity Institute of Forestry and Wildlife, Amity University Noida) , Dr. Gilles Maurer (Beauval Nature, Center for Evolutionary and Functional Ecology, CNRS, Montpellier, France)

Abstract - Understanding habitat distribution and landscape connectivity is essential for conserving mountain ungulates in fragmented Himalayan ecosystems. This study assessed habitat suitability, environmental drivers, and connectivity patterns of the Himalayan tahr across four districts of the Garhwal region, Uttarakhand. From 475 field records, 100 spatially independent occurrence points were retained after spatial thinning and used with seven ecologically relevant predictors selected through multicollinearity filtering. An ensemble species distribution modelling approach integrating multiple algorithms achieved high predictive performance (AUC = 0.962 ± 0.008; TSS = 0.841 ± 0.021). Highly suitable habitats comprised only 17.7% (~3,820 km²) of the landscape, whereas 63.1% (~13,593 km²) was classified as very low suitability. Suitable habitats were primarily restricted to elevations of 2,800–3,800 m, with elevation and terrain ruggedness identified as key predictors. Core habitats covered just 216 km² and were fragmented into 74 patches. Connectivity analysis identified six major corridors linking these patches, including critical hotspots and bottlenecks for movement. Graph-theoretic analysis revealed a fragmented network with key high-centrality nodes. These findings highlight severe habitat fragmentation and emphasize the urgent need to conserve and manage critical corridors to ensure long-term persistence of Himalayan tahr populations.

04

ECOLOGICAL DYNAMICS OF HIMALAYAN BROWN BEARS IN THE TRANS-HIMALAYAN REGION

Niazul Hassan Khan, Wildlife Institute of India / Wildlife Protection Department, Ladakh

Bivash Pandav, Wildlife Institute of India

Abstract - The Himalayan brown bear (*Ursus arctos isabellinus*) is one of the most threatened large carnivores in the high altitude ecosystems of the Trans-Himalayan region of Ladakh. This study provides a comprehensive ecological assessment of the species by integrating habitat use, dietary patterns, and human–bear conflict dynamics across a landscape characterized by low productivity and extreme climatic conditions. Using multi-year field data, including systematic occupancy surveys, species distribution modelling, molecular scat analysis, and socio-ecological assessments, the study identifies key ecological drivers influencing bear distribution and behaviour. Results indicate that bear occupancy is strongly associated with temperature, elevation, valleys, and alpine rangelands. Dietary analysis reveals a predominantly herbivorous diet during summer, shifting to increased consumption of animal matter and anthropogenic resources in autumn. Spatial and temporal analyses of conflict data demonstrate a significant rise in human–bear interactions, primarily driven by livestock depredation and resource overlap in human-dominated landscapes. The findings highlight the role of habitat quality, seasonal resource availability, and anthropogenic pressures in shaping bear ecology. This study establishes a critical baseline for understanding the ecological dynamics of Himalayan brown bears and provides science-based recommendations for conservation planning and conflict mitigation.

05

SYMPHONY OF SHADOWS: DECODING NYCTIBATRACHUS MICROHABITAT PREFERENCES THROUGH STRUCTURAL EQUATION MODELLING IN THE WESTERN GHATS.

Priyanka Desai, Bharati Vidyapeeth Institute of Environment Education and Research (BVIEER)

Abstract - This study investigates the microhabitat preferences of amphibians, focusing on the Nyctibatrachus genus endemic to the southern Western Ghats. Correlation analysis followed by Structural Equation Modelling (SEM) was used to examine the direct, indirect, and latent effects of environmental factors such as altitude, humidity, ambient air temperature, and canopy cover on habitat selection and species presence. A key focus is the role of microhabitats in buffering temperature fluctuations, which is critical for amphibian survival under climate change.
Adaptive cluster sampling was employed to improve detection, particularly in riparian zones along hill streams, where habitat parameters were recorded within quadrats. The study was conducted in the Achankovil Forest Division in Kerala, known for its diverse microhabitats. Results indicate a slight positive association of Nyctibatrachus with altitude and canopy cover, a slight negative association with substrate temperature, and no significant relationship with rainfall, suggesting a preference for cooler, shaded environments at higher elevations.
SEM models further explored these relationships, revealing complex interactions among variables. Although model fit varied, the findings highlight the importance of conserving diverse microhabitats to support amphibian populations amid environmental change.

06

BAT FAUNA OF LAKSHADWEEP ARCHIPELAGO: DIVERSITY, DISTRIBUTION AND ROOSTING ECOLOGY

Irfan Mubarak P P, Nature Conservation Foundation

1) M K Shalini- Pondicherry University, Pondicherry 2) Sreehari Raman - Assistant Professor, Kerala Agricultural University (KAU), Thrissur

Abstract - The Bat fauna of Lakshadweep has remained poorly understood, with previous knowledge restricted to a single dead specimen. This study presents a comprehensive inventory on the bat assemblage in the coral island of Lakshadweep, utilising a multi-faceted approach that includes morphometric analyses, acoustics and DNA barcoding. Systematic bat monitoring was carried out in Kalpeni island during March- April 2024 following tree hole/ underbark surveys and bat detectors. 20 nights of passive acoustic monitoring yielded four distinct bat calls, two of which were confirmed as Alionoctulla coromandra and Alionoctulla dhofarensis through DNA barcoding and morphometric analyses, however the identity of remaining species remains uncertain due to absence of live specimens. Cavities in coconut palms were the exclusive roost substrate documented and to understand their roosting preferences, 29 active coconut cavities were closely monitored and 5 roost characteristics were recorded. Bats showed a significant preference for medium roost heights (181–464 cm) and medium girth trees (72–97 cm GBH). These findings highlight the ecological significance and biodiversity of bat populations in this unique island ecosystem. Observation of A.dhofarensis from Kalpeni is the first record of this taxon in the Indian subcontinent, further highlights the region's overlooked bat diversity and biogeographic relevance.

07

HABITAT FLUCTUATIONS IN BATS IN THE INDIAN SUBCONTINENT IN RESPONSE TO HISTORICAL CLIMATE CHANGE

Ratnesh Karjee, Ashoka University

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Abstract – Global climate and human-mediated habitat change are major threats to biodiversity hotspots. South Asia holds high biodiversity, which are at risk and understudied especially bats. India alone hosts ~135 species. Bats are bioindicators and are vulnerable to environmental changes. However, comparative analyses of bats responses to historical habitat changes are rare and often understudied. To assess the long-term response of bats to historical habitat fluctuation and future anthropogenic change we used Species Distribution Models (SDMs) to reconstruct paleohabitats and future prediction models for over 100 species of bats from the Indian Subcontinent across five key climatic periods: Last Interglacial (~130,000BP), Last Glacial Maximum (~20,000BP), Mid-Holocene (~6,000BP), the present, and projected future climate scenarios (2100). We further investigated association between habitat fluctuations with species traits (e.g., body size, vagility, feeding guild, etc.) and topographic features. We collate this data to predict the risk of extinction for these species. Our preliminary results on habitat reconstructions reveal species-specific responses to climate-mediated change. Integrating past, present, and future climatic scenarios provides critical insights to range-wide habitat fluctuations that can significantly contribute to threat assessments and conservation management frameworks for bats.

OS3 ANIMALS IN CHANGING LANDSCAPES

Chairs: Jagdish Krishnaswamy and Umesh Srinivasan

01

BIRD COMMUNITY ASSEMBLY ACROSS A DISTURBANCE GRADIENT IN A FOREST-AGRICULTURE LANDSCAPE OF NORTHEAST INDIA

Biang La Nam Syiem, Conservation Initiatives

Divya Vasudev (Conservation Initiatives), Varun R. Goswami (Conservation Initiatives), Don A. Driscoll (Deakin University)

Abstract - Understanding how wildlife communities assemble in nature is important for tailoring conservation strategies in disturbed landscapes. Three major mechanisms often underlie community assembly—environmental filtering, neutral assembly and niche differentiation. These mechanisms frequently vary across disturbance gradients, each predicting contrasting patterns of functional diversity. Here, we investigate bird community assembly across a disturbance gradient in a forest-agriculture landscape of Northeast India. Looking at functional diversity patterns, we ask how assembly mechanisms vary across three land covers—protected forests, community forests and agriculture—and three seasons—post-monsoon, winter and pre-monsoon. We use null modeling with multi-species occupancy modeling to robustly tease out contrasting patterns of functional diversity under different assembly mechanisms. Our results show greater signals of niche differentiation in protected forests in comparison to other land covers during post-monsoon, and high functional diversity across land covers in this more productive season. Across other seasons, environmental filtering was the dominant assembly mechanism in all land covers, but its strength was less in protected forests. Together, these results suggest overall better niche availability for birds in protected forests as compared to other land covers. Our study provides predictive insights into land management for bird conservation in disturbed landscapes.

02

EFFECTS OF SHADE MANAGEMENT ON BIRD COMMUNITIES AND HABITAT USE IN COFFEE AGRO-FORESTRY SYSTEMS OF THE WESTERN GHATS

Sanath R M, Nature Conservation Foundation

Gauranshi Chamoli (Nature Conservation Foundation), Anand M Osuri (Nature Conservation Foundation)

Abstract - Coffee is an important commercial crop grown in biodiverse parts of the world. It is typically an understory crop cultivated in forest-like systems, where native trees are either selectively retained, commercially valuable species are grown, or, in some cases, coffee is cultivated under minimal shade. These “forest-like” elements within coffee systems allow them to harbor or act as refuges for native biodiversity.

To maintain shade, trees are regularly managed through pruning, which can alter branch structure, substrate availability, and resource distribution. To understand how bird communities respond to these changes, we conducted point counts and trail observations across forests and coffee systems with different shade management regimes over five sampling rounds. We recorded bird identity, foraging strata, substrate use, and behavior.

We observed differences in bird abundance across vertical strata among shade categories. Insectivorous birds declined with increasing shade modification, with forests supporting higher numbers. We further assess shifts in niche width and partitioning. These patterns from our study suggest that shade management negatively affects insectivorous birds, with their use of vertical strata likely constrained by changes in substrate availability.

03

FRAGMENTED YET VITAL: IMPACT OF URBAN GREEN PATCH SIZE AND STRUCTURE ON AVIAN DIVERSITY IN PUNE, INDIA

Vaidehi Mehta, Bharti Vidyapeeth Institute of Environment Education and Research, Pune

Prof. Dr. Shamita Kumar

Abstract - Urbanization is rapidly reshaping landscapes, posing challenges to biodiversity while also creating opportunities for resilient urban ecosystems. In cities like Pune, fragmented urban green spaces act as critical ecological lifelines, supporting avian diversity and functioning as indicators of environmental health. This study investigates how green patch size, structural complexity, and urban disturbance influence bird diversity, with implications for designing biodiverse and resilient urbanscapes.

Using GIS mapping, FRAGSTATS-based landscape metrics, field surveys, and statistical modeling, we found that patch size positively influenced bird diversity (r = 0.46), with larger patches supporting greater species richness. Notably, smaller patches with higher structural complexity also supported considerable avian diversity, underscoring the importance of habitat quality alongside size. Urban disturbance showed a negative correlation with bird diversity (r = -0.38), highlighting the ecological impacts of fragmentation and human pressures. Guild richness explained 86% of the variation in bird diversity, emerging as a strong indicator of urban ecosystem resilience.

These findings highlight the need to conserve diverse green spaces, strengthen ecological connectivity, and enhance habitat structure to build resilient, biodiverse cities.

04

IMPACTS OF LAND USE ON BIRD COMMUNITIES IN THE WESTERN HIMALAYA: INSIGHTS FROM A TWO-DECADE-LONG MONITORING PROGRAM

Sidharth Srinivasan, Georgia Institute of Technology and Nature Conservation Foundation

Sidharth Srinivasan (Nature Conservation Foundation, India, Georgia Institute of Technology, USA), Tanzin Thinley (Nature Conservation Foundation, India), Kalzang Gurmet (Nature Conservation Foundation, India), Charudutt Mishra (Nature Conservation Foundation, India, Snow Leopard Trust, USA), Kulbhushansingh Ramesh Suryawanshi (Nature Conservation Foundation, India, Snow Leopard Trust, USA, Canadian Institute for Advanced Research, Canada)

Abstract - Anthropogenic land use change due to farming and livestock grazing has greatly altered biodiversity in ecosystems worldwide, particularly in grasslands and rangelands. High-altitude regions, however, remain understudied, and long term effects are poorly understood. We studied bird densities and community composition across four habitats along a land use intensity gradient (crop fields, grazed meadows, grazed steppe, and ungrazed steppe) in the Trans Himalayan region of Spiti Valley, Himachal Pradesh, India. Started in 2002, this is one of India's longest running bird monitoring programs. We found that land use significantly altered bird community composition. Crop fields had the highest bird densities but a homogenised community of habitat generalists. Ungrazed steppe harboured more specialist species. Grazed habitats were generally unfavourable, with lower densities and potentially lower species richness. Over decades, densities declined and community composition shifted in the least used habitat, suggesting that climate change might operate as a compounding driver alongside land use. Disentangling the roles of climate and land use would help develop a mechanistic understanding of the future of high-altitude birds. Our study reveals that maintaining ungrazed patches and traditional organic farming alone may not suffice for long-term bird conservation, especially if climate forcings concurrently drive high-altitude bird populations.

05

FRAGMENTATION AND SURROUNDING LAND USE SHAPE BIRD COMMUNITIES IN SEMI-ARID GRASSLANDS OF EASTERN PUNE, INDIA

Varsha, WII-SACON

Dr. Riddhika Ramesh, Senior Scientist, Salim Ali Centre for Ornithology and Natural History (South India Centre of Wildlife Institute of India) Coimbatore, Tamil Nadu, India – 641108.

Abstract - Semi-arid grasslands are one of the critical ecosystems supporting rich avian diversity, however in several parts outside Protected Areas of India it is classified as 'wasteland'. We aimed to study the multi-scale influence of grassland fragmentation and surrounding land use type on the bird community structure in Saswad grasslands of eastern Pune. We conducted bird surveys in 30 fragmented and contiguous patches with with six replicates per patch (three morning and three evening sessions)s using point count method from December 2025 to March 2026. We assessed the quality of microhabitat using 300 quadrat plots as well as measured the proportion of surrounding land use. A total of 139 bird and 24 grass species have been recorded during the sampling. Bird community structure differed between continuous and fragmented sites. Microhabitat features such as grass height and rock cover, along with surrounding agriculture, were found to significantly influence bird species composition. These findings highlight the combined role of local microhabitat characteristics and landscape-scale factors in shaping bird communities in grassland. This study provides early evidence of the ecological consequences of grassland fragmentation in semi-arid systems and underscores the need for informed conservation and land-use planning in these threatened ecosystems.

06

FAUNAL DIVERSITY OF VERTEBRATE PESTS IN AGRO-HORTICULTURAL ECOSYSTEMS OF SUB-MONTANE PUNJAB: A CASE STUDY OF PATHANKOT DISTRICT

Dr. Vinay Singh, Punjab Agricultural University- Krishi Vigyan Kendra, Pathankot

Bhupinder Kaur Babbar (Department of Zoology, Punjab Agricultural University, Ludhiana), Manu Tyagi (Punjab Agricultural University–KrishiVigyan Kendra, Pathankot), Ravinder Singh Chhina (Punjab Agricultural University– KrishiVigyan Kendra, Pathankot)

Abstract – The sub-montane region of Punjab, particularly Pathankot district, is characterized by diverse agro-horticultural systems, rich crop diversity, forest cover, and perennial water resources including rivers Ravi and Beas, Chakki stream, and UBDC canal. A farmer questionnaire-based survey was conducted in different blocks of the district to document vertebrate pest diversity and associated crop damage.

Major vertebrate pests recorded include wild boar (Sus scrofa Linnaeus), rhesus monkey (Macaca mulatta Zimmermann), blue bull (Boselaphus trago camelus Pallas), stag (deer spp.), jackal (Canis aureus Linnaeus), porcupine (Hystrix indica Kerr), rats, and flying fox (Pteropus giganteus Brünnich). Major Avian pests include parakeets (Psittacula spp.), babblers, and pigeons (Columba livia Gmelin). Wild boar, rats, mice, parakeets, and babblers were prevalent across all blocks, while monkeys and stags were predominant in Dhar Kalan, and blue bull in most blocks. Flying fox damage was prominent in litchi-growing areas of Pathankot, Sujanpur, and Narot. Severe monkey menace has led to partial abandonment of farming in Dhar Kalan. Additionally, migratory bar-headed goose (Anser indicus Latham) completely damaged rabi crops near Ranjit Sagar Dam in Dhar Kalan. Leopard (Panthera pardus Linnaeus) predation on livestock was also reported.

The study highlights the urgent need to disseminate knowledge on location-specific integrated vertebrate pest management technologies to farmers.

07

SPATIAL DRIVERS OF HUMAN–LEOPARD AND HUMAN–TIGER CONFLICT ACROSS SOUTH ASIA: A REGIONAL META-ANALYSIS

Anish Banerjee, Think Wildlife Foundation

Abstract - Across South Asia, recovering large carnivore populations and rapid habitat transformation have increased human carnivore conflict. Regional-scale drivers remain poorly understood. This meta-analysis quantifies spatial predictors of conflict risk across human–leopard and human–tiger systems in India, Nepal, Bangladesh, and Bhutan. Conflict locations comprised 4,614 human–leopard records from 34 studies and 3,380 human-tiger records from 22 studies, derived from published datasets and digitized maps with extractable GPS coordinates. Generalized linear models were fitted within a presence–background framework under multiple background sampling strategies. Predictor variables derived from open-source and remote sensing datasets included anthropogenic pressures, landscape structure, bioclimatic conditions, and topography. Models were evaluated using spatially blocked cross-validation. For human–leopard conflict, models showed moderate predictive performance (mean AUC ~0.70), with conflict risk consistently increasing with higher precipitation, proximity to forests, protected areas, and croplands. For human– tiger conflict, models showed high predictive performance (mean AUC ~0.94–0.98), with conflict risk increasing near protected areas, forests, roads, and forest edges. Extensions to the study include integration of compensation records to manage spatial bias in conflict reports and mapping conflict hotspots under current and future climatic and land-use change.

OS4-PATTERNS AND PROCESSES IN COMMUNITY ECOLOGY

Chairs: Kartik Shanker and Ashish Nerlekar

01

LIVING TOGETHER BY LIVING APART: CO-EXISTENCE IN TWO SYMPATRIC LIZARDS

Dimpi A. Patel, Wildlife Institute of India

Chinnasamy Ramesh, Scientist E, Wildlife Institute of India, Dehradun.

Abstract - Understanding how ecologically similar species coexist is central to community ecology, particularly in extreme environments such as the Trans-Himalayan cold desert. This study examines microhabitat use, thermal ecology, and niche differentiation between two sympatric agamid lizards, Theobald's Toad-headed Agama, Phrynocephalus theobaldi and Himalayan Rock Agama Paralaudakia himalayana, in Ladakh, India. Field-based observations from allopatric and syntopic populations were used to quantify habitat structure, substrate characteristics, and thermal variables. Significant interspecific differences in microhabitat selection, substrate type, and shelter use indicated strong spatial niche partitioning. P. himalayana was associated with rocky substrates and higher rock cover, whereas P. theobaldi occupied sandy and vegetated habitats. Thermal analyses showed no significant difference in mean body temperatures (Tb), but environmental temperatures and thermal excess differed significantly. Operative temperature (Te), approximated using substrate temperature (Ts), and thermoregulatory indices (Hertz et al., 1993) revealed contrasting strategies, with P. theobaldi actively thermoregulating and P. himalayana relying on favourable microhabitats. These findings demonstrate that coexistence is facilitated by fine-scale habitat partitioning coupled with divergent thermal strategies in a thermally constrained ecosystem.

02

CANOPY GAPS AS DIVERSITY HOTSPOTS: SUCCESSION OF VEGETATION AND CRAB COMMUNITIES IN MANGROVE CANOPY GAPS OF THE ANDAMAN ISLANDS, INDIA.

Perarivalan Sengannan, Wildlife Institute of India

Dr. Nehru Prabakaran, Scientist - D, Wildlife Institute of India, Dehradun.

Abstract - Disturbance is a key factor that determines species richness and composition in many ecosystems at varying spatial and temporal scales. Lightning strikes in mangrove forests often result in the formation of small- to medium-sized canopy gaps, characterized by tree deaths in a circular pattern. This small-scale disturbance is critical to sustaining demographic patterns in the mangrove plant community. We investigated mangrove vegetation and crab community composition by assessing 40 canopy gaps under two age categories (New Canopy Gaps and Recovering Canopy Gaps; 20 in each category) from six sites across the Andaman Islands. Each canopy gap was paired with a control plot in the intact forest. We found a higher plant species richness in new canopy gaps than in recovering canopy gaps and intact forest. Crab diversity was highest in the intermediate gap recovery stage (Shannon diversity, H' = 0.93), with a moderate canopy cover. Ocypodidae crabs were abundant in new canopy gaps, whereas their count declined in recovering canopy gaps and intact forests. Our study highlights a clear correlation between mangrove recovery and crab community dynamics, and it provides baseline information on the vegetation and crab community composition among two different recovering categories of canopy gaps and in intact forests.

03

FOREST TYPE SHAPES THE ARCHITECTURE OF SPIDER-ANT TROPHIC NETWORKS IN HIMALAYAN FORESTS

Ashirwad Tripathy, Forest Research Institute, Dehradun, Uttarakhand

Arun Pratap Singh[1], Himender Bharti[2] ;[1]Forest Entomology Discipline, Forest Protection Division, ICFRE- Forest Research Institute, Dehradun, Uttarakhand, 248006, India; [2]Department of Zoology & Environmental Sciences, Punjabi University, Patiala, Punjab, 147002, India

Abstract - Predator–prey interactions form the structural foundation of ecological communities, yet how habitat context shapes trophic network architecture remains poorly understood. We investigated spider–ant (myrmecophagous) interaction networks across two forest types—Himalayan Moist Temperate Deciduous Forest (HMTD) and Moist Shiwalik Sal
Forest (MSS). Bipartite interaction matrices were constructed and analysed using ecological network metrics, including connectance (C), nestedness (NODF), modularity (Q), interaction evenness, and specialization indices (d′ and H2′). The HMTD forest exhibited higher connectance (C = 0.321) and nestedness (NODF = 33.64) relative to the MSS forest (C = 0.214; NODF = 16.48), indicating a denser and more hierarchically organized interaction structure. In contrast, MSS showed greater generality and vulnerability, reflecting broader trophic breadth. Modularity remained comparable across habitats (Q ≈ 0.49), suggesting stable compartmentalization of interactions. Null model analyses revealed that overall nestedness did not significantly deviate from random expectations (Z = -0.498), indicating that interaction structure is largely shaped by marginal interaction frequencies rather than strong hierarchical constraints. These findings demonstrate that forest type influences spider–ant network organization and highlight the importance of habitat context in structuring arthropod trophic interactions.

04

ASSESSING FIVE-YEAR TREE MORTALITY IN A DIPTEROCARP WET EVERGREEN FOREST OF WESTERN GHATS

Drishya K V, French Institute of Pondicherry

Sruthi K - (PhD scholar , French Institute of Pondicherry) , Ayyappan Narayanan (Researcher , French Institute of Pondicherry)

Abstract - Tropical forests in the western ghats are among the most diverse ecosystems on earth, with their richness shaped by demographic changes like growth, recruitment and mortality of trees. Understanding these demographic processes helps to explain species survive, forests regeneration and how diversity is maintained. This study analyses 5-year mortality pattens of trees with ≥1 cm DBH in a 1- hectare permanent sampling plot at Uppangala, a lowland Dipterocarpus wet evergreen tropical forest in Western Ghats, based on the first re census. Trees were grouped into 5 cm DBH classes, and species-specific mortality rates were calculated using R.
Mortality followed clear size dependent patterns: the smallest trees (0-5cm DBH) suffered the highest losses, while larger trees exhibited very low mortality, showing higher survival among established individuals. Among species, Macaranga peltata had the highest mortality rate, indicating it is more vulnerable, while other species experienced lower rates.
These pattens suggest that tree death is not random but structured by both size and species. High mortality among small trees acts as an early demographic filter. The findings provide insight into species specific survival and long term dynamics in the tropical forests of the Western Ghats.

05

CONSPECIFICS DEPRESS SEEDLING SURVIVAL MORE STRONGLY IN WETTER FORESTS

Meghna Krishnadas, TIFR National Centre for Biological Sciences

There are 31 other authors in this study. Co-first author: Yan Zhu, Key Laboratory of Vegetation and Environmental Change, Institute of Botany, Chinese Academy of Sciences, Beijing

Abstract - Warm and wet tropical climates may promote specialized interactions between hosts and natural enemies resulting in negative effects of conspecifics on individual demographic performance being stronger than in dry and cool climates. Negative effects of conspecifics heighten population self-limitation, which should then co-vary with climate. This proposition is old, but tests remain equivocal, primarily due to lack of comparative data. We tested this long-standing expectation using seedlings, saplings, and trees across 21 forest plots spanning > 50□ latitude. Conspecific neighbors depressed seedling survival more than heterospecific neighbors at lower latitudes. This relationship weakened at higher latitudes, attributable to climatic factors associated with moisture availability. Moreover, seedlings of rarer species in moist sites experienced stronger self-regulation. By comparison, conspecific effects on saplings and trees were uncorrelated with latitude or climate gradients. Our findings suggest that stronger inhibition of conspecific seedling survival in wet and low latitude forests may aid niche differentiation at early life-stages, which can contribute to large-scale geographical gradients in community structure.

06

IN SEARCH OF THE ELUSIVE SAWFISH ALONG THE WEST COAST OF INDIA

Mayuresh Gangal, Nature Conservation Foundation

Mihir Sule (Faculty of Biology, University of Gdansk, Poland.), Gauri Gharpure (Indian Institute of Sciences, Bengaluru), Rajeshwari BT (Nature Conservation Foundation), Radhika Nair (Nature Conservation Foundation), D'souza (Nature Conservation Foundation), Ketki Jog (James Cook University, Australia), Kaustubh Deshpande (Independent Researcher), Rohan Arthur (Nature Conservation Foundation), Evan Nazareth (Nature Conservation Foundation)

Abstract - Sawfish (Pristis and Anoxypristis species) are among the most recognisable and charismatic, yet highly endangered, fishes in tropical and subtropical waters. All five species of sawfish are classified as "Critically Enangered" by the IUCN. Although three species have been reported from the coastal regions of the Indian peninsula, sawfish remain one of the least studied fish groups in India, with information largely restricted to landing records. For the survival of this globally threatened group and the development of meaningful conservation initiatives in Indian waters, it is critical to identify areas of occurrence and understand their life histories.
We interviewed experienced fishers from over 200 villages along 3,400 km of the west coast of India and collated information on their encounters with sawfish, as well as their knowledge of sawfish biology and ecology. This information was then validated using published literature on sawfish from other parts of the world. The validated data were compared with recent sighting records and information on the cultural significance of sawfish, provided by respondents to identify areas where they are likely to occur, and where human perceptions may support future conservation initiatives.

07

NICHE PARTITIONING AMONG SYMPATRIC MACAQUES IN HOLLONGAPAR GIBBON WILDLIFE SANCTUARY

DHIRAJ KUMAR DAS, Salim Ali Centre for Ornithology and Natural History, Tamil Nadu.

Honnavalli N. Kumara, Salim Ali Centre for Ornithology and Natural History, Tamil Nadu; Jihosuo Biswas, Primate Research Centre-Northeast India, Assam; Mewa Singh, Biopsychology Department and Institute of Excellence, University of Mysore, Mysuru, Karnataka

Abstract - Resources are an important commodity in nature which is highly limited. The related species should be having some mechanism to coexist. The occurrence of rhesus macaque (Macaca mulatta), pig-tailed macaque (M. leonina) and stump-tailed macaque (M. arctoides) in Hollongapar Gibbon Wildlife Sanctuary provides an opportunity to understand the mechanisms adapted to coexist. We selected one group each, and scanned them for 5 min every 15 min for four days/month and recorded the geocoordinates for every 30 minutes from October-2024 to September 2025. Feeding was highest in STM (39.01%), followed by RM (32.93%) and PTM (32.49%). STM and RM used <4.26 ± 5.31SD m on trees whereas PTM used 9.86 ± 4.27SD m. Insect consumption was highest by PTM (41.45%) compared to STM (18.49%) and RM (7.49%). Fruit consumption by PTM was 83.78%, followed by RM (48.08%) and STM (42.69%). Shoot was eaten relatively more by STM (35.19%) than RM (3.42%) and PTM 0.67%). Whereas leaf was consumed highest by RM (36.85%) than STM (16%), and PTM (14.5%). RM foraged home-wastes (12.90%), whereas other two macaques didn't. Although their ranges overlap but differential use of food resources and height by each macaques pave the way to coexist in a fragmented forest.

OS5-ANIMAL INTERACTIONS AND COMMUNICATION

Chairs: Gururaja KV and Viraj Torsekar

01

THE SOCIAL BUTTERFLY: PARTNER CHOICE WITHIN MIXED-SPECIES AGGREGATIONS OF TROPICAL PAPILIONOIDEA

Shravani Deoghare, Indian Institute of Science

Ravi Jambhekar (Assistant Professor, Indian Institute of Human Settlements), Kavita Isvaran (Professor, Centre for Ecological Sciences, Indian Institute of Science)

Abstract - Mixed-species associations are striking behavioural phenomena widespread across vertebrates. Butterfly mudpuddling—where individuals aggregate on moist substrates to obtain micronutrients—offers a novel system for studying diverse mixed-species aggregations (MSA). Here, the selective pressures shaping heterospecific partner choice remain unclear.
Heterospecific grouping may arise from phenotypic matching to maximise antipredation benefits or from phylogenetic relatedness reflecting shared nutritional requirements. Using over 600 crowd-sourced records from India, Africa, and Southeast Asia, we found 300 species participating in MSAs with richness ranging from 2–16. We quantified species-pair association strengths by comparing co-occurrences against null models. We then used linear models to test how association strength is shaped by phylogenetic relatedness and phenotypic traits, including colour and body size.
We found that associations were consistently non-random across regions. Association strength was strongly predicted by phylogenetic relatedness rather than phenotypic similarity, with same-family pairs showing significantly higher association strength than those from different families. These findings suggest that shared evolutionary requirements drive MSAs in puddling butterflies. This study highlights the role of evolutionary constraints in structuring cross species interactions and establishes butterfly mudpuddling as a novel model for mixed-species group dynamics.

02

REEF FISH COMMUNITIES SHOW DIFFERENTIATED RESPONSE IN THE AFTERMATH OF TWO MASS CORAL MORTALITY EVENTS

Radhika Nair, Nature Conservation Foundation

Wenzel Pinto, Rohan Arthur (Nature Conservation Foundation, Mysore).

Abstract - Mass bleaching events have led to the degradation of coral reefs globally. Compared to scleractinian corals, reef fish community response to these disturbances remains unclear. The atoll reefs of Lakshadweep have experienced four mass bleaching events since 1998. We examined the effects of the 2016 and 2024 mass bleaching event on reef fish assemblages in the Lakshadweep using data spanning from 2011 to 2025. This long-term dataset covers 6 reefs across 3 atolls, over deep (14-16 m) and shallow (7-9 m) sites. Overall, fish densities have declined by 46.3% following the 2016 event. We found a significant shift in assemblage composition post-2016, primarily driven by a decline in structure and live coral-dependent primary and secondary consumers (up to 59.1%). While densities of predators belonging to higher trophic levels were lower post-2016, they recovered at a rate of 14.2% per year. Secondary consumers, on the other hand, showed weak yearly recovery of 3.5%, while herbivores showed no significant trend. Predators and herbivores showed steeper declines in shallow sites post-2016. Our findings highlight the importance of long-term monitoring efforts for detecting trends in reef fish ecological communities and examining their differentiated response to pulsed disturbances across trophic levels and habitat characteristics.

03

INHABITING ANTHROPOGENIC SEAS: A HABITAT STUDY OF COASTAL CETACEANS OF MUMBAI

Mahi Mankeshwar-Modi, Coastal Conservation Foundation

Shaunak Modi, Coastal Conservation Foundation(CCF); Ameya Bhojane, CCF; Pradip Patade, CCF ; Raniya Ansari, CCF

Abstract - Species distribution as a function of specific environmental parameters has been well established. But do these species-habitat relations hold true for spaces that experience multiple human intersections within restricted habitats, such as a narrow coastal belt? The endangered Indian Ocean humpback dolphin (Sousa plumbea) is an obligate nearshore species whose habitat is restricted to a few kilometers from shore along the Indian west coast. In Mumbai, the species' habitat completely overlaps with commercial fisheries, at-sea construction and sewage release. Presented here are results from a study conducted between 2022–2025 to identify key parameters influencing distribution within the Mumbai Metropolitan Region. As a major contributor to habitat degradation, we also investigate whether sewage release influences species distribution. Variables of temperature, salinity, depth, and distance to shore were used to elucidate habitat profiles and relationships, while dissolved oxygen was sampled as a proxy for sewage affected waters. The study provides evidence that depth and distance to shore are important delimiters for the population, and we put forth arguments for limited plasticity in occurrence in areas highly impacted by large-scale sewage release. The study documents vulnerability of a marine apex predator in the face of its obligate nature and a shrinking habitat.

04

SOCIAL COHESION AND HERD DYNAMICS OF REINTRODUCED INDIAN GAUR (BOS GAURUS GAURUS) IN SANJAY TIGER RESERVE, MADHYA PRADESH

Bhaskar Bhandari, Wildlife Institute of India

Ritesh Vishwakarma (Wildlife Institute of India, Dehradun & Academy of Scientific and Innovative Research, Ghaziabad), Abhay Sengar (Madhya Pradesh Forest Department), Amit Kumar Dubey (Madhya Pradesh Forest Department), Bilal Habib (Wildlife Institute of India, Dehradun & Academy of Scientific and Innovative Research, Ghaziabad) & Parag Nigam (Wildlife Institute of India, Dehradun & Academy of Scientific and Innovative Research, Ghaziabad)

Abstract - In social ungulates, re-establishment of stable social organisation is decisive factor in success of reintroduction programs, influencing survival, reproduction and long-term persistence. Understanding how these social structures re-form following translocation is therefore central to improving conservation outcomes. Following the local extinction of gaur in Sanjay Tiger Reserve, 50 individuals from diverse demographic groups were reintroduced from two distinct source populations during 2023–24. We evaluated post-release social dynamics with emphasis on herd cohesion and stability. Herd formation and individual association patterns were assessed using scan sampling and association indices. Post-release observations showed rapid formation of multi-individual stable groups ranging from 2 to 17 individuals. Most herds consisted of mixed-sex/age groups comprising adult females and subadults, while adult males remained loosely associated. Association patterns were largely non-random among individuals, with majority of founders maintaining their natal cohesiveness. However, despite these existing bonds, founders also successfully integrated with individuals from different source populations to form mixed herds. This study demonstrates that, regardless of their differing origins, individuals from distinct source populations successfully integrated into stable cohesive units. These findings provide empirical evidence that multi-source translocations can achieve cohesive social units.

05

LISTENING TO THE NIGHT WHISTLER: PASSIVE ACOUSTIC MONITORING OF GRAY SLENDER LORIS IN SATHYAMANGALAM TIGER RESERVE

Vandana Kannan, Keystone Foundation

Mathesan R (Keystone Foundation), Vijay Ramesh (Center for Avian Population Studies, Cornell Lab of Ornithology), Anita Varghese (Keystone Foundation), Pratim Roy (Keystone Foundation)

Abstract - Populations of the nocturnal and elusive primate, Loris lydekkerianus, have been declining according to local communities of Sathyamangalam Tiger Reserve (STR) and the IUCN. This Mutpondi devalingi has not been studied before in this mosaic landscape with semi-evergreen, mixed deciduous, dry deciduous, and thorny scrub forests. We used novel technologies to model the distribution and habitat associations of the slender loris. In 2024, 35 AudioMoth devices were deployed totally across two seasons for 17 days each between 1800-0500 hours in 21 sites with potential loris presence. We trained a deep learning model on BirdNET for automatic detection of whistle calls and manually validated all predictions on RavenPro. 625 true positive calls were detected in 4,882 hours of data, confirming loris presence in 13/21 sites in central STR. In 2025-26, we deployed 36 recorders randomly throughout STR, equally distributed across two broad habitats spanning 200-1400m elevation, to understand association of loris presence with vegetation type, canopy cover, elevation, presence of lianas and bamboo. Occupancy model results will point towards microhabitat parameters important for loris conservation. PAM is highlighted for better detections of nocturnal elusive vocalizing species and as a less invasive, cost-effective tool for long-term monitoring of threatened species and habitats.

06

VOCAL BEHAVIOUR ACROSS PARTURITION IN THE ASIAN ELEPHANT (ELEPHAS MAXIMUS): A CASE STUDY

Seema Lokhandwala, IIT Guwahati

Abstract - Across long-lived, socially complex mammals, the production and modulation of vocal signals are intimately linked to developmental experience, social affiliation, and behavioural state. We present acoustic and ethological data from a semi-captive Asian elephant monitored across pre-parturition, parturition, and post-parturition phases, examining the functional properties of maternal vocalizations during the perinatal window. The post-parturition period was characterised by intensive caregiving and a discrete class of infant-directed (ID) low-frequency rumbles. Acoustic classification discriminated ID from non-infant-directed rumbles, with significant differences in fundamental frequency and call duration between contexts. These results extend existing evidence that structural variation in elephant rumbles encodes individual identity and caller emotional state to encompass context-dependent modulation during the perinatal period, implicating maternal vocal behaviour as a substrate for early-life acoustic learning. Complementary evidence from sperm whales demonstrates that vocal style shifts occur at the level of the social unit in response to key parturition events, with coordinated caregiving extending across kinship boundaries. Together, these findings suggest that mammalian vocal systems may be hierarchically organised: individual-level modulation supporting developmental processes and group-level coordination mediating collective behaviour during reproductive events.

07

THORACIC CENTRALIZATION AND ABDOMINAL-MEDIATED TEMPORAL STABILITY: A FUNCTIONAL MAP OF THE MECOPODA SONG CPG

Vivek Dasoju, Ashoka University

[1] Schöneich S. Prog Neurobiol 194: 101882, 2020. [2] Lin CC, Hedwig B. J Comp Physiol A 207: 533-552, 2021.

Abstract - Ensifera motor control is traditionally modeled as segmentally distributed. In field crickets (Gryllidae), the song central pattern generator (CPG) is dispersed across thoracic and abdominal ganglia [1,2]. However, our research on Mecopoda (Tettigoniidae) reveals an evolutionary departure toward thoracic centralization.

Using surgical lesions in Mecopoda elongata, we analyzed VNC transections at metathoracic-abdominal (T3–A3) and inter-abdominal (A3–A4) connectives. Unlike gryllid models [2], the complete song structure persists post lesion. While T3–A3 transections significantly slowed the Pulse Interval, A3–A4 lesions and shams yielded no robust temporal shifts. This identifies the A3 ganglion specifically as a critical source of descending tonic drive for species specific tempo, rather than a core rhythm generator. Furthermore, unilateral T3–A3 transections produced sham-like outputs, indicating high bilateral redundancy.

Even in "complex" phrased calls, abdominal neuropile provides only modular stabilization; truncation posterior to the metathorax did not disrupt the fundamental song blueprint. These findings demonstrate that the Tettigoniid CPG is functionally centralized within the thorax, utilizing the abdominal cord as a hierarchical resource for temporal precision. These findings provide the first functional map of motor control in bushcricket VNC.

OS6-ANIMAL BEHAVIOR AND PHYSIOLOGY

Chairs: Samira Agnihotri and Tanvi Deora

01

CHANGING DIETS, DISRUPTING GUTS? SEASONAL DIETARY SHIFTS AND GUT MICROBIOME DYNAMICS IN INDIAN GREY WOLVES(*Canis lupus pallipes*)

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Abstract - The Indian Grey Wolf (Canis lupus pallipes), a keystone carnivore of India's semi-arid grasslands, is increasingly impacted by habitat fragmentation, prey depletion, and reliance on anthropogenic food subsidies. As diet drives gut microbiome composition, seasonal microbial variation can reveal adaptive responses in human-dominated systems. However, baseline data for free-ranging Indian Grey Wolves remain limited.
This study examines seasonal shifts in gut microbiome diversity and composition. Non-invasive faecal samples (n=11) were collected from a grassland landscape near Pune, India, during winter and monsoon. Metagenomic sequencing was conducted, and diet was inferred through microscopic hair analysis. Microbial diversity was assessed using alpha (Chao1, Shannon, Simpson) and beta diversity metrics, and KEGG-based functional predictions. Winter samples exhibited higher diversity (Chao1: 15; Shannon: 2.33; Simpson: 0.85), dominated by fibre-associated taxa such as Bacillus and Ruminococcus, suggesting reliance on natural prey. Monsoon samples showed reduced diversity (Chao1: 9; Shannon: 1.50; Simpson: 0.71); increased abundance of taxa such as Escherichia coli, indicating anthropogenic dietary inputs.
This study provides a baseline assessment of seasonal gut microbiome dynamics in Indian Grey Wolves, indicating observed microbial variation reflects adaptive foraging plasticity rather than pathology. This novel framework links dietary shifts to conservation strategies

02

THE WINTER BEHAVIOR AND ACTIVITY OF A NON-HIBERNATING, NON-MIGRATING SMALL MAMMAL IN THE WESTERN HIMALAYAS.

Chandana M, National Centre for Biological Sciences

Dr Vivek Ramachandran, Dr Sandeep Pulla and Ishika Ramakrishna, National Centre for Biological Sciences

Abstract - Climate change impacts are pronounced in high-altitude ecosystems such as the Himalayas, where extreme conditions, habitat specialisation, and strong seasonality constrain species' activity and behaviour. Behavioural changes operate at a much faster timescale in species with low vagility, like the Pikas. In this study, we developed a detailed ethogram to analyse the behaviour and activity of Royle's pika during winter in the Western Himalayas. A total of 19 sites with confirmed pika presence were monitored across winter at different times. Over 600 visits yielded 150 detections. Pikas showed high behavioural flexibility across sites and tend to shift their surface activity to mid days during the winter season, despite being crepuscular in other seasons, thereby carefully tailoring their behaviour and activity to suit the extreme habitat. Royle's pika does not exhibit the typical hay-piling behaviour seen in other pika species. Our findings point to behaviour as a primary mechanism for coping with seasonal stress, highlighting behavioural flexibility as a key axis of resilience, enabling persistence in climatically sensitive ecosystems.

03

UNDER THE INFLUENCE: PARASITIC MANIPULATION OF FEMALE ROCK AGAMA BEHAVIOUR

Aaditya Gupta, Ashoka University

Dr. Kavita Isvaran, Professor, CES, IISC bangalore

Abstract - Parasites affect host physiology and behaviour by depleting energy reserves and impairing reproduction and foraging, hence parasitisation may impose strong constraints on traits and behavioural strategies. However, the effects of ectoparasitism on signalling behaviour remain poorly understood, particularly in reptilian systems. We examined the impact of tick load on survival and reproductive traits in peninsular rock-agamas(Psammophilus dorsalis), an annual, sexually dimorphic, and socially polygynous lizard. Females use conspicuous colour and posture displays for signalling during courtship. We focused on two functionally linked traits: visual signalling linked to courtship, and Flight Initiation Distance (FID), an important viability trait expected to change in a direction contingent on the balance between reduced escape performance and increased energetic or reproductive demands, thereby either increasing wariness or elevating risk-taking. We tested predictions using model presentations (N=13) and FID (N=22) assays. Despite energetic demands, we found no parasite dependent variation in FID, yet signalling was seen increasing with parasite load. This study highlights ectoparasitism as an energetic stressor on visual signalling and anti-predatory traits.

04

ECOLOGICAL INSIGHTS INTO THE FEEDING HABITS OF THE NILGIRI LANGUR

N Arjunan, Centre for Ecological Sciences, Indian institute of Science, Bangalore.

J. Beulahbah, Sharana B. Gouda, H.S. Suresh and P.B. Seshagiri

Abstract - The Nilgiri langur (*Semnopithecus johnii*) is an arboreal, folivorous primate endemic to the Western Ghats of India and is currently listed as Vulnerable by the IUCN. While the species primarily inhabits undisturbed protected areas, increasing habitat modification has led to its gradual use of human-inhabited landscapes, potentially altering its feeding ecology and long-term survival. Understanding how changes in habitat structure and plant composition influence the foraging behavior of Nilgiri langurs is essential for evaluating their adaptive capacity and conservation needs in rapidly transforming montane ecosystems of the Nilgiris. Foraging behavior, troop size, and feeding duration were recorded. Vegetation sampling was carried out using 50 m transects with a 2 m belt on either side (200 m^2), documenting tree girth, height, and roosting tree species. Diet preferences were analyzed at species and family levels. In protected areas, langurs fed predominantly on native species such as Daphniphyllum neilgherrense, Turpinia cochinchinensis, Celtis tetrandra, Ilex denticulata and Litsea sp. In contrast, langurs in human-dominated landscapes showed a marked shift towards cash crops and ornamental plants, spending significantly more time feeding on cultivated species. management in the Nilgiri landscape (TNFD permission No. 2022/40).

05

INVESTIGATING REPRODUCTIVE BIOLOGY OF FEMALE MUGGER CROCODILES (*Crocodylus palustris*) BY USING BEHAVIOUR AND ENDOCRINE MEASURES

Brinky Desai, Mahim Pandhi Wildlife Foundation

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Abstract - Reptiles are one of the most speciose groups of tetrapod, however, often neglected in conservation research. We investigated reproductive behavioural patterns and underlying endocrine correlates, a basic knowledge that was lacking in understanding the biology of the mugger crocodiles (20 females, 2 males). Behavioural observations
across single reproductive season revealed three distinct phases: (i) mating, (ii) mixed (mating and parental-care), and (iii) non-breeding. Ethogram analysis demonstrated a fixed mating behavioural repertoire (n = 165), including 13 behaviours exhibited by both sexes. Due to low male sample size (n = 2), statistical analysis focused on females. Female-female aggression was prevalent across phases without significant variation ($P > 0.05$). To investigate endocrine correlates, we quantified fecal hormone metabolites (n = 138 female samples; Mean ± SE, ng/g dry feces): progesterone (fPm=2421.4±316.5), oestrogen (fEm=406.9±34.8), and testosterone (fTm=2386.6±245.4). The results showed that fEm and fTm levels did not vary significantly ($P > 0.05$) across phases, but fPm levels were significantly higher ($P < 0.05$) during mixed phase associating with increased parental care. Despite limitations (low male sample; single season), it is the first study to validate association between endocrine profiles and reproductive behaviour in female muggers, advancing mechanistic understanding relevant to conservation and management.

06

NOISE-INDUCED DELAY IN THE DAWN CHORUS OF THE COMMON TAILORBIRDS IN AN URBAN-FOREST LANDSCAPE

Akash Jaiswal, TERI School of Advanced Studies

1. Eliziane G. de Oliveira, Institute for Mediterranean Studies (IMEDEA), CSIC-UIB, 07190, Esporles, Spain; 2. Renata S. Sousa-Lima, Department of Physiology & Behaviour, Federal University of Rio Grande do Norte. Natal, RN - Brasil 59078-900; 3. Krishan Kumar, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India 110067

Abstract - Urbanisation imposes novel environmental pressures that reshape avian behaviour. While temperate species frequently advance their dawn chorus to avoid acoustic masking, tropical regions suggest divergent strategies. This study investigated the Common Tailorbird (Orthotomus sutorius) across an urban-forest noise gradient inside a university campus in New Delhi, India. Using passive acoustic monitoring at 27 sites, the onset time of the dawn chorus, along with daytime background noise levels (L90), artificial light at night (ALAN), and microclimatic variables, was measured. Contrary to the “advancement” hypothesis, birds in noisier environments significantly delayed singing onset relative to sunrise ($R2adj = 0.35$, $p < 0.001$). Daytime noise was the sole significant predictor, whereas ALAN and temperature had no measurable independent effect. These findings support a “recovery priority” strategy, in which tropical species with longer breeding seasons prioritise metabolic restoration and sleep over early morning territorial advertisement. This research highlights that behavioural responses to urbanisation are not universal and underscores the need to integrate life-history traits into urban ecology. Framing noise-induced delays as a diagnostic marker of physiological stress offers critical insights into identifying ecological vulnerability in urbanising landscapes.

OS7-HUMAN-WILDLIFE INTERACTIONS AND LIVELIHOODS

Chairs: Ravi Chellam and Venkat Ramanujam

01

ANTHROPOGENIC MORTALITY OF LEOPARDS IN AGRICULTURAL LANDSCAPES OF BIJNOR, NORTHERN INDIA

Shivam Chauhan, Department of Wildlife Sciences, Aligarh Muslim University, Aligarh

Dr. Kaleem Ahmed (Department of Wildlife Sciences, Aligarh Muslim University)

Abstract - Large carnivores increasingly persist in human-dominated landscapes, where expanding infrastructure expose them to multiple anthropogenic threats. The leopard (Panthera pardus) frequently inhabits sugarcane-dominated agroecosystems of northern India, where dense crops provide suitable cover and facilitate regular use, increasing proximity to people. In Bijnor district, such landscapes elevate risks of accidental mortality, yet long-term assessments remain limited. We examined temporal trends in anthropogenic mortality from 2015–2025, identified major causes with emphasis on linear infrastructure, and assessed seasonal and demographic variation across age and sex classes.

Leopard mortality data were obtained from Forest Department records and supplemented with field surveys conducted from January 2025. Causes of mortality were classified as roadkill, railkill, retaliatory killing, drowning, electrocution, and post-rescue mortality. Temporal trends were assessed using linear regression, and associations among mortality causes, season, and age class were tested using Fisher's Exact Test.

We documented 75 mortalities, increasing significantly over time ($\beta = 1.69 \pm 0.24$ SE, $R^2 = 0.85$, $p < 0.001$). Roadkill dominated (54.7%), and infrastructure-related causes accounted for ~68% of deaths. Mortality peaked in winter (48%), with no significant seasonal or age-class differences. These findings emphasize the need for targeted mitigation measures to reduce mortality.

02

COMMUNITY VALUES AND SOCIAL NORMS SHAPE HUMAN BEHAVIOUR TOWARD ELEPHANTS IN SHARED HUMAN-ELEPHANT LANDSCAPES.

Shikhar Srivastava, Ashoka University

Meghna Agarwala (Associate Professor, Department of Environment Studies, Ashoka University)

Abstract - Understanding human-elephant interactions requires looking beyond material losses. Community responses are shaped by underlying values and social norms that define acceptable behavior. Using a Values-Norms-Behaviour (VNB) framework, we examined community responses in Odisha, through focus group discussions across villages with varying conflict levels. We explored how broad life and elephant-specific values shape social norms, which drive behavioral responses towards elephants. Our results support the VNB framework while revealing gendered and generational differences. Positive broad values toward nature often contrasted with negative elephant-specific perceptions, where elephants were framed primarily through crop loss and insecurity. Women expressed lower behavioral tolerance, linking elephants to household safety and restricted mobility. Behavioral orientations did not consistently track with encounter frequency; some high-conflict villages articulated coexistence-oriented responses, while certain lower-conflict villages expressed exclusionary attitudes. This suggests that while broad value orientations, particularly relational or intrinsic values, align with coexistence, these outcomes are heavily mediated by circulating narratives and social interpretations of risk. Our findings indicate that behavioral tolerance is not merely a reflection of reported material impacts but is significantly shaped by the values and norms through which communities interpret elephant presence

03

RESPONSES OF ELEPHANTS TO COMMUNITY-LED DETERRENTS IN THE BANDHAVGARH LANDSCAPE, CENTRAL INDIA

Rajashekhar Niyogi, Wildlife Research and Conservation Society, Pune

Siddharth Dixit, Tanuj Joshi, Tanuj Suryan, Umesh Patel, Jayant Kulkarni, Prachi Mehta. Wildlife Research and Conservation Society, Pashan, Pune,

Abstract - The recent recolonization of wild elephants in Madhya Pradesh since 2018 presents a rare opportunity to understand human–elephant interactions in a novel socio-ecological system. This situation allows the evaluation of mitigation strategies before strong behavioral habituation develops in elephants. We assessed the effectiveness of low-cost, community-based conflict mitigation interventions implemented across 20 villages in the Bandhavgarh Tiger Reserve in the year 2024. These interventions include trip alarms, blinking lights, and organic olfactory repellents, deployed in conflict-affected villages in a participatory manner. Data on elephant interaction were collected during the 2025 rice cultivation season through interviews with farmers who had implemented these mitigation measures. These records were cross-validated with independent evidence, including camera trap data. Effectiveness was quantified using field-recorded "drive out time" — the duration required to drive out elephants from agricultural fields during crop-raiding attempts. Analysis of 31 documented interactions, where trip alarms were used, revealed a mean deterrence time of 6.7 minutes, with 90% of incidents resolved almost immediately (≤1 minute), indicating strong initial deterrence. Notably, rapid response times were frequently associated with layered deterrent use (e.g., trip alarms combined with other techniques). This study provides one of the first empirical assessments of mitigation effectiveness in

04

WOMEN, FOREST AND LEADERSHIP: ECOLOGIES OF CARE AND RESILIENCE IN THE CENTRAL INDIAN HIMALAYAS

Kavya Pandey, Centre for Wildlife Studies

Aleena Sebastian, National Institute of Advanced Studies/ Kaylin R Clements, Colorado State University/Krithi K Karanth, Centre for Wildlife Studies

Abstract - Women play key roles in sustaining forests through everyday practices, and yet their leadership in conservation governance remains marginal. Our study examines women's leadership experiences in grassroots community conservation, with a focus on the forest council, locally known as Van-Panchayat, in the state of Uttarakhand, located in the Central Indian Himalayas. Using feminist political ecology and the Marxist theory of care work, the study emphasizes women's ecological labor, which is often normalized as an extension of their domestic responsibilities and is undervalued in both policy and practice. Based on eight months of immersive fieldwork from November 2024 to May 2025, and using Reflexive Thematic Analysis approach, the paper explores four interrelated themes: women's leadership as an extension of their care work; intersectional barriers shaped by gender, caste, geography, and local hierarchies; the importance of support systems in sustaining women leaders; and aspirations for more inclusive and equitable governance. The narratives express desires for dignity, equality, and changes to the structural governance of the forest. These findings validate that women are not mere passive participants but active agents whose knowledge and leadership are crucial for ecological resilience. Creating spaces where women feel safe to participate equally and effectively in forest-management-related activities is essential for building sustainable futures.

05

ADOPTING METHODOLOGICAL PLURALITY TO UNDERSTAND ELEPHANT AGENCY IN SHAPING HUMAN-ELEPHANT CONFLICT IN NORTH BENGAL

Akashdeep Roy, Indian Institute of Science Education and Research (IISER), Pune

Abstract - While the human role in human-elephant conflict (HEC) is widely studied, this study explores how nonhumans (elephants) are political actors who shape HEC alike in North Bengal. North Bengal is a part of both global biodiversity and HEC hotspots. Combining 'human eye' (surveys, interviews, and participant observations) with 'animal eye' (camera traps and satellite telemetry) provided a more-than-human pathway into understanding HEC. Each method helped in data triangulation.
Findings show how strict conservation laws have elevated the importance of elephants over that of the locals, which has translated into behavioural changes among both sentient beings. Through all mentioned methods, meek behaviour among locals and bolder mobility among elephants were evident throughout the 18-month fieldwork. Elephants have developed various strategies to breach electric fences and target human spaces for nutrition and retaliation. The difference-in-difference regressions showed that electric fence efficacy was found to only be up to 32% and created a spillover effect in the nearby unfenced/weak-fenced areas. This exemplifies the relational agency of elephants within the landscape, while also highlighting why HEC persists despite interventions aimed at mitigating it. This approach provided a nuanced view on HEC and also bridged the epistemological gap between conservation anthropology and conservation biology.

06

UNDERSTANDING NEGATIVE HUMAN-WILDLIFE INTERACTIONS AND HOW ELEPHANTS ACT AS FACILITATORS FOR SYMPATRIC HERBIVORES TO ACCESS FORAGE RICH AGRI-FIELDS

Sahil Das, Bharati Vidyapeeth Institute of Environment, Education and Research (BVIEER), Pune

Dr. Abhishek Ghoshal, Conflict mitigation head and manager, Wildlife Trust of India (WTI)

Abstract - Human-wildlife negative interactions (HWNI) pose persistent challenges for both biodiversity conservation and rural livelihoods, particularly in fragmented landscapes shared by people and large herbivores. We investigated the spatial, temporal, and species-specific patterns of HWNI in villages surrounding Jaldapara National Park, India, with a focus on crop foraging by sympatric herbivores. Using a mixed-methods approach combining semi-structured household interviews (n = 107), focus group discussions, field observations, and camera trapping, we assessed crop depredation patterns and potential wildlife movement pathways across forest-agriculture boundaries. Crop foraging accounted for 86.3% of all incidents reported by respondents during household surveys, with Asian elephants contributing the largest cumulative crop-foraged area, followed by one-horned rhinoceros, gaur, and wild pig. Crop foraging peaked during major harvest periods, particularly in summer and winter. Although camera traps did not capture direct behavioural evidence, community reports and thematic analyses indicated that solar-fence breaches created by elephants were subsequently used by other herbivores. These patterns suggest potential indirect facilitation, whereby elephant-mediated access may enable sympatric herbivores to access crop fields. Our findings highlight the importance of considering multi-species interactions and energized-fence maintenance as mitigation strategies in shared landscapes.

07

WHEN HUNTING TRAPS BECOME CONSERVATION TOOLS

Bahar Dutt, Shiv Nadar University

Robertson Basan, Umpung Village

Abstract – In the West Khasi Hills of Meghalaya along the Indo–Bangladesh border, a community-driven conservation initiative has emerged to protect the Hill Mynah. This is the state bird, that has faced significant population pressure due to illegal trapping and cross-border trade. The glossy black bird distinguished by bright yellow wattles and an orange yellow beak, is highly valued for its advanced vocal mimicry, making it particularly vulnerable to hunting for the pet trade.

This study documents an innovative conservation approach led by local stakeholders, including the village leadership . Traditional bamboo trapping devices, once used to capture the species, have been repurposed into nesting structures. These handcrafted nests are installed on top of tall trees at an incline to protect the eggs from adverse weather conditions.

Since implementation, more than 20 such nests have been installed every year, with regular utilization by Hill Mynahs for breeding. This transformation of indigenous knowledge and materials into conservation tools highlights the effectiveness of community-based interventions in mitigating anthropogenic threats.

OS8-CONSERVATION CHALLENGES AND INTERVENTIONS

Chairs: Bilal Habib and H S Bargali

01

FROM RELEASE TO ESTABLISHMENT: POST-RELEASE ECOLOGY OF INDIAN GREY HORNBILLS IN GIR

Tanisha Dagur, Wildlife Institute of India

Ram, M. (1); Gadhavi, D. (2); Sahu, A. (3); Srivastava, N. (4); Rather, T.A. (2); Modi, V. (2); Jhala, L. (1); Zala, Y. (1); Jhala, D. (2). 1. Wildlife Division, Sasan-Gir, Junagadh 362135, India; 2. The Corbett Foundation, P.O. Tera, Taluka Abdasa, Kutch 370660, India; 3. Wildlife Circle, Junagadh 362001, India; 4. Chief Wildlife Warden, Aranya Bhavan, Sector 10, Gandhinagar 382010, India

Abstract – The Indian Grey Hornbill was historically extirpated from the Gir landscape leading to local extinction, while in subsequent years, after it's recognition as protected area (National Park and Wildlife Sanctuary), the habitat conditions significantly improved, hence necessitating a structured reintroduction program to facilitate population recovery. Between 2021 and 2023, individuals were translocated from known hornbill ranges within Gujarat to the Gir NP, and were monitored using satellite telemetry to quantify post-release movement ecology, nesting dynamics, and behavioural responses. Post-release dispersal was characterized by initially large home ranges, indicative of exploratory movement, followed by progressive dwindling in space use, reflecting site fidelity and establishment. Nesting was primarily associated with large cavity-bearing trees, and breeding activity was recorded within one year of release, suggesting rapid reproductive establishment. Behavioural observations indicated dietary plasticity and no significant sex-specific differences in activity budgets. Collectively, these findings demonstrate successful acclimatization and early self-sustaining population establishment, highlighting the role of telemetry-based monitoring in evaluating reintroduction outcomes that provides us an understanding of conservation model that can help in improving habitat conditions to support a healthy population of reintroduced birds.

02

ILLEGAL PANGOLIN TRADE IN INDIA (2020-2025): IS THERE LIGHT AT THE END OF THE TUNNEL?

Abhijit Konwar, National Institute of Advanced Studies, Bangalore

Sindhu Radhakrishna, National Institute of Advanced Studies, Bengaluru

Abstract – Pangolins are the most trafficked mammals globally, and India—home to the Indian pangolin (*Manis crassicaudata*) and Chinese pangolin (*M. pentadactyla*)—plays a significant role in this illegal trade. We analyzed seizure data from January 2020 to December 2025, compiled from media reports and publicly available government and conservation records, to assess trade dynamics. Across 240 seizures, authorities confiscated 111 pangolins, 1263.21 kg of scales, and 43 claws, resulting in 705 arrests. Using established conversion factors, we estimate that at least 1725 pangolins were extracted from the wild. Seizures increased in 2021–2022, declined in subsequent years, and rose moderately in 2025, while estimated pangolin numbers peaked in 2025. This divergence suggests persistent organized trafficking involving larger consignments, despite possible fluctuations in enforcement or detection. Assam, Odisha, Madhya Pradesh, and Chhattisgarh emerged as major hotspots, with trade routes linking these states to Nepal, Myanmar, and China. Our findings highlight sustained trafficking and emphasize the need for targeted enforcement, strengthened cross-border cooperation, demand reduction, and socio-economic interventions at poaching hotspots.
Keywords: Pangolin trade, seizures, India, Northeast and Central India, Scales, hotspots.

03

SAVING OUR BHUPATHY'S PURPLE FROG: CONSERVATION APPROACHES FOR THE CRITICALLY ENDANGERED NASIKABATRACHUS BHUPATHI

Suchetana Gupta, Centre for Cellular and Molecular Biology

Karthikeyan Vasudevan, Chief Scientist, Centre for Cellular and Molecular Biology

Abstract - Bhupathi's purple frog (*Nasikabatrachus bhupathi*), is a fossorial Gondwanan relict and it is known from one location, thereby categorized as critically endangered. We constructed a Species Distribution Model (SDM) to identify field survey sites. Since the adults emerge once a year in different parts of the eastern slopes of the Western Ghats, simultaneous surveys were needed with the help of a large team. We trained the Tamil Nadu forest department staff to record the species' presence by monitoring streams from mid-October to early November in different divisions of two tiger reserves. Passive audio recorders were used in 5 locations for three weeks. This yielded three new locations through direct observations. After confirming species identity through morphological and molecular data, tadpoles were staged and the time of oviposition was estimated. In 2025, breeding occurred from 20th September to 28th October, suggesting they emerge multiple times and breed opportunistically in the streams. The SDM predicted highly suitable habitats (>75%) along the southern eastern slopes consisting Anamalai, Megamalai and Agasthyamalai, influenced strongly by precipitation variables. However, only 23% lie inside protected areas. Our findings provide insights into the distribution and reproductive biology of this threatened species, while emphasising the need for extensive surveys.

04

REVIVING THE CRITICALLY ENDANGERED TAXA: TRIPLOPHYSA KASHMIRENSIS IN KASHMIR HIMALAYAS: A CONSERVATION BREEDING & HABITAT RESTORATION INITIATIVE

Irfan Ahmad, Shere Kashmir University of Agricultural Aciences & Technology of Kashmir.

Oyas Asimi (FACULTY OF FISHERIES. SKUAST-KASHMIR), Adnan Abubakr (FACULTY OF FISHERIES. SKUAST-KASHMIR)

Abstract - Triplophysa kashmirensis is native to the cold-water streams of the Kashmir Himalayas, a delicate ecology under a lot of environmental and anthropogenic stress, an enormous decrease in population as a result of uncontrolled fishing, habitat damage, and water pollution. The main habitats include the high-altitude lakes and streams in the area, including tributaries that are connected to the Jhelum River. The degradation of water quality brought on by pollution from human settlements, agricultural runoff, and the introduction of exotic species poses a severe threat to T. kashmirensis existence.

Currently, limited targeted conservation efforts focus on the fish species within this region, and many habitat-specific fishes, like T. kashmirensis, lack the resilience needed to thrive without human intervention. A conservation breeding program for the critically endangered fish species Triplophysa kashmirensis, vis-a-vis in and Ex situ conservation efforts critical to ensure the survival of this species. Through the use of low-tech, low-cost conservation techniques by captive breeding and the selective nurturing of healthy broodstock, this effort is going on to restore remnant individuals to their native environments. Efforts to increase in the local population of T. kashmirensis and strengthened ecosystem resilience in its native range. Noninvasive method of DNA extraction for WGS is also going on.

05

ALTERED LIVING CONDITIONS: A CENTURY IN ZOOS. THE CASE OF THE LION-TAILED MACAQUE (*Macaca silenus*).

Dr. Nilofer Begum, Laboratory for the Conservation of Endangered Species, Centre for Cellular and Molecular Biology

Dr. Werner Kaumanns (Lion-tailed Macaque-Research and Conservation, Eschenweg 5, 37130, Gleichen, Germany) and Dr. Govindhaswamy Umapathy (Laboratory for the Conservation of Endangered Species (LaCONES), CSIR Centre for Cellular and Molecular Biology (CCMB), Uppal, Hyderabad 500007, India)

Abstract - Altered living conditions are a key problem for the conservation of nature. It is likely that conditions that conflict with a species' key traits are of special importance. One of the key traits for primates is their social way of living. Life in a zoo is often under extremely altered conditions and thus can be used to investigate the corresponding phenomena. This study investigates the effects of living conditions on the development of the global captive population of the endangered Lion-tailed macaque with reference to its potential for long-term survival and "reserve". Lion-tailed macaques have a long history in zoos covering 119 years, 2,734 individuals, various subpopulations and 366 institutions worldwide. Aim of the study presented is to analyse the patterning of reproduction, population dynamics, and identify effects of living conditions that might establish mismatches with species-typical adaptations. It is based on the international studbook. The results reveal: low reproductive output, low population growth, high infant mortality, large reproductive variance, and overall effects potentially leading to the loss of gene diversity. The study concludes that concepts dealing with the species' adaptive potential must be considered for their appropriate captive management as well as for conservation measures in fragmented wild habitats.

06

QUANTIFYING LOCAL EXTINCTIONS OF WESTERN HOOLOCK GIBBONS FROM NORTHEAST INDIA

Ezra Lawanker Rynjah, Conservation Initiatives

Biang La Nam Syiem, Anush Uthaiah, Divya Vasudev, Varun R. Goswami

Abstract - Western hoolock gibbons (*Hoolock hoolock*) are a species of wild ape, classified as endangered by the IUCN. They are found in Northeast India, Myanmar and Bangladesh. Local populations extinctions have been reported in many parts of their historical range. However, it remains unclear how recent, and to what extent, this loss in population has occurred. In this study, we investigated historical declines of gibbon occurrence across Northeast India. We carried out questionnaire surveys across different villages in Assam, Meghalaya, and Nagaland to determine current and past presence of these animals. We used occupancy models to quantify temporal changes in occurrence across these states, and identify anthropogenic drivers of local extinction. Our results indicate that different states experienced different periods of extirpation. Meghalaya was found to have lost most of their gibbons over 20 years ago, while Nagaland and Karbi Anglong in Assam experienced more recent extinctions. Decreasing gibbon occupancy in Nagaland was correlated with increasing human population and diminishing forest cover, hinting at hunting and habitat loss as dominant anthropogenic drivers for local extinctions in this state. Our study brings to light important information on the local extinction dynamics of India's only species of wild ape.

07

REMNANTS AND RESTORATION: ASSESSING VASCULAR EPIPHYTE COMMUNITIES IN A FRAGMENTED WESTERN GHATS LANDSCAPE

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Pradeeshwar R J, Karunakaran P V, Salim Ali Centre for Ornithology and Natural History, South India Centre of Wildlife Institute of India, Post Anaikatty, 641108, Coimbatore, Tamil Nadu, India

Abstract - Vascular epiphytes are characteristic components of tropical wet evergreen forests, yet remain vulnerable to habitat fragmentation and land-use change. In the Valparai landscape of the Anamalai Range, over a century of plantation conversion has reduced rainforest to scattered fragments, with active restoration efforts underway for nearly two decades. This study examined vascular epiphyte communities across eight fragments of varying sizes and a contiguous forest, comparing 16 actively and passively restored plots while also assessing phorophyte-level drivers of epiphyte richness and abundance. Sampling was conducted in 10×10 m quadrats, documenting epiphytes on trees (GBH >30 cm) up to 10 m height. A total of 56 vascular epiphyte species were recorded, dominated by ferns and Orchidaceae family. Across 844 trees, species richness and abundance correlated positively with tree GBH and height, while canopy cover negatively influenced trunk epiphytes. Actively restored plots showed higher species richness and more favourable structural attributes than paired passively restored plots. However, the combined vascular epiphyte community from all the fragments still differed from that of the contiguous forest. These findings highlight the irreplaceable role of large, intact forest tracts in conserving epiphytic diversity, while underscoring targeted restoration as a complementary strategy.

OS9- CONSERVATION IN SHARED LANDSCAPES

Chairs: Anish Andheria and Tanushree Srivastava

01

ESTIMATING THE COST OF WILDLIFE THAT INDIAN FARMERS PAY

Milind Watve, Independent Researcher

Abstract - Wild herbivores attacking crops is a universal phenomenon, with some India specific angles. The net losses include direct losses in terms of wild animals eating and trampling crops and indirect losses in terms of farmers giving up farming, shifting to suboptimal crops and disinvesting from intensive agriculture when faced with the risk of damage. No rigorous and realistic methods for estimating crop damage have been standardized and validated by agricultural or wildlife researchers which reflects the gross neglect of the problem. There are a handful of intensive, quantitative and reliable studies over small areas on the one hand and state wide extensive data sources with low accuracy and resolution on the other. We use six different approaches to estimate the net agricultural loss due to wildlife in the state of Maharashtra based on different data sources. In spite of the limitations of each method, their convergence increases the robustness of the estimate. The range of damage estimates for Maharashtra alone is between Rs ten to forty thousand crore per annum. The compensation protocols are inefficient and the large cost is almost entirely being paid by poor farmers. This cost needs to be a major concern in the economics of wildlife.

02

TURNING THE TIDE: SHIFTING FISHER BEHAVIOUR TOWARD WHALE SHARK CONSERVATION ALONG KERALA'S COASTLINE

Jithin Jose, Wildlife Trust of India

Abstract - The Endangered whale shark (*Rhincodon typus*), the world's largest fish, is facing threat from accidental entanglement in fishing gears along Kerala, where species occurs seasonally between November to March. A survey to assess fisher knowledge, attitudes & practices towards whale shark conservation revealed that the species was correctly identified by 60% fishers (n=450), whereas 82% were unaware about the ecological significance of its protected status and consequences of accidental landings.

whale sharks are not consumed along the coast, however accidentally landed whale sharks are used as poultry feed. The campaign to change this mind set was initiated in 2017 with fishers, students, forest, animal husbandry, and coastal police department from nine coastal districts through outreach, interagency collaboration, and sensitization. The large- scale sensitisation reached out to fishers (n=192827) and students (n=89266).

The awareness was translated to conservation action when the first rescue of whale sharks was reported from Malappuram in December 2018. Subsequent engagement with the fishers yielded 53 more rescues till February 2026 reflecting the growing community stewardship. Over 200 media stories in seven years have significantly amplified awareness. These findings show that continuous hand holding of communities is essential to bring substantial shifts in their behaviour towards marine megafauna conservation.

03

ETHNOZOOLOGICAL USAGE OF FOREST RESOURCES BY THE TRIBAL COMMUNITIES OF MIZORAM

Rakesh Ch Saha, Pachhunga University College, Mizoram University

Dr. Sushanto Gouda (Wildlife Trust of India), HT Lalremsanga (Mizoram University), Dr. Kaushalendra (Pachhunga University College, Mizoram University), Dr. Anthony J Giordano (S.P.E.C.I.E.S)

Abstract - Humans have shared a great bond with animals and have used it for various purposes like transportation, domestication, cultural and traditional values, etc. Ethnozoological knowledge plays a very important role in sustaining traditional healthcare practices and cultural identity among tribal communities. The present study, conducted during 2023–2024, documents the use of animal by indigenous groups across five regions of Mizoram. A total of 68 respondents, representing different tribes and age groups ranging from 20 to 79 years, were interviewed using a structured questionnaire survey. The investigation recorded 24 animal species utilized for various ethnomedicinal and cultural purposes, belonging to diverse faunal classes including aves, mammals, reptiles, arthropoda, and mollusca. Among the documented species, python fat exhibited the highest use value and was widely reported for treating ailments such as burns, jaundice, diarrhoea, and stomach disorders. The findings highlight the depth of indigenous knowledge systems and their continued relevance in local healthcare. However, the reliance on faunal resources also underscores the need for sustainable management and conservation strategies to balance traditional practices with biodiversity protection

04

UNDERSTANDING THE HUNTERS: TRADITIONAL HUNTING PRACTICES AND PROFILES FROM PUALRENG WILDLIFE SANCTUARY, MIZORAM, INDIA

Antarika Paul, Mizoram University

Sushanto Gouda- Department of Zoology, Mizoram University, Tanhril, Aizawl-796004, Mizoram, India ; Wildlife Trust of India, Sector-8, Noida- 201301, Uttar Pradesh, India ; Vabeiryureilai Mathipi- Department of Zoology, Mizoram University, Tanhril, Aizawl-796004, Mizoram, India; Anthony J. Giordano- S.P.E.C.I.E.S.—The Society for the Preservation of Endangered Carnivores and their International Ecological Study, Ventura, California, USA ;Center for Human-Carnivore Coexistence, Colorado State University, Fort Collins, Colorado, USA ;Center for Collaborative Conservation, Colorado State University, Fort Collins, Colorado, USA

Abstract - In Mizoram, a North-eastern state of India, hunting has prevailed for ages with deep-rooted cultural values. For developing a framework of coexistence between native communities and wildlife, the study herein aims at understanding the hunting pattern, hunters' profiles, and other demographic and socio-economic covariates from Pualreng Wildlife Sanctuary, Mizoram. Herein, we interviewed 157 locals from the four fringe villages of Pualreng WLS and found that 29.94% of the respondents are actively engaged in hunting. The age group that hunts the most was found to be between 41- 60 years (38.30%), and mostly associated with farming (74.46%). Guns were the most preferred hunting tools (93.61%), followed by traps (25.53%), snares (8.51%) and catapults (8.51%). The most hunted species were found to be wild boars (Sus scrofa cristatus) (72.3%) and barking deer (Muntiacus muntjak) (38.30%). Most hunters were found to have a basic education (<5th standard), and hunting was part of retaliatory killing as a result of crop damage, sources of bush meat and medicinal purposes. Winter was the most preferred season and executed by 1-2 hunters in a group. Primary information on hunting practises has proven to be efficient in decision-making and policies for human-wildlife coexistence and sustainable livelihood practises.

05

COMPARATIVE POPULATION GENOMICS OF HIPPOSIDEROS BATS: INFORMING URGENT CONSERVATION STRATEGIES FOR ENDEMIC KOLAR LEAF-NOSED BAT

Tanisha Singh, Ashoka University and Indian Institute of Science (IISc)

Dr. K. Praveen Karanth (Professor, Centre for Ecological Sciences, IISc), Rajesh Puttaswamaiah (Trustee, BCIT), Vivek Premnath Suranse (PhD student, Centre for Ecological Sciences, IISc) and Dr. Anubhab Khan (Assistant Professor, Centre for Ecological Sciences, IISc).

Abstract - The critically endangered Kolar Leaf-nosed Bat (Hipposideros hypophyllus) is a point-endemic species facing extreme extinction risk. To establish a genomic baseline for its conservation, we investigated its genetic diversity, population structure, and evolutionary relationships with other Hipposideros species.
Using ddRAD sequencing data from 59 individuals across three species, we analyzed genome wide SNPs to assess heterozygosity, inbreeding, population structure, and phylogeny. All species exhibited excess heterozygosity (negative inbreeding coefficients) and uniformly negative Tajima's D values, suggesting historical population expansion or purifying selection. PCA and ADMIXTURE analysis resolved three distinct, non-admixed genetic clusters corresponding to each species, confirming their genetic integrity. Phylogenetic reconstruction using NJ and ML approaches further supported species-level distinctions.
These findings provide the first genomic baseline for H. hypophyllus, indicating retained genetic diversity despite its restricted range and genetically distinct population. This information is vital for assessing long-term viability and evolutionary potential, directly informing conservation prioritization and habitat management. Keywords: Kolar leaf-nosed bat, critically endangered, whole-genome sequencing, SNP, population genomics, Hipposideros, conservation genomics, genetic diversity.

06

INTEGRATING BREEDING SITE DISTRIBUTION AND PRE-HARVEST FIRE-RELATED MORTALITY RISK TO GUIDE LEOPARD CONSERVATION IN AGROECOSYSTEMS OF SOUTH GUJARAT, INDIA

Rohit Chaudhary, Department of Wildlife Sciences, Banda University of Agriculture and Technology

Mohamad Navaz Dahya, Aadil Kazi and Isha Patel; Department of Wildlife Sciences, College of Forestry, Navsari Agricultural University;

Abstract - Large carnivores increasingly use agroecosystems as breeding sites, yet there is a paucity of information on their breeding ecology and the risks they face in these systems. In the present study, we aimed to understand the breeding ecology of the leopard and the associated risks in the Navsari district, South Gujarat, using rescue records of 70 cubs from 53 litters (December, 2021– December, 2025). We assessed mean litter size and breeding site distribution using maxent modelling, cub mortality due to pre-harvest burning, and mapped the spatial distribution of potentially risky leopard areas. The detected litter size of leopards was 1.32 ± 0.07 SE. Precipitation seasonality and precipitation in the driest quarter, along with road density and percent of cropland, influenced breeding suitability most. A total of 20 cubs died due to pre-harvest burning. Integrating habitat suitability with mortality intensity revealed that 17.28% of the Navsari district comprises high-risk areas where high breeding suitability overlaps with high cub mortality. The present study highlighted that agroecosystems could be attractive for breeding but simultaneously risky due to cub mortality. Targeted awareness campaigns for farmers and community-based field monitoring prior to burning could be the probable conservation and management actions required.

07

EMPOWERING COMMUNITIES TO PROTECT PANGOLINS: COUNTERING PANGOLIN TRAFFICKING IN INDO-MYANMAR BORDER

Chingrisoror Rumthao- Wildlife Trust of India

Monesh Singh Tomar (Assistant Manager & Officer-in-Charge, Wildlife Trust of India), Jose Louise (Chief Executive Officer, Wildlife Trust of India)

Abstract - Northeast India, particularly the Indo–Myanmar border landscape, remains highly vulnerable to illegal wildlife trade (IWT) due to porous international boundaries, adaptive trafficking networks, and the persistence of traditional hunting practices. Pangolins, the most trafficked wild mammals globally, are under severe pressure in this region, with hunting increasingly linked to organised cross-border trade.

Our project advances a strategic community stewardship approach that embeds conservation within indigenous governance systems, CSOs, youth platforms, and village leadership structures across Manipur and Nagaland. Moving beyond enforcement-centric interventions, we engaged apex indigenous community bodies, village chiefs, clan councils, church leaders, and student organisations through structured dialogues and culturally rooted sensitisation processes. These efforts culminated in formal resolutions banning pangolin hunting, consumption, and trade across more than 300 villages under three apex bodies, including landmark commitments from the Tangkhul and Sangtam Naga communities.

Youth mobilisation served as a catalytic mechanism for behavioural change. Through strategic outreach and the conservation-themed "Pangolin Cup," the project sensitised over 5,000 individuals, fostering ecological awareness and community ownership of pangolin protection. This initiative demonstrates a scalable, culturally grounded model for reducing IWT in socio-ecologically complex regions

OS 10- CLIMATE, HEALTH, AND CONSERVATION

Chairs: Sutirtha Dutta and Abhishek Ghoshal

01

CLIMATE CHANGE MITIGATION IN RANGELANDS: EXAMINING EFFICACY OF AFFORESTATION IN INDIAN GRASSLANDS FOR CARBON SEQUESTRATION

Jobin Varughese, National Centre for Biological Sciences/ Centre for Pastoralism

Mayank Kohli - National Centre for Biological Science, Bengaluru; Anisha Jayadevan -University of Maryland, Baltimore County, USA; Anish Paul - National Centre for Biological Science, Bengaluru; Ameer Favas V. - National Centre for Biological Science, Bengaluru; Jaseem K.P. - National Centre for Biological Science, Bengaluru; Jayashree Ratnam - National Centre for Biological Science, Bengaluru; Mahesh Sankaran - National Centre for Biological Science, Bengaluru.

Abstract - Tree planting has been advocated as a natural climate solution across montane grasslands and savannas, despite the grasslands storing one-third of terrestrial ecosystems' carbon stock, ~90% of which is allocated underground as root biomass and soil organic carbon. Whether such afforestation actually increases above- and below-ground carbon sequestration, and, if so, what environmental covariates drive this increase, has not been quantified in the tropics. We examine above- and below-ground carbon stocks in grasslands and quantify changes in ecosystem C stocks following afforestation.

We quantify above-ground carbon stocks using field-collected vegetation variables and below-ground carbon stocks by analysing soil samples from 66 paired plantation-grassland sites across arid and semi-arid regions of India. Soil carbon is further divided into persistent and labile carbon.

Our primary findings suggest that, as expected, the above-ground component increases in all plantations; however, in several sites, changes in below-ground components are negative, and the consequent ecosystem carbon is minimal at most sites, with some showing a decrease in ecosystem carbon stock. Additionally, the added carbon in plantations may be vulnerable to fire, drought, herbivory, disease, and soil respiration losses. Given the importance of grasslands, the study challenges the effectiveness of afforestation in achieving its intended carbon-sequestration benefits.

02

CLIMATE CHANGE OR AFFORESTATION? ATTRIBUTING FIVE DECADES OF TREE COVER EXPANSION IN THE HIMALAYA

Niranjan Balagopal, Ashoka University

Dr Meghna Agarwala, Ashoka University; Dr Harry Fischer, SLU Sweden; Dr Dil Khatri, SLU Sweden/SIAS Nepal

Abstract - Himalayan ecosystems have undergone substantial land cover change over the past five decades, yet whether tree cover expansion is driven by climate change or plantation management remains poorly understood. We asked whether tree cover increase represents natural succession or threshold displacement via afforestation, and under what edaphic and climatic conditions it occurs. Tree cover change between 1976 and 2025 was quantified across 294 field surveyed plantation and natural forest plots in Himachal Pradesh and Nepal, with tree cover derived from multi temporal Landsat remote sensing and gain trajectories modelled using ordinal logistic regression alongside plot-level soil and topography data. Nearly half the plots supporting tree-cover in 2025 were open or grazing land in 1976. Ordinal regression identified baseline tree cover and soil depth as primary determinants of tree-cover increase; plots with higher 1976 tree-cover showed lower subsequent gain, consistent with saturation of available growing space. Precipitation change was non-significant; growing-season warming predicted gain in plantation plots only. Long term trajectories were governed by soil conditions, initial cover, and plantation occurrence rather than climate. Unlike previous studies, detailed plantation histories enabled direct attribution that tree-cover increase below 3500m in the Himalaya is largely plantation-driven rather than a response to climate change

03

ARID FRONTIERS: WHY BIOGEOGRAPHY MATTERS FOR CLIMATE-VULNERABLE WILDLIFE

Manasi Mukherjee, Independent Researcher

Mitali Mukerji and Angshuman Paul: Indian Institute of Technology, Jodhpur, Rajasthan, Dhriti Banerjee and Indu Sharma: Zoological Survey of India, Kolkata, India

Abstract - Biogeography and phylogeography research in the Indian subcontinent remain undervalued, particularly in arid systems such as the Thar Desert. Often treated as a single ecoregion they are overlooked in global conservation priorities. Using crowdsourced GBIF and eBird data, our work identifies four distinct biotic ecoregions within the Thar, two of which are under significant anthropogenic pressure and support endangered species, underscoring urgent restoration needs1. Contrary to its "barren" perception, the western Thar sustains high winter migratory bird richness, supported by insect detritivore pathways, while resident generalists reduce niche competition2. Extending this framework globally across ten major deserts, we find a consistent pattern: deserts of the Tropic of Cancer exhibit higher migratory richness (ANOVA, $p = 0.003$), whereas those of the Tropic of Capricorn are dominated by sedentary species. This pattern appears driven by broader trophic adaptability in northern deserts, facilitating migratory influx3. Ongoing analyses reveal that long-term trends (1980–2022) in bird richness are shaped more by precipitation, evapotranspiration and vegetation dynamics ($p<0.05$ for 8/30, 7/30 and 8/30 cases respectively) than temperature alone 3/30. These findings highlight that shifts in trophic structure and assemblages expose hidden ecosystem fragility and warrants desert-specific interpretation when assessing vulnerability and sustainability under climate change.

04

WILDLIFE CONSERVATION WITH ONE HEALTH APPROACH: CURRENT SCENARIO BASED ON FIELD RESEARCH

Bahar Baviskar, Society for Wildlife Conservation, Education and Research

Abstract - Society for Wildlife Conservation, Education and Research (Wild-CER) is dedicated to advancing ecological sustainability through integrated wildlife conservation with focus on one health approach including scientific investigation and community education.

We have especially focused on the investigation of wildlife diseases, which pose significant threats not only to animal populations but also to ecosystem stability and human health. Emerging diseases such as rabies and canine distemper in carnivore highlight the complex interconnections between species and habitats.

Wild-CER's initiatives combine the field investigations for disease surveillance focused on rabies and canine distemper, mitigate transmission through mass vaccination and promote awareness among local communities. Wild CER conducted the disease surveillance with focus on rabies and canine distemper in tiger reserves like Tadoba Andhari Tiger Reserve and Valmiki Tiger Reserve. While spreading awareness among the local communities through educational outreach we prepared the outreach material and training modules in the local language to make it more effective and also to strengthens public engagement and fosters stewardship.

Through the multifaceted one health approach, we demonstrated that addressing threat of wildlife diseases is not only a veterinary challenge but also a cornerstone of effective conservation and ecological balance which need multisectoral and multidimensional collaboration.

05

ONE HEALTH DIGITAL PLATFORM FOR FREE-ROAMING DOG ENUMERATION, INDIVIDUAL IDENTIFICATION, VACCINATION MONITORING AND BITE-RESPONSE SUPPORT

Harish Kumar Tiwari, IIT Guwahati

Ganesh Daimari, Alakesh Bezbaruah; Affiliation: JH CreIndia Foundation, Bhetapara, Guwahati, Assam, India

Abstract - Background: Accurate enumeration and longitudinal identification of free-roaming dogs are essential for planning rabies vaccination, animal birth control, post-bite risk assessment, and humane population management. CreIndia digital One Health platform integrates decision making based on enumeration, identification, vaccination and sterilisation tracking, and bite-response support can overcome labour intensive conventional methods.
Methods: The application supports photographic capture-recapture surveys using mobile devices to record dog photographs, GPS location, and descriptive metadata. Each dog is assigned a unique identity, enabling repeat sightings to be linked across survey rounds. Capture histories can be exported as CSV files for analysis in Program MARK or SuperDuplicates. The backend dashboard supports data validation, monitoring, mapping, and retrieval of dog-level records. A public-facing version also allows users to photograph a biting dog, enabling verification of prior vaccination status, vaccination date, and the nearest anti-rabies vaccination centre.
Results and Conclusions: The platform enables standardised, paperless, location-linked enumeration, improves individual recognition, and integrates vaccination, sterilisation, and bite-response functions. It strengthens evidence based dog population management, rabies control, and rapid public health decision-making in endemic settings.

06

LOSS AND GAINS IN MANGROVE: A MULTI-DISCIPLINARY LONG-TERM EVALUATION OF POST-TSUNAMI MANGROVE ECOSYSTEM RECOVERY IN THE ANDAMAN AND NICOBAR ISLANDS

Nehru Prabakaran, WII

Anoop Raj Singh1,3, Thirumurugan V. 1,4, Sharad Bayyana1, Mayur Fulmali1,2, Sohom Seal1, Sneha Pandey1, Shamna K.T. 1,2 Co-author Affiliations: 1 - Wildlife Institute of India, Dehradun 2 - Academy of Scientific and Innovative Research 3 – Department of Environmental Science, Gurukula Kangri (Deemed to be University), Haridwar 4 – Department of Botany, Madras Christian College, Chennai

Abstract - The 2004 tsunami, and subsequent coastal geomorphological changes have inflicted a large-scale loss of mangroves across the Andaman and Nicobar Islands (ANI). Through a multi-disciplinary approach, we assessed the resilience and long-term recovery of mangrove flora, fauna, and ecosystem services across ANI during 2004 – 2025. Mangrove species composition and ecosystem services have significantly changed between pre and post tsunami. The landward mangroves were most impacted by the sea level change compared to the seaward mangroves. While, mangrove crab species richness significantly reduced at uplifted sites (n=37) than the subsided sites (n=54). Sites with surviving vegetation, and high freshwater inputs showed faster recovery, while sites with higher vegetation loss and less fresh water input showed poor recovery. Species with larger propagules (Rhizophora spp. and Bruguiera spp.) dominated the early succession, while species with smaller propagules (Avicennia spp., and Sonneratia spp.) dominated the later succession. In addition to scientifically driven plantation efforts, involvement of local community and controlling the herbivory by Spotted Deer and the domestic cattle are critical for natural recovery of mangroves. Overall, monitoring this long-term ecological recovery of mangroves indicated a high resilience of the ecosystem to the large scale natural disasters.

07

INTERACTIVE EFFECTS OF GRAZING AND ELEVATION ON BELOWGROUND FUNCTIONAL TRAIT VARIATION IN HIMALAYAN FOREST GRASSLAND MOSAICS

Nasir Ul Islam, University of Kashmir, Hazratbal, Srinagar

Meghna Krishnadas (National Centre for Biological Sciences, Bangalore, Karnataka – 560065), Manzoor A Shah (Department of Botany, University of Kashmir, Hazratbal Srinagar, J&K – 190006)

Abstract - Functional trait variation in grasses plays a crucial role in determining ecosystem processes and responses to environmental gradients and disturbances. This study examined how grazing influences belowground functional traits of grasses along an elevational gradient. We sampled three grassland sites across low, mid, and high elevations, with each site comprising of paired grazed and non-grazed plots. Key belowground traits, including specific root length (SRL), root tissue density (RTD), and root dry matter content (RDMC), were quantified. Our findings indicate that grazing significantly alters trait expression in grasses, reflecting shifts in plant resource-use strategies. Grazed plots generally exhibited traits associated with acquisitive strategies, such as higher SLA and SRL, whereas non-grazed plots showed relatively conservative traits, including higher tissue density. However, these patterns were not uniform across elevations, suggesting that environmental constraints modulate grazing effects on plant functional traits.
Overall, the interaction between grazing pressure and elevation highlights the context-dependent nature of trait responses in grasses. This study underscores the importance of incorporating both biotic disturbances and abiotic gradients in trait-based ecological studies and provides insights into grassland functioning under varying environmental conditions.

POSTERS

POSTER 10, JULY 2026

01

INVESTIGATING NEGATIVE ECOLOGICAL IMPACTS OF APIS MELLIFERA GLOBALLY

Aanchal Chaudhary, Azim Premji University, Bhopal

Author: Alok Bang, Affiliation- Azim Premji University, Bhopal, Corresponding author- alok.bang@apu.edu.in

Abstract - Bees are the vital pollinators, an ecosystem service ensuring pollination of 85% flowering plants worldwide and 35% of global food production. Bees produce more than $15 billion in crop production annually. European honey bee (Apis mellifera) have been moved globally by humans intentionally and unintentionally, in the past 200 years. In this study, we have reviewed and collected data on negative ecological impacts of Apis mellifera which have become invasive in many parts of the world. The native range is Europe, Middle East and Africa.
We analyze primary data for economic cost and spatiotemporal from Invacost database. Most publications between 1995-2015 reported a total economics cost of 4.25 billion U.S. dollars. The cost mainly characterised into two types: damage and management. Primarily agriculture and authorities stakeholder sectors are affected. Ecological impact and spatiotemporal distribution data from GIDIAS database. Studies published between 1993-2020, ecological impacts have been observed on services like pollination, seed dispersal, food and material.
Our study helps in synthesising knowledge on the negative impacts of a species that is mostly viewed positively, and addresses some pertinent questions around sustainable agricultural practices. Where the economical benefits can not compensate for ecological costs. Studies like ours address UN Sustainable Development Goal 15 (Life on Land), which is fundamental to maintaining ecological balance.

02

BURROWING ON BORROWED TIME: IMPACT OF TOURISM ON GHOST CRABS IN THE EAST COAST

Abhishree M K, Gandhi Institute of Technology and Management, Visakhapatnam

Harish Prakash,Rohan Kumar

Abstract - Ghost crabs (*genus Ocypode*) are the ecosystem engineers of intertidal ecosystem. An important characteristic of ghost crab is the construction of voluminous and semi-permanent burrows in the sand. Burrows protect crabs from high tides, predators, extreme temperatures, and serve as sites for mating and reproduction. Ghost crabs have previously been used to assess the impact of human activities on beach and dune biota and ecosystems. My research advances such studies by specifically examining how the horn-eyed ghost crab makes daily burrowing decisions under changing abiotic conditions and dynamically changing human presence. Specifically, it investigates the impact of tourism on the burrowing behavior of ghost crabs in intertidal ecosystems. Data collection carried out by focal sampling on the beach, recording crab activities during burrowing. I also recorded parameters such as time of the day, the diameter of the burrow, pattern of sand dispersal, burrow distance from the tide line, and the presence of threats from humans, dogs, and crows near the burrowing crabs. Preliminary results suggest that the duration of burrowing increases with an increase in human threat, time from sunrise and sand dispersion angle. Overall, the increased burrowing time will result in crabs facing higher cost in beaches with tourists.

03

SPECTRAL LIBRARY GENERATION AND DIFFERENTIATION OF MANGROVE AND CO-OCCURRING INVASIVE ALIEN PLANT SPECIES

Ajaydas Poolatt, Central University of Tamil Nadu

Kumar Arun Prasad; Department of Geography, School of Earth Sciences, Central University of Tamil Nadu, Thiruvarur, Tamil Nadu, India

Abstract – Although hyperspectral indices (HSI) and leaf functional traits (LFT) improve species discrimination and ecosystem assessment, a key gap remains in using them to distinguish native mangroves from invasive alien plant species (IAPS). This study aims to compile a spectral library of native mangroves and co-occuring IAPS to identify the optimal spectral indices to effectively distinguish between them. A total of 39 spectral indices were calculated to represent 1) Structural traits, 2) Photosynthetic pigments and light use efficiency, and 3) Water related traits. A Kruskal-Wallis test followed by Dunn's-Bonferroni posthoc test identified HSI with significant differences (selected: 23 indices), which were reduced using Principal Component Analysis (selected:16 indices) and Recursive Feature Elimination using cross-validation (RFECV) (selected: 4 indices). Separability is quantified using Jeffries-Matusita distance. Red edge vegetation stress index (RVSI), Normalised difference red edge (NDRE), and Fluorescence ratio blue/red (FR-b/r) related to Photosynthetic pigments and light use efficiency and Normalised difference lignin index (NDLI) related to structural traits were found to be optimal for species differentiation. The findings can support targeted remote sensing applications for invasive species monitoring and coastal biodiversity management.

04

GUILD-LEVEL RESPONSES OF GRASSLAND BIRD COMMUNITIES TO HABITAT EDGE TYPES IN FRAGMENTED SEMI-ARID LANDSCAPES

Anish Patil, Bharati Vidyapeeth Institute of Environment Education and Research

Dr. Sougata Sadhukhan, Assistant professor, BVIEER, Pune

Abstract – Fragmentation of Indian semi-arid grasslands significantly alters avian community structure. We investigated how edge type, distance from edge, and grazing intensity influence specialist and generalist bird guilds in the Dive Ghat - Saswad landscape, Pune. Using stratified sampling across three topographic strata, we conducted 73 line transects. Data were analyzed using Distance Sampling and Generalized Linear Mixed Models to identify primary habitat drivers. Analysis revealed that edge type is the dominant predictor of community assemblage. Plantation boundaries were most detrimental, causing a 63.5% loss in specialist abundance compared to interior habitats. Distance from edge emerged as a critical guild-level trait, with specialists exhibiting significantly higher sensitivity than generalists. We conclude that edge type is a more powerful driver than local habitat factors. Effective conservation requires landscape-scale interventions rather than isolated patch management. We recommend modifying plantation boundaries and managing agricultural zones as transition habitats to mitigate specialist exclusion and maintain the ecological integrity of fragmented semi-arid grasslands.

05

INFLUENCE OF RIPARIAN BUFFER AND VEGETATION QUALITY ON MICROCLIMATIC CONDITIONS AND COMMUNITY PATTERNS OF SMALL MAMMALS AND BIRDS

Aparna A R, Salim Ali Centre for Ornithology and Natural History (SACON)

Aparna Adiyara Raveendranathan 1, Ramesh Tharmalingam 2,3 and Riddhika Kalle 1,3 . 1Division of Environmental Impact Assessment, Sálim Ali Centre for Ornithology and Natural History, Anaikatty (POST), Coimbatore, 641108, Tamil Nadu, India. 2Division of Conservation Ecology, Sálim Ali Centre for Ornithology and Natural History, Anaikatty (POST), Coimbatore, 641108, Tamil Nadu, India. 3Centre for Functional Biodiversity, School of Life Sciences, University of KwaZulu Natal, Pietermaritzburg, South Africa. *Corresponding Author E mail: aparnaadiyara@gmail.com*

Abstract - Riparian zones provide high-quality habitats to support diverse bird and small mammal communities. This study explores patterns of community composition across riparian zones with varying levels of fragmentation and compares microclimatic conditions between riparian core and edge. We conducted sign surveys, habitat assessment, 180 fixed-width point counts with a 50 m radius, and camera trapping at 20 riparian patches in Mudumalai Tiger Reserve from October 2025 to April 2026. We recorded nine species of small mammals from 500 trap-nights and 117 bird species. We measured the temperature and relative humidity using Miggo-Blue-S data loggers placed in the riparian core and edge habitats. Avian species richness and relative frequency increased with riparian tree height and GBH while small mammal richness increased at 40-50 m riparian buffer width. We found that the riparian core maintained relatively stable microclimatic conditions with reduced temperature fluctuations compared to edges. The hourly minimum and maximum temperatures varied between the riparian core and the edge habitats. We conclude that contiguity of riparian patches and vegetation quality are vital microclimate refugia within protected areas for maintaining sustaining biodiversity when exposed to extreme climate changes

06

POPULATION STATUS OF ANDAMAN EDIBLE NEST SWIFTLET IN THE ANDAMAN AND NICOBAR ISLANDS

Arathi J, Wildlife Institute of India

Dr. R. Suresh Kumar, Scientist -F, Wildlife Institute of India; Dr. Nehru Prabakaran, Scientist - D, Wildlife Institute of India.

Abstract - Objective: The Andaman and Nicobar Islands serve as a sanctuary for numerous endemic species, including the Andaman Edible-nest Swiftlet (Aerodramus fuciphagus inexpectatus). This small, cave-dwelling bird, relies on echolocation to navigate the pitch-black interiors of limestone caves by emitting high-frequency clicks. Our study aimed to estimate the population of the Andaman Edible-nest Swiftlet across the Andaman and Nicobar Islands, focusing on the Karst cave ecosystems. Methods: We conducted a comprehensive survey, including literature review, community engagement, and extensive fieldwork over three seasons from May 2023 to April 2025. A total of 280 caves were surveyed—45 in Nicobar and 235 in Andaman. Manual and photographic documentation methods were employed to count nests, with GPS coordinates recorded for each site. Results: Our findings revealed a total of 6,309 nests, equating to approximately 12,618 birds. Of these, 3,444 nests were found in natural caves, while 2,865 nests were located in human-made structures. This suggests that the species has adapted to anthropogenic environments, with human-made structures serving as viable habitats. The study highlights the importance of community involvement and continued monitoring to support the long-term conservation.

07

URBAN VS RURAL: TAXONOMIC AND FUNCTIONAL DIVERSITY OF AVIAN COMMUNITIES IN SIKKIM, EASTERN HIMALAYA.

Bhumika Sharma, Sikkim University

Arnab Banerjee, Department of Zoology, Sikkim University, Sikkim, India

Abstract - Urbanization is a major driver of biodiversity change, with its effects increasingly evident in the Eastern Himalaya, a global biodiversity hotspot where birds serve as sensitive indicators of environmental change. This study assessed and compared taxonomic and functional diversity of avian communities along a rural-urban gradient in Sikkim, Eastern Himalaya, India. Bird surveys were conducted in 2024 using the point count method across six sites classified as rural habitats (RH) and urban habitats (UH), with three sites in each habitat category. A total of 1124 individuals representing 87 species from 37 families were recorded. Species richness and the Shannon diversity index were higher in RH than in UH. Beta diversity and similarity indices indicated differences in bird community composition between RH and UH, supported by cluster analysis. Feeding guild composition varied between habitats, with insectivorous species dominating RH, whereas omnivorous species dominated UH. Functional trait analysis showed higher functional richness and functional dispersion in RH, while UH showed higher functional evenness, indicating functional homogenisation driven by environmental filtering. Urbanization reduces both taxonomic and functional diversity and drives biotic and functional homogenisation in bird communities, highlighting the importance of urban green spaces and habitat heterogeneity for bird conservation.

08

HOW DOES SOIL MOISTURE SHAPE PLANT COMMUNITY PATTERNS IN HIGH-ELEVATION WETLAND MEADOWS?

Charu Sharma, Nature ConservationFoundation

Mayank Kohli – National Centre for Biological Sciences; Munib Khanyari – Nature Conservation Foundation, Institut de Ciència i Tecnologia Ambientals de la Universitat Autònoma de Barcelona (ICTA-UAB), Barcelona, Spain

Abstract - Wetlands of Changthang (Ladakh) are unique high-elevation ecosystems valued culturally and ecologically. They act as carbon sinks, are critical water sources and foraging grounds for pastoral communities. However, they are under pressure from intensified tourism, land-use change and warming climate; all of which could lead to wetland alteration. To further investigate the impacts of shrinkage or expansion of wetlands on the surrounding meadows, we examined the role of soil moisture in regulating vegetation structure of marshes and below-ground carbon stock. We analyzed the contemporary vegetation structure and species diversity at micro-scale from three wetlands using 0.5 m quadrats (n= 180) following the line-intercept method. We recorded over 30 species of vascular plants. Preliminary analysis shows that with distance from the wetland and reduction in soil moisture, assemblages of Kobresia-Carex Oxytropis transition to Leymus-Stipa-Polygonum spp.. Additionally, the wetland's fluvial system and presence of saltmarsh alter community patterns, with notable differences across the sites. Soil carbon and nitrogen analyses are ongoing, and we predict that soil carbon stocks will increase with moisture content. These findings establish critical baseline data for predicting wetland vegetation responses to environmental change, consequential for both people and wildlife.

09

RIPARIAN VEGETATION OF THE HIRAN RIVER OF GIR NATIONAL PARK AND SANCTUARY: AN ECO-FLORISTIC STUDY WITH SPECIAL REFERENCE TO CARBON SEQUESTRATION

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Dr. Paurav Mehta

Abstract – Riparian forests play a critical role in carbon storage and ecosystem stability in tropical dry deciduous landscapes. This study quantified diversity, biomass and carbon sequestration across 40 riparian plots in the Gir landscape (Nov Dec, 2025). Tree girth, diameter, height and wood density were used to estimate biomass and carbon stocks at the individual level, and diversity indices were computed at the plot level.

Carbon distribution was highly skewed (Shapiro–Wilk, $p < 0.001$) with significant variation among species (Kruskal–Wallis $x^2 = 1531.6$, $p < 0.001$). Tree diameter showed a very strong positive association with carbon storage (Spearman's $= 0.96$, $p < 0.001$), and log–log regression indicated that diameter alone explained 94.9% of the variation in carbon stock ($R^2 = 0.95$, $p < 0.001$). Carbon contribution was strongly size-asymmetric, with the largest 10% of individuals accounting for 61.96% of total carbon. Shannon diversity ranged from 1.23 to 2.56 (mean = 2.02) and was not significantly correlated with carbon stock (= 0.13, $p = 0.42$).

These findings highlight that carbon storage in Gir riparian forests is structurally regulated and disproportionately dependent on large trees, underscoring the conservation importance of mature individuals for climate mitigation.

10

LINKING CHARCOAL PROXIES TO VEGETATION: A MODERN REFERENCE DATASET FROM TROPICAL INDIA

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Abstract – Fire regimes are governed by interactions between climate and vegetation over long timescales, yet such dynamics remain poorly understood in tropical ecosystems, particularly in India. This gap limits our ability to interpret the ecological role of fire and its role in shaping wildlife habitats. Here, we develop a modern charcoal reference dataset for tropical vegetation from southern India to improve reconstructions of fire–vegetation interactions. Forty plant species representing trees, shrubs, grasses, and sedges were experimentally charred at multiple temperatures to examine variations in charcoal morphology and morphometry. Additionally, Fourier Transform Infrared (FTIR) analysis was conducted on 12 representative species across temperature gradients to assess spectral responses. Results show that charcoal morphology and morphometric parameters reliably distinguish plant functional groups. In contrast, combustion temperature strongly affects charcoal yield and FTIR spectral signatures. These findings demonstrate that charcoal can be used to infer both fuel type (plant groups) and burning conditions. This study provides a critical baseline for reconstructing the fire–vegetation interactions in tropical deciduous ecosystems. By improving proxy interpretation, it advances understanding of fire–fuel dynamics and their temporal changes, with important implications for ecosystem and wildlife management in fire-prone landscapes such as savannas and dry deciduous forests.

11

TIDE TALES: DAILY FLUCTUATIONS IN SEDIMENT DEPOSITION/REMOVAL AND THEIR IMPLICATIONS FOR GHOST CRAB BURROW DENSITIES ON THE VISAKHAPATNAM COASTLINE

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Abstract - Coastlines are dynamic, with day-to-day changes due to sediment deposition and removal. Various factors exacerbate these processes, ranging from natural factors such as tides driven by the lunar cycle to anthropogenic coastal development. These changes are bound to disrupt the daily lives of the intertidal organisms. Conventionally, coastal erosion (sediment removal) and accretion (sediment deposition) have been examined using long-term remote sensing satellite data. Very few studies have examined these changes at a finer temporal scale through on-site visits and investigated how they impact the intertidal keystone species, the ghost crab (Genus Ocypode). We asked how the beach slope and sediment characteristics impact sediment deposition and removal, and then examined how these daily changes affect ghost crab burrow densities. An increase in sediment bulk density led to increased average sediment deposition (or) removal, while an increase in sediment's water-holding capacity % explained the variation. Finally, an increase in sediment deposition increased ghost crab burrow densities. In other words, sites experiencing sediment removal had fewer crab burrows. These results suggest that fine-scale temporal changes affect the daily decisions of intertidal organisms, and that coastal development that causes large-scale disruption in sedimentation must be assessed to protect the coastal ecosystem.

12

SEASONAL VARIATION IN SPIDER FUNCTIONAL DIVERSITY AND ITS ENVIRONMENTAL DRIVERS IN THE TROPICAL DRY FORESTS OF THE ARAVALLI MOUNTAIN RANGE, INDIA.

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Abstract - Spiders, as dominant arthropod predators, play an important role in ecosystem stability, and their functional diversity explains how ecological roles shift across habitats and seasons. This study examined seasonal variation in spider functional diversity and the effects of environmental variables on spider traits and community structure in the tropical dry hilly forests of the southern Aravalli range, Udaipur, Rajasthan, India. From November 2023 to October 2024, spiders were sampled across three seasons using 30 randomly distributed 10 × 10 m quadrats in and around Sajjangarh Wildlife Sanctuary. Species were assigned functional traits, 11 variables were measured seasonally, and multivariate functional trait analyses were performed. A total of 152 species from 95 genera and 23 families were recorded, with the highest richness in the monsoon (n = 120). Functional dispersion was highest in the monsoon (0.304 ± 0.008) and lowest in summer (0.229 ± 0.017; $p < 0.001$). Functional beta diversity peaked between monsoon and winter ($\beta = 0.376$). RLQ axes explained 77.70% covariance, and hypervolume was largest in the monsoon (21.51) with 31.2% overlap with summer. SEM confirmed a strong negative temperature effect on functional dispersion ($\beta = -0.0041$, $p = 0.0016$), highlighting the need for long-term functional monitoring.

13

ASSESSING LONG-TERM SHIFTS IN POLLINATOR COMMUNITIES VISITING INTENSIFYING COFFEE GROWING LANDSCAPES

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Abstract - Nearly 75% of our global food crop species depend on insects for pollination. Traditional coffee agroforest systems of Kodagu offer diverse nesting habitats and floral resources for wild pollinators, while also benefitting from them. However, the coffee agroforestry in Coorg is shifting from traditional management practices to more intensified practices. This along with degrading forest habitats pose a threat to the pollinators. In this study we aimed to assess the changes in pollinator diversity and their visitation rates to coffee (Coffea canephora) over the past two decades. To do this, we observed pollinator visits to coffee flowers.
We found that mean visits per plant by Apis dorsata have reduced significantly from 33.2 to 3.5. While mean visits per plant of Apis cerana remained relatively stable, visits by Tetragonula sp. have increased from 8.7 visits to 18.22. Particularly, the sharp decline in A. dorsata, a primary pollinator of coffee, was corroborated by reduction in nest occurrences in comparison to previous observations. Our study highlights a shift in the pollinator community present in coffee agroforests, with one of the major pollinators showing a steep decline. We are looking to understand the potential drivers for this shift.

14

POPULATION STATUS, NESTING ECOLOGY AND THREATS OF RIVER ISLAND NESTING BIRDS IN NATIONAL CHAMBAL SANCTUARY,INDIA

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Abstract - The National Chambal Sanctuary represents a critical riverine ecosystem that supports breeding populations of river island-nesting birds. These species rely on river islands for nesting, which provide safety from predators and disturbance. To assess population status, nesting ecology, and threats of key species, the surveys were conducted in the morning hours. 2-3 observers scan the entire island area. After a total of 7 islands that were surveyed, we found 219 nests and 926 individuals of island-nesting birds. Species-specific habitat preferences were evident: Indian Skimmer selected large dry sandy islands and hard pebbly sandy islands, whereas Small Pratincole preferred large dry sandy islands. In contrast, River Lapwing exhibited a broader habitat use and was recorded across all different island types. This highlights the importance of habitat heterogeneity in sustaining diverse nesting assemblages. However, nesting habitats are increasingly threatened by anthropogenic pressures, assessed by a 3m circular plot around nests, mainly including sand mining (25%), cattle trampling (30%), and predation by feral dogs and crows (20%), which negatively impact breeding success. The study emphasizes the need for targeted conservation interventions, including protecting key nesting islands, regulating extractive activities, and community-based monitoring, to ensure the long-term persistence of these specialized riverine bird species.

15

POSITIONING THE WHALE SHARK AS A FLAGSHIP SPECIES IN GOA: INSIGHTS FROM A STAKEHOLDER KNOWLEDGE, ATTITUDES, AND PRACTICES (KAP) ASSESSMENT

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BC Choudhury (PI Marine Projects ,Wildlife Trust of India), Sajan John (Co-PI Marine Projects ,Wildlife Trust of India), Saymanti Bandyopadhyay (Campaign Division Head, Wildlife Trust of India), Aishwarya Menon (Programme officer, Wildlife Trust of India), Jithin Jose (Field officer, Wildlife Trust of India)

Abstract - Goa's 194km coastline supports rich marine biodiversity exploited by fishing and non-fishing sectors. The endangered Whale shark(Rhincodon typus) faces threats like accidental entanglement, boat strikes, and plastic pollution, yet remains absent from local conservation discourse. This study provides baseline to inform targeted outreach strategies for whale shark conservation in the state. A Knowledge, Attitude, and Practices(KAP) survey (n=296)assessed fishers(n=284) and other stakeholders(n=12), including Forest and Fisheries officials, Researchers, NGO's and Media.

Findings reveal moderate awareness among fishers, with 64%correctly identifying the species. Although 92%expressed willingness to release entangled whale sharks, this is constrained by gear loss, poor reporting mechanisms, and low awareness of compensation schemes(12%). Participation in conservation was minimal(5%), reflecting an awareness–action gap. However, 74%are willing to report future sightings. High smartphone use(90%), particularly WhatsApp, presents strong outreach potential.

Results highlight the need for localized monetary compensation to offset gear loss incurred while releasing entangled whale sharks, strengthened policymaker coordination to streamline reporting and ensure effective implementation of conservation and compensation scheme, and community empowerment to encourage whale shark conservation, fostering stewardship and pride, thereby positioning the whale shark as flagship species.

16

HABITAT FACTORS AND TRAITS SHAPE PLANT-POLLINATOR INTERACTIONS IN A SEMI-ARID LANDSCAPE

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Diana Michael, Shivani Krishna

Abstract - Plant-pollinator interactions form a key role in plant reproductive success and ecological processes. Species-level plant-pollinator interaction is generally used to assess plant community stability. However, plant-pollinator interaction at the individual plant level, especially for keystone species, is less explored. In this study, we examined the role of habitat and floral characteristics in plant-pollinator interaction at the level of individual Maytenus senegalensis plants, one of the dominant species in the semi-arid region of the Aravalli Hills. Flower production, nectar sugar concentration, and flower diameter were quantified, along with environmental parameters such as soil moisture, distance to the habitat edge, and density of co-flowering conspecifics.

We found substantial variation in reproductive investment among individuals, with evidence for a trade-off between flower number and nectar concentration. Increased flower production was associated with reduced reproductive success, likely due to higher within-plant visitation and geitonogamy. Dipterans were responsible for maintaining network structure, and Eristalinus and Apis were the dominant visitors. The presence of co-flowering conspecifics reduced pollen deposition, indicating interactions among neighbouring plants. Individual plants showed some degree of interaction specialization, and perturbations affecting highly connected individuals had disproportionate effects on network structure and stability.

17

UNDERSTANDING THE ROLE OF NEIGHBOURHOOD EFFECTS IN SHAPING FRUGIVORY AND SEED PREDATION DYNAMICS

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Abstract - Frugivory and animal-mediated seed dispersal play a pivotal role in driving plant evolution and diversification at a global scale. Frugivory is influenced by both the characteristics of individual plants (such as plant and fruit traits) and by the neighbouring plants. Additionally, a transition in the structure of frugivore communities, from dominance of seed dispersers to seed predators, could impact the fruit-removal patterns of dependent plant species. In this study, conducted in a semi-arid community in the Aravalli Range, northwestern India, I estimated the specific contribution of local spatial plant neighbourhoods to frugivory rates and pre-dispersal seed predation in a fleshy-fruited plant species (Grewia tenax). Interactions between frugivores (comprising 12 bird species) and Grewia tenax began at fruit ripening and continued until fruit senescence, with visitation rates ranging from 0.19 to 1.58 (/5min). Frugivory rate showed a positive relationship with the abundance of conspecific fruiting neighbours, and the large variation in visitation between plants could be partly explained by their spatial position, crop size, and fruit traits. Overall, these results suggest that there may be an optimal neighbourhood diversity structure that simultaneously promotes spatial escape from seed predation while maintaining sufficient attraction for frugivore visits.

18

HARMONY AT HEIGHTS? SPATIO-TEMPORAL INTERACTIONS BETWEEN MESOCARNIVORES ACROSS A STRESS GRADIENT IN THE HIGH HIMALAYA

Manjot Kaur, Nature ConservationFoundation

Abstract - Species interactions are complex and dynamic. A nuanced understanding of species interactions can help understand factors shaping species assemblages and communities while also providing baseline ecological information for conservation. Our study contributes to this emerging knowledge by focusing on spatio-temporal interactions among mesocarnivores under varying ecological stress. High mountain ecosystems are often characterised by low productivity, where resource limitations play a crucial role in shaping community dynamics. In such environments, the stress gradient hypothesis predicts that species interactions become more facilitative (or neutral) under increasing environmental stress. This framework provides a useful lens to examine how mesocarnivore interactions may shift under varying stress levels. We analysed the patterns of interaction between Vulpes vulpes (red fox) and Martes foina (stone marten), under varying stress levels across 14 sites covering c.31,000 sq.km. The species interaction factor (SIF) ranged from 0.98 to 1.14 across the 14 sites indicating neutral to positive or non-significant negative spatial association. Activity pattern also highly overlapped regardless of stress levels. The largely neutral patterns observed highlight the need for further research into ecological and behavioural processes that may underlie mesocarnivore co occurrence in resource-stressed landscape.

19

CAVITY-RICH OPEN HABITATS ARE THE KEY DETERMINANT FOR THE ENDEMIC FOREST OWLET OCCUPANCY AND REPRODUCTION IN THE NORTHERN WESTERN GHATS

Kaushalkumar Ganeshbhai Patel, Wildlife Conservation Society - India

Anant Pande (WWF-India), Vishnupriya Sankararaman, Dinesh Chaudhary, Harsh Patel (WCS-India)

Abstract - The Forest Owlet Athene blewitti is a rare, endangered, India-endemic owl rediscovered in 1997 after 113 years. We conducted systematic surveys in the Dangs district, in northern Western Ghats (November 2024 to June 2025), using pilot-informed, non-random sampling across 164 one-square-kilometer grids and four independent field visits. In total, 123 grids were occupied and 54 were confirmed breeding sites - presence of at least one juvenile. Using multi state occupancy models with 12 habitat covariates, we estimated territory occupancy and reproduction probabilities. The best occupancy model produced a high estimated occupancy of Ψ^1 = 0.974 (±0.044 SE), while reproduction, given occupied, was Ψ^2 = 0.660 (±0.070 SE). Slope and cropland proportion most strongly influenced detection probability, whereas cropland and tree cavities were most informative for occupancy, tree cavities most strongly affected reproduction, indicating cavity availability as a critical ecological requirement. Overall, occupancy and reproduction increased with greater tree-cavity availability and cropland presence, but higher mean slope reduced occupancy. Field observations of over 200 mature individuals including 55 breeding pairs and 104 juveniles; brood size 1.89 (±0.10 SE), suggest a global conservation stronghold. These findings underscore the urgent need to protect cavity-rich habitats within the human–agriculture landscape for species conservation.

20

URBAN ECOLOGY OF GREY LANGURS: EXPLORING APOSSIBILITIES FOR A COEXISTENCE

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Abstract - Urban expansion across India has increasingly brought Grey Langurs or Hanuman langurs (Semnopithecus entellus) into close human proximity, resulting in rising incidents of conflict, yet their ecology in urban populations remain understudied. Anthropogenic landscapes pose risk of accidents, electrocution, dog attacks, injuries, and health complications and occasionalhuman conflict.This study integrates spatial ecology and conflict assessment using focal troop observations, GPS tracking, rescue records, and behavioural data in Vadodara and Ahmedabad cities of Gujarat, India. Further, the home ranges were estimated using MCP, while day ranges and conflict hotspots were mapped using QGIS.Results indicate that anthropogenic food subsidies do not significantly influence day range, suggesting that intrinsic habitat features and natural resource availability are more important drivers of movement. However, poor waste management and anthropogenic feeding increase interaction frequency that can increase possibility of a conflict. Comparative insights from Vadodara and Ahmedabad highlight key spatial and anthropogenic drivers of conflict. The study is ongoing and will further explore strategies for fostering peaceful coexistence between humans and langurs.The graphical summaries and spatial mapping of rescue hotspots shall unravel critical risk factors and enable targeted mitigation efforts for reducing human-langur conflicts.

21

INVESTIGATING THE FORAGING AND HABITAT ECOLOGY OF INSECTIVOROUS BATS IN URBAN AND PERI-URBAN DELHI USING ACOUSTIC SAMPLING

Nakul Shokeen, Central University of Haryana

Muhammedmaaz Mukardamwala (Nature Conservation Foundation), Seerat Jahan (Zakir Husain Delhi College, University of Delhi, Rohit Chakravarty (Nature Conservation Foundation, Bat Conservation International, Centre for Wildlife Studies)

Abstract – Urban ecosystems, despite their extensive alterations, can support significant biodiversity, including the ecologically important yet often misunderstood taxa such as bats. In Delhi, several bat species roost within archaeological monuments making these spaces an important yet conflict-prone interface between cultural heritage and urban wildlife. Delhi's archaeological sites host some of the largest urban insectivorous bat colonies in India whose ecosystem services across different urban habitats needs to be understood. Our study focuses on quantifying the ecosystem services of these bats in controlling agricultural pests. We used passive acoustic monitoring to quantify bat activity and foraging behaviour in urban, woodland, and agricultural habitats within Delhi–NCR. Ultrasonic echolocation recordings are currently under analysis to generate activity indices and detect feeding buzzes as proxies for foraging intensity. However, preliminary assessment points towards a higher number of feeding buzzes in agriculture sites, followed by woodlands, whereas urban built-up areas show comparatively lower activity. This pattern implies that agricultural landscapes serve as key foraging grounds, potentially driven by high insect availability, whereas woodlands provide structurally complex foraging environments. If confirmed, our findings will build a case for the conservation of monument-roosting bats in view of their ecosystem services.

22

STRUCTURAL RECOVERY AND STABLE MULTIDIMENSIONAL DIVERSITY MASK COMPOSITIONAL SHIFTS AFTER SELECTIVE LOGGING IN EASTERN HIMALAYA

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Abstract – Selective logging is among the most widespread anthropogenic disturbances in tropical forests. While its effects on forest structure and taxonomic diversity are well documented, its consequences for functional and phylogenetic diversity, as well as species- and trait-mediated responses across logging chronosequences, remain less studied. We examined tree communities across recently logged, old-logged (>25 years), and unlogged forests in the Eastern Himalayan foothills. Using 90 vegetation plots (400 m^2 each), we quantified forest structure, species composition, and taxonomic, functional, and phylogenetic diversity, along with species- and trait-level responses to logging. Recently logged forests had lower canopy cover, canopy height, and basal area of large trees than old-logged and unlogged forests. Total stem density and basal area were similar across forest categories, however, species composition remained distinct. Logged forests exhibited higher taxonomic diversity, whereas functional and phylogenetic diversity did not vary across forests. Species-specific analyses showed both positive and negative responses to logging. Trait-based analyses revealed that evergreen and thicker leaf species were negatively impacted in logged forests. Our findings indicate that selectively logged forests retain ecological value but remain structurally and compositionally distinct, underscoring the importance of multidimensional approaches to understanding forest recovery and resilience.

23

HABITAT USE AND SPATIAL TEMPORAL INTERACTION OF ENDANGERED RED PANDA WITH SYMPATRIC MAMMALS IN NORTHERN WEST BENGAL

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Abstract - The red panda is an elusive and endangered arboreal mammal native to the Eastern Himalayas, facing population decline due to habitat loss and fragmentation. This study aimed to understand factors influencing its habitat use in Darjeeling and Kalimpong districts, West Bengal, and to assess its activity patterns and temporal overlap with potential predators. Surveys were conducted across protected and non-protected areas, where potential habitats were identified along elevation gradients, and 4 km² grids were established for systematic camera trapping. Data from 103 ground-based camera traps, totaling 18,423 trap nights, yielded 187 red panda captures along with other species. Relative abundance indices were calculated, and habitat use was examined using GLMs with environmental covariates. Results indicated that altitude, slope, canopy cover, ruggedness, and wood cutting significantly influenced habitat use. Red pandas showed predominantly diurnal activity with a peak around 0800 hrs and exhibited the highest temporal overlap with leopards ($\Delta = 0.76$). These findings highlight the importance of specific environmental and topographic factors in shaping habitat use. For conservation implications, minimizing anthropogenic disturbances and preserving structurally complex habitats are critical for ensuring the long-term survival of this species.

24

INFLUENCE OF FOREST COVER CHANGE ON OCCUPANCY TRENDS OF THE FOREST OWLET (*Athene blewitti*) IN MADHYA PRADESH

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Prachi Mehta WRCS, Jayant Kulkarni WRCS

Abstract - The Forest Owlet (*Athene blewitti*), an endangered diurnal owl endemic to central India, occupies farm-forest ecotones, making it particularly vulnerable to land-use transformation at forest boundaries. In Madhya Pradesh, it occurs in very low numbers within an 811 km² area of disturbed reserve forest in Khandwa district and a 468 km² area of forest in Burhanpur. This study investigates how long-term changes in forest cover, as an indicator of anthropogenic pressure from local communities and departmental timber felling, influence occupancy trends of the Forest Owlet across systematic monitoring grids in Khandwa district. Field observation data spanning 2013–2025 are compared against temporal changes in forest cover quantified through raster-based spatial analysis and linked to grid level occupancy records to assess how habitat loss and fragmentation drive shifts in the species' presence and detectability over time. As an obligate secondary-cavity nester, the Forest Owlet is acutely sensitive to human mediated forest degradation, and occupancy is expected to show measurable negative associations with declining forest cover across monitoring grids. This ongoing analysis aims to establish the importance of forest condition for the Forest Owlet's persistence and to generate spatially explicit conservation recommendations for its management within central India's agrarian landscapes.

25

IMPLICATIONS OF FOOD AVAILABILITY, HABITAT FRAGMENTATION, AND URBAN GREEN SPACE STRUCTURES ON THE BREEDING SUCCESS OF ALEXANDRINE

Pragya, Doon University

Name: Mr Sunny Joshi, Senior Project officer Raptor Conservation Programme WWF-INDIA, Name: Dr Suneet Naithani, Associate Professor School of Environmental Sciences and Natural Resources DOON UNIVERSITY

Abstract - Successful breeding in birds depends on synchrony between nesting and peak food availability. In rapidly urbanizing landscapes, habitat fragmentation and changes in urban green space structure may influence access to nesting cavities and food resources. This study examines how habitat fragmentation and urban green space structure affect the breeding success of Alexandrine Parakeets in Dehradun, Uttarakhand. The species depends on tree cavities for nesting and fruit-bearing trees for food resources, shaped by urban expansion and landscape modification. We (1) document breeding timing across nesting sites, including those within urban green spaces; (2) monitor fruiting patterns of key food trees near nests; (3) quantify habitat fragmentation and urban green space configuration using satellite imagery and landscape metrics; and (4) evaluate whether mismatches between chick-rearing and fruit availability, together with landscape structure, explain variation in breeding success. By linking breeding outcomes with food phenology and urban landscape structure, this study aims to identify high-risk nesting areas and inform urban biodiversity planning under changing climate and land-use conditions. Keywords: Breeding success, habitat fragmentation, urban green space structure, food availabi

26

TEMPORAL PARTITIONING SHAPES BAT ASSEMBLAGES IN SEMIARID ECOSYSTEMS

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Abstract- Arid and semiarid environments are characterised by extreme environmental variability that influences the availability of limited and patchily distributed resources such as water. In response, animals may migrate or partition resources to reduce competition, leading to temporal structuring within assemblages across multiple scales. Here, we show that bat assemblages during the winter dry season in a semiarid grassland of northwestern India exhibit both seasonal shifts and temporal segregation among coexisting species. Using passive acoustic monitoring to quantify activity patterns, we found that Rhinolophus lepidus and Tadarida aegyptiaca differed in seasonal activity, being more frequently detected during the early and late parts of the dry season, respectively. In contrast, Pipistrellus tenuis and Scotophilus heathii did not show seasonal variation in activity but instead partitioned their activity temporally, reducing overlap at water sources. These findings, among the first for bats in this region, highlight the complex temporal dynamics structuring bat assemblages in arid and semiarid ecosystems and have implications for understanding bat behavioural ecology as well as for long-term monitoring.

27

EFFECTIVENESS OF COMMUNITY-LEVEL INTERVENTIONS IN MITIGATING HUMAN-WILDLIFE CONFLICT MITIGATION IN CORBETT TIGER RESERVE

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Jason Bismarck Coutinho- (Project Associate), Dr. Harendra Singh Bargali- (Deputy Director, The Corbett Foundation)

Abstract - Human–wildlife conflict around Corbett Tiger Reserve has intensified due to forest dependence and landscape changes. The study focuses on community-based interventions to to mitigate HWC and reduce forest dependency, improve agriculture productivity, and enhance livelihoods for scalable conservation. Using mixed questionnaire interview data (n = 229 households) was evaluated for safeguard interventions of Energy Efficient Stoves (EES), Chain-Linked Fences (CLF), and Iron Haystack Poles to curb forest dependency and conflict. The results indicated traditional households harvested Sal, Bamboo, and Teak for haystack poles struggling with labor intensive cutting and spoilage of fodder, Iron poles eased efforts and protected haystacks preserving for a longer period 13%. EES slashed forest visits by doubling fuel efficiency; one fuelwood pile lasted 5 days compared to 2 days in traditional stoves, reducing wood replacement frequency, cooking time, smoke exposure, and associated risks. User satisfaction reached 67%, with 94% of households recommending the stove for its benefits. CLF significantly reduced wildlife intrusions upto 75% bolstering crop protection and yields (wheat: 7,485–11,250 kg; rice: 14,125–17,200 kg; finger millet: 765–1,497 kg) and reduced crop-guarding effort.These interventions reduced forest dependency, improved agriculture, enhanced livelihoods, and enabled scalable conservation in conflict landscapes.

28

SPECIES RICHNESS, BODY SIZE, AND FRUIT AVAILABILITY SHAPE MULTIDIMENSIONAL NICHE OVERLAP AMONG AVIAN FRUGIVORES IN TWO TROPICAL FORESTS OF INDIA

Rintu Mandal, Nature ConservationFoundation

Abstract - Understanding how ecologically similar species coexist within local communities is a key ecological question. Although niche differentiation is recognised as a key mechanism promoting coexistence, the extent of niche overlap among sympatric species is likely context-dependent, varying with local diversity, resource conditions, and species traits. We examined multidimensional niche overlap among avian frugivores across dietary, vertical space, and temporal axes in two tropical forests in India: Anamalai and Namdapha Tiger Reserves. Using >1100 hours of focal observations on 186 fruiting plants, we constructed weighted interaction matrices for frugivore species visiting >10% of focal plants, yielding nine species in Anamalai and 18 in Namdapha. Pairwise frugivore overlaps were quantified using Pianka's index, and tested how they varied with frugivore species richness, fruit crop size, plant functional groups, and body-size differences between species pairs. Overlap was consistently lower than null expectations across all niche dimensions and was significantly lower in Namdapha, the more species-rich site. Overlap was higher on plants with more fruits, and particularly on Ficus. Similar-sized frugivore species also showed greater overlap. Our findings suggest that fine-scale multidimensional niche segregation facilitates coexistence in tropical frugivore assemblages, while local resource abundance and morphological similarity can promote niche overlap among co occurring species.

29

QUANTIFYING THE IMPACT OF MULTI-STAKEHOLDER BIODIVERSITY CONSERVATION TRAININGS ACROSS THE GANGA RIVER BASIN

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Abstract - The Wildlife Institute of India-National Mission for Clean Ganga (WII-NMCG) project has implemented extensive multi-stakeholder training and awareness interventions across Ganga basin states from 2017 to 2026 to strengthen biodiversity conservation understanding and sustained conservation action. The trainings incorporated a multi method learning approach, including expert lectures, group discussions, field exposure, species identification exercises, case studies, and evaluation-based learning tools. The training effectiveness was assessed through standardized pre-post questionnaire surveys. The analysis was conducted on pre-post assessment data from 697 participants. Learning outcomes were analysed using the Exact Wilcoxon–Pratt Signed-Rank Test, descriptive statistics, and Cohen's d to determine the magnitude of training impact. The statistical analysis revealed a substantial improvement in participant understanding, with mean scores increasing from 11.7 ± 3.97 SD (pre) to 20.5 ± 4.67 SD (post). The observed change reflected enormous educational effect (Cohen's d = 2.02), indicating profound knowledge gain following the interventions. The findings established that the WII-NMCG stakeholder learning and sensitization initiatives significantly strengthen conservation awareness, biodiversity understanding, and informed participation, thereby supporting long-term Ganga biodiversity conservation.

30

ARE ROTATING CEILING FAN BLADES A THREAT TO INSECTS IN HUMAN HABITAT? – OBSERVATIONS ABOUT THE GREATER BANDED HORNET, VESPA TROPICA, LINNAEUS, 1758

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Abstract - In general, insect abundance and diversity is under threat. The recording of the factors affecting this is crucial to scientific understanding of the losses. While insect diversity decline is evident because of habitat destruction, pollution and climate change, other anthropogenic factors should be studied to understand the human-driven biodiversity crisis. As a natural event in human habitat, we observed a ceiling fan hit and apparent death of the Greater Banded Hornet, Vespa tropica, Linnaeus, 1758, (n=3) from Pune. Our observations highlight the question 'Can a rotating ceiling fan be a threat to insect life in general?' The literature on fan blades causing injuries in human children is available. With scarce literature on insect injuries caused by fan blades, we propose not overlooking such anthropogenic factors even though these observations look very basic or rare at first glance with further studies. Additionally, although these social wasps are known for using cognition and context-specific sensory (visual and olfactory cues) information in foraging strategies, in our observations, it seems they couldn't manage to escape the situation.

31

DIURNAL AND NOCTURNAL INSECT POLLINATION IN SEMI-URBAN AREAS AROUND DELHI-NCR.

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Tanvi Deora, Department of Life Sciences, SNIoE; Anannya K.R, Department of Life Sciences SNIoE

Abstract- Insect pollination is essential for maintaining agricultural diversity and robust ecosystem functioning. However, global declines in insect diversity and increasing environmental pollutants pose a threat. Studies show that nocturnal insects such as moths are important pollinators, yet remain understudied. Nocturnal pollination is especially vulnerable to light pollution, but its impact remains unclear, especially in urban and semi-urban areas. Our research documents nocturnal lepidopteran pollination and examines interactions between diurnal and nocturnal pollination in semi-urban environments.

We sampled lepidopterans and their pollination partners at the botanical garden in Shiv Nadar University, Delhi-NCR campus. Using direct observations, we documented 23 species across 5 butterfly families feeding on 50 plant families.The bipartite diurnal network shows a generality of 7.300133 for the pollinators with a high variation in degree. Using light traps, we sampled 50 moth species across 4 families and collected pollen on their proboscis to identify pollination partners. Pollen load ranged from 1-50 grains, with some moths carrying 3-4 different pollen types. We aim to build the nocturnal bipartite network to compare diurnal and nocturnal systems, and with studies from undisturbed areas. Future work will extend to less-lit sites to directly address the impact of light pollution on pollination.

32

BEE DIVERSITY AND PLANT-POLLINATOR INTERACTION NETWORKS IN SAL FORESTS OF GARHWAL, UTTARAKHAND

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Arun Pratap Singh Scientist-G Forest Research Institute Dehradun

Abstract - Bees are among the most important pollinators, playing a vital role in maintaining forest ecosystem functioning and plant reproductive success. However, information on bee diversity and plant–pollinator interaction networks in Sal (Shorea robusta) forests of Garhwal, Uttarakhand, remains limited. The present study investigates bee diversity and the structure of plant–pollinator networks in these ecologically significant forest systems. Field sampling was conducted using direct floral observations across different seasons (Pre-monsoon, Monsoon, Post-monsoon). Bee species were identified to the lowest possible taxonomic level, and their interactions with flowering plants were recorded to construct quantitative interaction networks. Network parameters such as connectance, nestedness, and specialization were analyzed to understand the complexity and stability of these interactions. The results revealed a diverse bee assemblage, predominantly represented by families such as Apidae, Halictidae, Megachilidae, Colletidae and Andrenidae. The interaction networks showed a moderately nested and connected structure, indicating resilience but potential vulnerability to environmental disturbances. Seasonal variation and floral resource availability significantly influenced bee visitation patterns and network dynamics. This study highlights the importance of conserving floral diversity and habitat integrity in Sal forests to sustain pollinator communities and ecosystem services. The finding

33

DETERMINANTS OF BIRD ABUNDANCE AND RICHNESS ON FICUS TREES ACROSS AN URBAN GRADIENT IN KOLKATA, INDIA

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Upamanyu Hore, Amity Institute of Forestry and Wildlife, Amity University, Noida, Uttar Pradesh, India

Abstract - Urbanization alters habitat structure and resource availability, influencing bird communities in tropical cities. Ficus trees function as key resources, yet the drivers of bird abundance and species richness on these trees across urban gradients remain poorly understood. We quantified bird abundance and richness on Ficus trees across low, medium, and high urbanization zones in Kolkata, India, and examined the influence of tree traits and environmental variables using generalized linear model analysis in RStudio. Bird communities were driven by tree structural attributes, with girth and height positively influencing both abundance and richness overall and particularly in the highly urbanized areas. Noise had an overall negative effect on the richness, particularly in highly urbanized areas, indicating strong anthropogenic constraints. Resource variables such as fruit availability had weaker but positive effects, becoming significantly important for the richness in less urbanized zones. Resource availability was more influential in determining richness in less urbanized areas. These findings highlight the importance of large, fig trees in sustaining urban bird communities.

34

TEMPORAL AND SEASONAL VOCAL ACTIVITY OF THE INDIAN NIGHTJAR IN URBAN HYDERABAD

Swathi C S, Tata Institute of Fundamental Research Hyderabad

Dr. Harsha Kumar- TIFR Hyderabad & Dr. Anusha Shankar- TIFR Hyderabad

Abstract - Indian nightjars (*Caprimulgus asiaticus*) are nocturnal, insectivorous birds found commonly in both urban and rural Indian landscapes. We are currently studying the vocal activity patterns of this species in the TIFR-H campus, an urban area, and whether it is correlated with nighttime temperatures and with moon phase. We use 17 audio recorders to collect data from the campus. The data collected from November 2024 to May 2025 show clear shifts in nightjar seasonal vocal activity patterns. During their breeding season in March, they were highly vocally active, calling throughout the night, while in the winter their vocal activity was much lower and confined to dawn and dusk. We also found that vocal activity is higher at higher nighttime temperatures. Their activity is not correlated with moon phase, unlike what has been found in nightjars from other parts of the globe. This could be a consequence of either this species' biology or of artificial light at night. We plan to do direct observational studies to understand their behaviour and expand the study to rural sites to understand the role of artificial light in their behaviour, and later, explore the physiology of the bird in response to urbanisation and light at night.

35

ARE WE THROWING WATER ON SAND? INSIGHTS FROM WATER VISITATION RATES OF SPECIES IN A DESERT

Swati Sen, Wildlife Institute of India

Tanisha Dagur, Project Associate II, Wildlife Institute of India; Dr Sutirtha Dutta, Scientist- E, Wildlife Institute of India

Abstract - Water is a limiting resource in a desert ecosystem, strongly influencing species distribution, behavior, and interactions. This study evaluates whether visitation to artificial water sources (guzzlers) is correlated with the species density in the surrounding landscape. Camera trap data were collected across four enclosures in Desert National Park, Thar Desert. Visitation rates were quantified using guzzler camera-trap data across seasons. Species density was estimated independently using camera-trap distance sampling (CTDS) from systematic deployments at grid centroids with distance markers. Relationships between visitation rate and density were assessed across species and seasons.

Results indicate a clear discrepancy between density and visitation, with several low-density species exhibiting disproportionately high use of water sources. This pattern was consistent across enclosures and seasons, suggesting that water use is driven more by ecological and physiological requirements than by encounter probability alone. Relatively higher visitation rates of water sources by Nilgai and Pig indicate that the well-intended intervention of water provisioning, prevalent in India's arid landscapes, targeted to benefit arid specialists such as the Great Indian Bustard and Chinkara, might be benefiting mesic species by relaxing the physiological constraints of the arid environment. Thus, our findings highlight the potential role of artificial water sources as an ecological filter.

36

POLLINATOR DIVERSITY AND DYNAMICS IN KASHMIR HIMALAYA

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Prof. Manzoor A. Shah

Abstract - Pollinators largely determine plant fitness and provide key ecosystem services to ensure global food security, yet their diversity is threatened by changing environments. Hence, we documented the pollinator diversity through intensive field studies in Kashmir Himalaya across an elevational gradient from Feb 2025 to Oct 2025 using direct visual recording of floral visitors. With each session lasting for 10 minutes, we conducted a total of 1321 observation sessions and recorded 923 pollinator visits, representing a diverse assemblage of insect groups. Bees were the dominant pollinators at lower elevations, whereas a shift in dominant pollinator groups was observed at higher elevations, indicating a variation in pollinator community structure along the gradient. Overall, the results indicate a bee-dominated yet taxonomically diverse pollinator assemblage, highlighting the ecological importance of bees as primary pollinators in lower elevation systems. The observed variation across elevations underscores the need to consider habitat-specific dynamics in pollinator conservation. This study provides baseline data for future ecological monitoring and underscores the need for habitat conservation to sustain pollinator diversity under climate change scenarios.

37

"CROC-IAL" DISTANCING: WHAT SPACING TELLS US ABOUT MUGGER CROCODILE SOCIALITY

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Abstract - Traditionally, reptiles are considered to be solitary, yet new evidence suggests otherwise. This study aims to use inter individual distance (IID) as a proxy to measure sociality in mugger crocodiles. Using drone-based aerial imaging across 19 sampling days (December 2025 - January 2026), we recorded 803 crocodile dyads during peak basking hours in Petli, Gujarat, India. IIDs were categorized into social categories: Very Tight (VT), Tight (T), Loose (L), and Very Loose (VL) using body-length-scaled thresholds. Orientation scores (difference in snout-to-midpoint distances) were calculated per dyad. For the population, L dominated (~52%), followed by VL (~40%), while T and VT together accounted for <7% of dyads. VT and T also varied significantly (P0.05) with time (hourly slots from 10- 14h). Orientation became increasingly negative at closer distances (VT and T categories), suggesting individuals actively orient themselves away from neighbors as proximity increases. We also found that observed IIDs were significantly ($P<0.05$) lower than random expectations across all crowding levels. Overall, the muggers demonstrated non-random, structured spatial positioning, potentially indicating a social network that warrants future investigations.

38

WHO STRIKES FIRST? SPECIES AND ONTOGENY GOVERN COMPETITIVE STRATEGIES AND OUTCOMES IN GREEN CHROMIDE (*Etroplus suratensis*) AND TILAPIA (*Oreochromis spp*.)

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Pranav Kulkarni (Biological and Life Sciences, School of Arts and Sciences, Ahmedabad University), Ratna Ghosal (Biological and Life Sciences, School of Arts and Sciences, Ahmedabad University)

Abstract - Inter-specific competition plays a fundamental role in determining structure and function of ecological communities. In this study, we investigated inter-species competition between green chromides (GC, native to Indian freshwaters) and Tilapia (T, invasive to Indian freshwaters). We staged one-on-one contests, using a combination of body lengths (6, 8, 11 cm), and residency (resident or intruder). We scored outcomes on a binary scale, wherein whoever initiated an aggressive act or fed first, each got a score of 1. However, whoever hid (defence or avoidance) first received a score of -1. The opponent got 0 in all of these cases. We summed up the scores for an individual and ran a cumulative link mixed model to assess the effect of species (GC/T), development stage (body lengths), body-size contrasts (between the opponents) and residency on the scores. Our results showed that species, developmental stage and residency had a significant effect, wherein T, oldest stage (11 cm) and residents are the highest scorers. However, body-size contrasts had no effect. Thus, contrary to the conventional belief that contrast in opponents' body sizes determines the winner, we showed that outcomes are majorly determined by traits that are either species-specific or linked to their developmental stages.

39

CALLING OUT LOUD: INFLUENCE OF LAND-USE CHANGE, SOCIAL CONTEXT, CLIMATE, AND BODY CONDITION ON AMPHIBIAN CALLING BEHAVIOUR IN THE WESTERN GHATS

Vijay Karthick, Nature Conservation Foundation

Abstract - Amphibian calling behaviour is shaped by a dynamic interplay of environmental, physiological, and social factors, yet how land-use change disrupts these relationships remains largely unexplored. We investigated how neighbour calling density, rainfall, air temperature, and body condition shape the calling behaviour of bush frogs, and how these relationships differ between intact rainforests and coffee agroforests. From June to September 2024, we recorded advertisement calls of four bush frog species across the two land-use types in the Western Ghats. We collected 10- minute focal acoustic recordings from 250 individuals, alongside environmental and morphological data. Temporal (rate, duration, inter-call interval) and spectral (dominant frequency) call properties were extracted using automated note-level annotation.
Preliminary results indicate that air temperature and relative humidity do not differ between coffee agroforests and rainforests. However, body condition is consistently higher in coffee agroforests across all four species. We are currently using a structural equation modelling approach to disentangle how these extrinsic and intrinsic factors interact to shape calling behaviour across land-use types. Our findings will help us better understand the behavioural consequences of land-use change and the sensitivity of endemic amphibians to ongoing and future biotic and abiotic changes.

40

A COMPARATIVE STUDY OF VOCALISATIONS IN WILD AND CAPTIVE ASIATIC LIONS (*Panthera leo leo*)

Vyas Helly Hirenkumar, Bharati Vidyapeeth institute of environment education and research

Sougata Sadhukhan, Meena Venkataraman. Bharati Vidyapeeth Institute of Environment Education and Research (BVIEER), Pune, Carnivore Conservation and Research, Mumbai

Abstract - Lion vocalisation plays a crucial role in communication, as lions rely on vocalisations for social bonding and territorial defence. However, our understanding of the acoustic behaviour of Asiatic lions are limited compared to our knowledge of African lions.
In this study, we present the first detailed comparison of acoustic parameters of Asiatic lion vocalisations between wild (n=16) and captive (n=17) individuals, as well as between males and females. Acoustic data were recorded opportunistically during peak vocal activity hours from both wild and captive sites across the Gir. A total of 84 recordings were analysed in Raven Pro and categorised into moans, climax, and grunts based on spectrogram structure. Acoustic parameters were compared using two-sample t-tests. Our findings revealed that wild lions showed slightly but significantly lower fundamental frequencies (174 Hz) than captive lions (192 Hz) across all call types. Males showed lower acoustic parameters (176 Hz) compared to females (194 Hz) in both wild and captive conditions. As lower-frequency vocalisations travel farther distances, the reduced frequencies observed in wild lions may indicate long-distance communication in the natural habitat. This study provides important baseline acoustic data for future development of acoustic monitoring systems and conservation management of Asiatic lions.

41

BIOGEOGRAPHIC PATTERNS AND DRIVERS OF CAVITY-NESTING BIRD DIVERSITY IN THE WESTERN GHATS OF INDIA.

Yash Gaikwad, Savanna Science Foundation

Naman Goyal (Indian Institutes of Science Education and Research, Tirupati), Vishwa Jagati (Indian Institutes of Science Education and Research, Tirupati), Archita Sharma (Indian Institutes of Science Education and Research, Tirupati), Varun Kher (Wildlife Institute of India), V.V. Robin (Indian Institutes of Science Education and Research, Tirupati), Archita Sharma (Indian Institutes of Science Education and Research, Tirupati)

Abstract - Tree cavities support 18% of the global bird diversity, yet remain a vanishing resource due to deforestation. Although one-fifth of all terrestrial vertebrate species of India depend on tree cavities generated by cavity-excavator birds and various other modes, our understanding of the factors limiting the distribution of this guild remains limited. To address this knowledge gap, we assessed how canopy characteristics and cavity-excavator birds influence the distribution and richness of cavity-nesting birds (CNB) across the Western Ghats.

We utilized eBird occurrence data for 64 cavity-nesting species (1,00,000+ occurrences) to generate species distribution models (SDM). Using SDMs, we mapped total CNB richness and its constituent excavator and non excavator sub-guilds, correlating these patterns with environmental variables to identify primary drivers of distribution. The next steps in our analysis include constructing structural equation models to quantify relationships between CNB richness and environmental factors.

While total CNB richness correlates with canopy height, non-excavator richness is more strongly driven by richness of excavator species. These findings identify cavity-excavator richness as the primary limiting factor governing the distribution of the CNB guild. Our study, being one of the first from India, underscores the critical role of excavator species in maintaining biodiversity in Indian forests.

42

REPRODUCTIVE STATUS SHAPES BROOD RECOGNITION IN AN INDIAN PONERINE ANT

Sk Sayak, IISER Kolkata

Sumana Annagiri

Abstract - Brood recognition is fundamental for cooperative brood care and protection of brood from invaders or parasites and thus it directly impacts colonies' fitness in eusocial insects like ants. Broods are known to produce signals in several ant species. Ants recognize broods by traits like the developmental stage, sex, caste and species. However, the behavioural response of ants, has not been examined in detail. In Diacamma indicum, a tropical Ponerine ant, reproductive division of labour is achieved by the sole reproductive female in the colony (called gamergate) by the removal of a pair of thoracic exocrine glands (gemma) from all newly eclosing callow ants (mutilation). Our study examines adult ants' behavioural response towards brood in the context of reproductive status and age. Mature gamergate neither picks up the pupae nor shows care towards them in significant contrast to mature workers. One day-old and three-day-old workers were comparable to similar-aged future reproductives. However, 14-day-old future reproductives showed gamergate-like behavioural modulation. Our findings suggest that when the receiver is a potential reproductive, her response shifts. This aspect is a novel insight into the continuum of brood-adult communication within these superorganism colonies.

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01

BIRD SONG VARIATION IN SUBSPECIES ACROSS BIOGEOGRAPHIC BARRIERS

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Aaromal E, Archita Sharma, Dhyey Shah, V.V. Robin

Abstract - Birds sing to communicate a range of behaviours, influencing mate choice, territory defense and species recognition. Song complexity and structure vary among individuals and populations, reflecting geographical, ecological and cultural evolution. For birds with broad distributions and multiple subspecies in peninsular India, These variations are poorly described but can affect species detection as ranges shift under environmental change.We study the Indian Blackbird, Common Iora and the Rufous Treepie species' complex, all widespread passerines with multiple recognized subspecies across peninsular India. Despite their ecological relevance, little is known about how song structure varies across individuals, populations and subspecies. Documenting this variation helps understand how vocal signals evolve under different selective pressures and helps acoustic monitoring for conservation assessments. Recordings were taken from the Macaulay library(n=420+) , annotated at the note level in RavenPro and temporal and spectral variables were extracted. Analysis in Rstudio used multivariate ANOVA to test variation within individuals , within populations and among populations across subspecies. Preliminary results indicate subtle but geographically structured variation, with both shared and locally distinctive acoustic features across taxa.This study highlights how vocal diversity can reflect evolutionary differentiation while improving species-level monitoring across changing landscapes

02

FROM THE WESTERN GHATS TO THE WORLD: NICHE DYNAMICS IN INDOTYPHLOPS BRAMINUS

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Praveen Karanth (Indian Institute of Science)

Abstract - The Brahminy blindsnake (Indotyphlops braminus) is one of the most widespread snakes in the world, largely due to parthenogenesis and human-mediated dispersal. In India, mitochondrial (cytb) data reveal two genetically distinct but morphologically similar lineages: a "wet zone" clade restricted to the Western Ghats and a "dry zone" clade distributed across peninsular India. All global samples analysed so far are nested within the wet zone clade and show extremely low haplotype diversity, suggesting a single parthenogenetic lineage underlying its global spread.

Here, we use species distribution modelling (SDM) and niche overlap analyses to test predictions of geographic parthenogenesis specifically, whether the parthenogenetic lineage occupies a broader ecological niche than the sexual lineage. We compiled molecularly confirmed records from India and worldwide, along with large-scale occurrence data, to build clade-specific models and project them across India and worldwide.

We assess differences in niche breadth, the extent of niche overlap, and patterns of geographic separation between the two lineages. The initial modelling suggests that the wet zone lineage occupies a broader environmental space than the dry zone lineage, consistent with its global distribution. Together, these analyses provide a framework to examine how reproductive mode shapes ecological niches and geographic distributions.

03

UNCOVERING THE ENDOPARASITE AND GUT MICROBIOME DIVERSITY IN TIGERS IN TADOBA-ANDHARI TIGER RESERVE, INDIA

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Abstract - Unraveling the endoparasite and gut microbial diversity in large mammalian carnivores can provide critical insights into their health and conservation. In this study, we use DNA metabarcoding to characterize helminth, gut microbiome, and dietary diversity from scat samples of tiger populations in Tadoba-Andhari Tiger Reserve and its surrounding territorial forest divisions, a key stronghold for tigers in Central India. To our knowledge, this is the first study employing molecular methods to comprehensively assess helminth diversity in wild mammal populations in India. We examine how helminth and gut microbial communities vary across seasons, spatial gradients, and dietary composition, with the aim of disentangling host–parasite–microbiome relationships. We expect to observe differences in helminth and gut microbiome diversities between individuals inside and outside protected areas due to changes in their dietary profiles depending on prey availability and increased habitat disturbance. This work addresses critical knowledge gaps and provides a framework for integrating parasitology, microbiome ecology, and diet to augment carnivore conservation.
Keywords: conservation, metabarcoding, tiger, helminth, gut microbiome, diet

04

ECOLOGY AND HISTORICAL CONNECTIVITY PREDICT GENETIC DIVERGENCE ACROSS A GEOGRAPHIC BARRIER IN WESTERN GHATS BIRDS

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Abstract - Barriers that dissect mountain ranges, such as the Palghat Gap in the Western Ghats (WG hereafter), provide natural systems to test how geographic barriers drive population divergence. The degree of divergence is often mediated by species' ecological traits, which influence their ability to cross barriers and maintain gene flow. We use a comparative phylogeographic framework across a WG bird community to test which traits predict genetic differentiation across the Palghat Gap. Specifically, we examined climatic niche breadth, hand-wing index (a proxy for dispersal ability), foraging stratum, wing length (a proxy for body size) and historical connectivity during the Last Glacial Maximum. Climatic niche breadth, hand-wing index and historical connectivity emerged as significant predictors of genetic differentiation. Species with narrower climatic niches, particularly those restricted to cool, wet montane habitats, and lower hand-wing indices (eg. Montecincla sp.), showed greater genetic differentiation across the Gap. In contrast, species with broader climatic niches (eg. Pycnonotus jocosus) and higher hand-wing indices (Eg. Columba elphinstonii) exhibited lower genetic divergence. Overall, our results suggest that climatic specificity and dispersal ability shape patterns of genetic differentiation across this major biogeographic barrier.

05

INVESTIGATING THE ROLE OF AFFILIATIVE HUMAN POSTURES IN APPROACH DECISIONS OF INDIAN FREE-RANGING DOGS

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Srijaya Nandi, Tuhin Subhra Pal, Anamitra Roy and Anindita Bhadra - Indian Institute of Science Education and Research Kolkata

Abstract - Studying social cues impacting human-animal interactions is necessary to understand how individuals use them to differentiate potentially beneficial exchanges from harmful ones. Free-ranging dogs (FRDs) approaching unknown humans is a prime example that may give rise to affiliation or conflict. In this study, 3 affiliative postures (standing, bending, squatting) were identified from regular human-FRD interactions. These were posited (alone or with a hand calling gesture) against a neutral posture (standing still, arms by sides), on 712 FRDs in binary approach trials using independent-groups design. We noted 243 successful approaches (subject positioned within one FRD-body-length of either experimenter). Neutral-neutral trials were utilized to control for baseline preference. Primary experimenters (females aged 27, 24) and attire were constant throughout to account for inter-experimenter bias. FRDs approached affiliative postures and gestures far more than chance (logistic regression), with individual responses being affected by behavioral states. Sociability (tail wag, interaction with chosen experimenter, proximity), approach latency, posture choice were considered among the response variables. This study found that FRDs are hypersociable and cognitively adaptable when deciphering human postural cues. The findings underscore potential to lessen conflict and promote cohabitation in urban settings by encouraging obvious affiliative body language during human-dog interactions.

06

WARMING CITIES, SHIFTING PHYSIOLOGY: CONTRASTING THERMAL RESPONSES OF TWO TROPICAL GECKOS ACROSS AN URBAN RURAL GRADIENT IN BENGALURU

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Dr. Chetan Nag K S, CUBEC, Jain (Deemed-to-be University), Bangalore, India

Abstract - Urban expansion represents a major form of land-use change in the Anthropocene, elevating temperatures, altering substrates, and reshaping microhabitats that structure species persistence in tropical cities. To understand how these thermal shifts affect urban reptiles, we examined two gecko species from Bengaluru, India: the nocturnal Hemidactylus parvimaculatus and the diurnal Cnemaspis mysoriensis. Individuals from urban and rural habitats were evaluated for preferred body temperature (Tpref), critical thermal limits (CTmax, CTmin), and temperature dependent locomotor performance. Urban populations of C. mysoriensis exhibited significantly higher Tpref (30.1 °C ± 1.2 SD) and elevated CTmax and CTmin (+1.13 °C), indicating an upward shift in the thermal tolerance window. In contrast, H. parvimaculatus showed only a marginal increase in Tpref 29.0 °C ± 1.3 SD) and no detectable changes in thermal limits. Thermal performance curves revealed a shared optimum temperature (29 °C), but C. mysoriensis maintained a broader performance breadth and significantly higher sprint performance in urban habitats. Our findings highlight how urban environments act as selective filters, favoring thermally flexible species, underscoring the importance of incorporating thermal refugia, heterogeneous microhabitats, and green infrastructure into urban planning to sustain biodiversity and enhance the ecological resilience of rapidly expanding tropical cities.

07

PHYLOGEOGRAPHIC ANALYSIS OF EUTROPIS MACULARIA AND EUTROPIS ALLAPALLENSIS: UNVEILING CRYPTIC DIVERSITY AND GENE FLOW CORRIDORS IN TWO WIDESPREAD SPECIES OF SUN SKINKS

Arijit Dutta, National Institute of Science Education and Research

Dr. Aniruddha Datta Roy (Reader F, NISER)

Abstract - Widespread species often show morphological and genetic variations due to local environmental pressure or historical isolation, complicating species delimitation. This challenge is more evident in lygosomines, like Eutropis, where significant genetic divergence without corresponding morphological differences may lead to misclassification. Specifically, the E.macularia and E.allapallensis species group represents a taxonomical dilemma as the former is found to be polyphyletic in phylogenetic studies and the latter is morphologically similar to E.macularia. Hence, our study aims to understand the phylogeography of E.macularia and E.allapallensis. Our initial phylogenetic analyses on a concatenated multi-gene dataset show that the Indian E.macularia complex consists of two major clades with multiple sub-clades distributed across different ecoregions. The Southeast Asian E.macularia from Thailand is sister to the Indian lineages. Interestingly, the E.allapallensis group showed monophyly in our analyses but its sister lineage i.e. E.clivicola was retrieved as polyphyletic and shared ancestry with E.allapallensis. Therefore, resolving the systematics of E.macularia and E.allapallensis requires denser sampling at the contact zones along with a finer resolution data such as whole genome sequence, to account for potential gene flow among the metapopulations.

08

EXPLORING HETEROSPECIFIC SOCIABILITY PARAMETERS IN AN URBAN ECOSYSTEM WITH THE MODEL: INDIAN FREE-RANGING DOGS

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Abstract - Sociability is one of the most relevant personality traits in urban adapted species that affects their coexistence and conflicts with humans. Although free-ranging dogs are canids free from direct human supervision, they indulge in frequent contact. To test aspects of sociability in dog groups (with pups/juveniles), an unfamiliar experimenter stood >1.5 meters from members of a group in the natural habitat. Two 30s phases followed: first with a positive vocalisation (PV), second with an additional food stimulus (S). Another experimenter video recorded the experiment. Human flux was recorded as pedestrian/vehicular movements per minute (1600-1800 h). 121 groups with 519 dogs of different life history stages tested. Flux had a positive effect on approach score, affiliative demeanor after approach and duration of stay. Members showing non-affiliative behaviours at start, including aggressive & anxious behaviours, were less likely to approach in close quarters and showed higher latency when they did. Pups are likely to show affiliative behaviours after approach. Overall, this study sheds light on heterospecific sociability parameters of dogs in groups and this will aid in formulating policies regarding dog-human conflicts in the urban ecosystem.

09

CONSPECIFICS VS. ALIEN INVASIVE HETEROSPECIFICS - SOCIAL DECISION MAKING IN THE JUVENILES OF A FRESHWATER MEGAFISH DECCAN MAHSEER.

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Abstract – Group living fishes leave or join their shoals considering various factors since social decisions are associated with fitness consequences. Juveniles of Deccan Mahseer (JDM; Tor khudree), a charismatic freshwater fish species restocked extensively in the natural waterbodies in India prefers larger groups of conspecifics over the smaller ones. The present study explored social decision making by the individual JDM when presented with a combination of conspecific and alien invasive heterospecific (tilapia, Oreochromis mossambicus and common carp Cyprinus carpio) shoals varying in the size. We tested the combinations of 2 vs. 2, 2 vs. 4 and 2 vs. 8, and the number of conspecifics was kept constant (2 individual) during these titration experiments. Our results revealed that JDM failed to reach a shoaling decision in all experiments where the pairs of conspecifics were presented in combination with the shoals of tilapia divergent in the number of individuals. By contrast, JDM exhibited a clear preference for the shoals of common carp over its own species when the heterospecific - conspecifics ratio reached 4:1. The ecological implication of the differences in the social decision making strategies followed by JDM in presence of conspecific, tilapia and common carp in the context of restocking and reintroduction of the hatchery reared individuals into the natural water bodies are discussed.

10

HEAT HARDENING AND THE INFLUENCE OF HABITAT THERMAL HETEROGENEITY ON ABOVEGROUND ACTIVITY IN SPINY-TAILED LIZARD (*Saara hardwickii*).

Chirag Nimish Vassa, Indian Institute of Science

1. Mr. Varun Kher (Wildlife Institute of India), 2. Avichal Tatu (University of Melbourne, Australia), 3. Dr. Sutirtha Dutta (Wildlife Institute of India)

Abstract – Globally, climate change has accelerated rising temperatures and the frequency of extreme weather events, increasing extinction risks, particularly for ectotherms. Short-term behavioural and physiological adjustments, i.e., phenotypic plasticity, are crucial for survival. While ectotherms like reptiles utilize various microhabitats to regulate body temperature and buffer themselves against thermal stress, the influence of habitat heterogeneity on aboveground activity remains understudied. In parallel, species may also employ heat hardening, I.e., a reversible increase in thermal tolerance to mitigate short-term heat stress. However, studies investigating heat hardening capacity in reptiles are lacking. Here, we investigated heat hardening capacity and the influence of habitat thermal heterogeneity on aboveground activity in the spiny-tailed lizard (Saara hardwickii). Experimental trials showed no significant evidence of heat hardening, though few individuals exhibited increased thermal tolerance, implying intraspecific variation. Conversely, habitat thermal heterogeneity was influential; individuals in thermally heterogeneous habitats were significantly more active than those in homogeneous habitats. While thermal stress reduced overall activity, peak activity times shifted across treatments, and aggression varied by sex and habitat condition. Lacking physiological plasticity, S. hardwickii relies on habitat thermal mosaics to maintain greater activity levels.

11

FLEXIBILITY OVER FIT: WHY PHENOTYPIC INTEGRATION MATTERS FOR SPECIES' GEOGRAPHICAL DOMINANCE

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Mustaqeem Ahmad - Kunming Institute of Botany, Chinese Academy of Sciences, Satyaki Chowdhury - IISER Berhampur, Meghna Krishnadas - National Centre for Biological Sciences

Abstract - Forecasting species' responses to environmental change requires linking ecological properties to abundance and distribution through a mechanistic, phenotype-based framework. At broad scales, geographical dominance—range size and abundance—captures key dimensions of species success, which should reflect phenotypic properties tied to evolutionary potential. Previous synthesis proposed that species whose primary trait covariation axis aligns with environmental selection gradients, are likely to have bigger range sizes - we term this narrow sense phenotypic flexibility. Using floral trait data from Himalayan plants, we tested if comparable alignment between largest axis of trait covariation and environmental gradient relates to species dominance, and found no evidence for it. We argue that this reflects a mismatch between static environmental gradients assumed and the spatiotemporally dynamic adaptive landscapes that species actually experience. We therefore introduce broad-sense phenotypic flexibility—the capacity to respond to multiple, shifting drivers—quantified via aspects of phenotypic integration, or the degree of trait covariation. We found species with strong but inflexible integration were widely distributed, but species with variation in strength of integration across populations were more globally abundant. These results suggest that the ability to adjust the strength and structure of trait integration may underpin broad ecological success.

12

LONG-TERM MONITORING OF NILGIRI TAHR IN TAMIL NADU: INSIGHTS FROM PROJECT NILGIRI TAHR

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Abstract - Long-term monitoring of the Nilgiri tahr (Nilgiritragus hylocrius) in Tamil Nadu has been strengthened under Project Nilgiri Tahr through integrated population assessment, telemetry, and health surveillance. The synchronized population estimation recorded 1,031 individuals in 2024, increasing to 1,303 in 2025, indicating a positive conservation trend. In major continuous habitats, populations increased from 203 to 282 in Mukurthi National Park and from 276 to 334 in the Grass Hills landscape of Anamalai Tiger Reserve between 2024 and 2025. Fragmented landscapes also showed improvement, with numbers rising from 552 to 687 individuals. Population estimation employed bounded count methods in fragmented habitats and double observer approaches in large landscapes to enhance accuracy. Radio telemetry studies revealed variation in home range use across individuals and sites, providing insights into habitat use, movement, and connectivity. Health monitoring identified lump disease associated with Coenurus cysts (Taenia multiceps), transmitted through predator–prey interactions. The prevalence of infection declined from 0.48% in 2024 to 0.15% in 2025, although its widespread occurrence across the southern Western Ghats remains a concern. While non-fatal, the disease alters behaviour and increases predation risk. These integrated efforts provide a robust framework for adaptive management and long-term conservation of this endangered mountain ungulate.

13

THE WATCHERS OF THE HOLLOW: AUTOMATED MONITORING OF INDIAN GREY HORNBILL NESTING BEHAVIOUR

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Prof. Akanksha Rathrore (BITS Pilani, Hyderabad), Dr. Rohit Naniwadekar (Scientist, Nature Conservation Foundation), Sartaj Ghuman (Ecologist)

Abstract - Nest cavity monitoring provides critical insights into avian breeding behaviour but is often constrained by labour intensive observation and limited temporal coverage. In this study, we focus on the Indian grey hornbill and develop a camera-based system for continuous, minimally invasive monitoring of nesting activity in human-modified landscapes.
We implement automated detection and behavioural analysis pipelines using computer vision approaches, including bounding box detection and segmentation, to extract fine-scale behavioural data from long-duration video streams. The system is designed to quantify key behavioural metrics such as visitation rates, provisioning events, and activity patterns at nest sites. By reducing reliance on manual annotation, this approach enables scalable monitoring across multiple nest boxes with minimal human intervention.
Our ongoing work evaluates the performance of different computer vision techniques in accurately detecting individuals and behaviours, with the goal of building a generalisable pipeline adaptable to other cavity-nesting species. This framework offers a high-throughput and low-disturbance alternative to traditional monitoring methods, facilitating long-term behavioural studies and improving the feasibility of large-scale ecological data collection.

14

CAN'T ALWAYS GET WHAT YOU WANT: FACTORS AFFECTING FEMALE MATE CHOICE IN (*Psammophilus dorsalis*)

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Dr Kavita Isvaran, Professor, Centre for Ecological Sciences, Indian Institute of Science (IISc)

Abstract - Females, through their mate choice decisions, gain fitness benefits by mating with high-quality males. However, mate sampling is time-consuming and energy-intensive, increasing the risk of predation and harassment from conspecifics. Females must therefore balance the costs and benefits of mate choice by modulating their decisions, with these trade-offs shaped by both intrinsic and extrinsic factors.
The peninsular rock agama (*Psammophilus dorsalis*) is a sexually dimorphic, polygynous lizard where both sexes defend territories. Spatial heterogeneity in territory distribution leads to variation in the number of mates females encounter over their short lifespan (~1 year). Females exhibit distinct postures and dynamic colour displays during courtship, making them an ideal system to study mate choice.
This study explores how individual quality (body size) and social factors (mate availability) influence mate preferences in female P. dorsalis. We hypothesize that female quality interacts with mate availability to shape preferences. We conducted field-based model presentation experiments using 3D-printed male models across habitat patches. We find that females are less selective when mates are abundant, and that female size has little effect on mate choice. Thus, we examine condition- and context-dependent variation in female mate choice in P.dorsalis in their natural habitat.

15

DO HOST BIOGEOGRAPHIC PATTERNS SHAPE HAEMOSPORIDIAN ASSEMBLAGES?

Gayathri R, Indian Institute of Science Education and Research-Tirupati

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Abstract - Elucidating the diversity and spatial structure of host-parasite assemblages can help improve our understanding of disease transmission dynamics and host-parasite evolution. Plasmodium and Haemoproteus(Haemosporidian parasites) infect a range of wild birds, making them an ideal system for studying the eco-evolutionary disease dynamics in natural populations. Biogeographic barriers can restrict species dispersal, thereby affecting avian population genetic structure. We hypothesized that these barriers may also influence the distribution, diversification, and turnover of parasite lineages infecting birds. In this study, we characterize and compare Haemosporidian assemblage composition in avian hosts in two biogeographic zones in Peninsular India, accounting for differences in host specificity between Plasmodium(generalist) and Haemoproteus(specialist). We sampled birds across the biogeographic zones and screened for parasites using molecular techniques. We found that most lineages, both Plasmodium and Haemoproteus, are unique to specific zones, with few lineages shared across, indicating potential spatial structuring. Furthermore, Haemoproteus lineages showed more specialized host associations, along with more phylogenetic clustering by zones, as compared to Plasmodium. This study demonstrates strong spatial clustering of parasite lineages and shows that differences in host specialization between Haemoproteus and Plasmodium affect the parasite assemblage in predictable ways.

16

TUNING INTO THE RIGHT FREQUENCY: VARIATION IN ACOUSTIC ATTRACTIVENESS ACROSS FUNCTIONAL GUILDS IN MIXED-SPECIES BIRD FLOCKS OF THE WESTERN GHATS

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Abstract - Individuals in mixed-species flocks (MSFs) of birds in tropical forests rely heavily on acoustic communication for flock formation, cohesion, and coordinated movement. Within these flocks, MSF participants can be grouped on the basis of their social and foraging guilds into intraspecifically gregarious gleaners, solitary gleaners, and solitary sallyers. Species from these functional guilds differ in the ecological benefits they provide to other flock members and are hence expected to be differentially attractive. Participants are expected to show preferences for joining particular guilds based on cost-benefit trade-offs.

To test the acoustic attractiveness of different functional groups, we conducted playback experiments in the forests of Western Ghats, India. For each functional guild, we selected two common species, recorded their vocalisations, and played them back at the study site. We measured heterospecific responses — identity of approaching species, number of individuals, latency of arrival, and distance from the speaker. Our results show that gregarious gleaners attract the highest number of heterospecific flock participants, followed by solitary sallyers and then solitary gleaners. These findings provide field-based experimental evidence that acoustic attractiveness varies across functional guilds, and that trait-based interactions influence flock composition and organization in the MSFs of the Western Ghats.

17

DO BIRDS OF A FEATHER REALLY FLOCK TOGETHER? GLOBAL PATTERNS OF COLOUR SIMILARITY IN MIXED SPECIES BIRD FLOCKS

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Dr. Maria Thaker (Professor, CES, IISc Bangalore), Dr. Kartik Shanker (Professor & Chair, CES, IISc Bangalore)

Abstract - Mixed-species bird flocks (MSFs) are widespread social assemblages that enhance foraging success and reduce predation risk. While functional traits such as foraging behaviour and body size are known to structure MSFs, the role of visual traits—particularly plumage colour—has rarely been tested quantitatively. Here, we examine how plumage colour is structured in MSFs at a global scale. Using data from 52 sites spanning four continents, we quantified colour similarity among flock participants and compared observed flocks to null assemblages. We further examined whether MSF participants represented a colour subset of the regional species pool. Across all sites, MSFs participants were more colour similar than expected by chance, indicating non-random, colour-structured assembly of flocks. The strength and prevalence of colour structuring varied geographically, but not with flock size. At the community level, MSF participants differed systematically in colour composition from the regional species pool, occupying a restricted region of colour space. Together, these results demonstrate that plumage colour affects MSFs at multiple levels, influencing overall flock participation and structuring species co-occurrence within flocks. Our findings provide the first global quantitative evidence that highlight the importance of visual traits like colour in structuring interspecific social systems and community assembly.

18

STUDYING THE ASSOCIATION OF PHYLLOSPHERE BACTERIAL COMMUNITIES WITH HOST PLANT PHYLOGENY AND FUNCTIONAL TRAITS ACROSS SEASONS IN THE WESTERN GHATS, INDIA

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Dr. Aniruddha Datta-Roy(National institute of science education and research), Dr. Rittik Deb(National institute of science education and research), Dr. Anand M. Osuri(Nture Conservation Foundation), Mr. Vijay Kumar S(Nature conservation foundation), Sanjay Kumar(National institute of science education and research)

Abstract - The phyllosphere, or above-ground surfaces of plants, harbours diverse bacterial communities that influence host plant growth, resilience against pathogens, and stress tolerance. Phyllosphere communities are structured by stochastic factors, such as rainfall, which introduce transient taxa, and deterministic factors, such as host identity and traits, which select for stable core taxa. While the role of deterministic host factors in structuring phyllosphere communities has been studied in the Neotropics and temperate regions, tropical Asia remains poorly studied in this context.

To address this knowledge gap, we are characterising phyllosphere bacterial communities of 18 host plant species in a wet tropical forest in the Central Western Ghats of India, to examine how host phylogeny and functional traits influence community composition. This will determine whether these communities track host evolutionary history, converge on functional traits, or both. Seasonal comparisons assess stability of these relationships and identify temporally consistent core taxa.

Sampling is complete for both seasons and preliminary analysis of wet season data indicates a weak phylogenetic signal in community composition, suggesting that functional traits or dispersal may play a stronger role in shaping phyllosphere community in this system.

19

EFFECT OF PLEISTOCENE GLACIAL CYCLES ON EVOLUTIONARY HISTORY OF BATS

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Abstract - Earth has experienced rhythmic cycles of cooling and warming periods throughout the Pleistocene that have substantially influenced migrations, evolutionary adaptations and extinctions in animal communities. This period is known for its repetitive glacial cycles, the evolution and spread of early humans, and its effects on populations, resulting in the expansion or contraction of several mammalian species. Recent advancements in genomics and the coalescent framework have facilitated the exploration of the evolutionary history of species using genomic data. This study investigates fluctuations in the demographic history of multiple bat species using single whole-genome sequence data through Pairwise Sequentially Markovian Coalescent (PSMC) method. We also employed Species distribution modeling to uncover the effects of past climate change events on species. We observed a reduction in effective population size from the Last Interglacial Period to the Last Glacial Maximum for most species. Using complementary methods, this study aims to gain insights on fluctuations in population history and paleoclimatic suitable habitats in response to the late Quaternary climate shifts.

20

BITES THROUGH LIFE: ONTOGENETIC DIETARY CHANGES IN SHARKS

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Abstract - Many animals show ontogenetic dietary changes, however, the specific patterns vary based on ecological and physiological factors. Despite their position as top predators in ecosystems, dietary studies of sharks remain limited. While adult sharks are often thought to occupy the highest trophic levels in marine food webs, the neonate and juvenile stages are limited by morphological restrictions, habitat constraints, and differences in nutritional requirements. To understand these variations, we studied ontogenetic dietary changes in two species of sharks - the pelagic Spadenose shark (Scoliodon laticaudus) and the benthic Grey Bamboo shark (Chiloscyllium griseum). We analyzed gut contents (GC) across age groups to understand dietary patterns. We found that the diet of sharks changes from crustacean-dominated in juveniles to fish-dominated in adults. Currently, we are analyzing stable isotopes (SI) from axial muscle samples to understand shifts in trophic levels and habitat usage. We also plan to combine GC data with macronutrient information to estimate the intake macronutrient composition across age groups. Our study on sharks helps map out their diets and places it in the larger context of their development.

21

EXAMINING THE ORIGIN AND PHYLOGENY OF ENDEMIC HUMBOLDTIA VAHL (FABACEAE), WESTERN GHATS, INDIA

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Abstract - The Western Ghats (WG) is a global biodiversity hotspot harbouring over 60% of endemic woody species, yet phylogenetic studies on plants in this region remain scarce. We use the endemic genus Humboldtia Vahl, comprising eight accepted species, to investigate its evolution in the WG. Among the accepted species, H. brunonis is restricted to the central WG (CWG), and the remaining species are confined to the southern WG (SWG), distributed equally above and below the Shencottah Gap (SG), mostly as point endemics, with one species occurring in Sri Lanka. Phylogenetic reconstruction using Maximum Likelihood and Bayesian Inference, based on one nuclear and three chloroplast markers, along with divergence-time dating (using fossil and secondary node calibrations) and ancestral area reconstruction, revealed that Humboldtia originated from a widespread ancestor (Africa, Neotropics, and Indian subcontinent) during the Eocene. In-situ speciation within the WG likely occurred during the Miocene, initially through (climatic) vicariance between CWG and SWG lineages, followed by sympatric and subset-sympatric speciation within the SWG clade. Miocene aridification likely contributed to diversification, with most species exhibiting climatic niche differentiation along elevation and precipitation gradients. The antiquity of all species, especially the point-endemics, highlights the need to integrate evolutionary history into woody plant conservation.

22

CAN TROPICAL AGAMID LIZARDS PHYSIOLOGICALLY TOLERATE THE ALTERED THERMAL MOSAIC OF URBAN MICROHABITATS?

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Abstract - Human-induced environmental changes create unique and unprecedented thermal landscapes, yet the extent to which species respond to these changes remains poorly understood. One major challenge is the spatial mismatch between the scale at which organisms experience their environment and the broader scale at which climate data are collected. Here we use Infrared Thermography (IRT) to quantify fine scale microclimate within urban and rural habitats of two agamid lizards, Calotes versicolor and Psammophilus dorsalis. By combining field-based body temperatures and lab based measures of thermal limits and preferences, we find that thermal responses to urbanization are shaped by species-specific thermal traits and patterns of microhabitat use. Between species, urban individuals did not differ markedly in habitat thermal heterogeneity experienced or substrate temperature used. However, within species, P. dorsalis experiences warmer and more heterogeneous conditions in rural habitats, whereas C. versicolor experiences similar thermal conditions across habitats. Calotes versicolor also exhibits broader thermal tolerance and preferred temperature ranges than P. dorsalis. Collectively, our results suggest that P. dorsalis may be more susceptible to thermal constraints imposed by human-modified landscapes. Overall, we demonstrate the critical need to account for microclimatic conditions and species-specific thermal traits when assessing how animals respond to climate change.

23

QUANTIFYING THE NAVIGATIONAL EFFICIENCY OF DIACAMMA INDICUM DURING COLONY EMIGRATION ON A LABYRINTH

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Abstract – This study investigates the relocation dynamics, problem-solving ability, learning, and collective memory of Diacamma indicum at a colony and individual level. We have focused on two basic objectives. A labyrinth path has been designed, then it is placed in a water arena, and then the ant colony is motivated to relocate by exposing them to LED light. For the first objective, the control is a straight path, same distance as the labyrinth. Relocation dynamics are recorded, and analysis is done by comparing them with a straight path. An increase in transportation time and discovery time is noted; percentage of primary leaders is less than control while the cumulative work done is comparable with the control. Second objective, minimum 5 consecutive tandem runs of a leader is chosen during relocation, and time taken to finish each of the tandem runs, distance traveled and number of U-turns made are recorded. A decrease in time and number of U-turns was observed with increase in speed, indicating increased efficiency. This study is important to understand, despite having discrepancies in the percentage of specific types of leaders, ants as a colony overall compensate as the work done across time remains comparable to control, increasing efficiency on multiple exposure which can give us insight into their ability to retain memory and implement information gathered even under a high-stress situation like relocation.

24

MOLECULAR TOOLS FOR AVIATION STRIKES REVEAL SEASONAL AND TAXONOMIC PATTERNS

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Abstract – Bird strikes, defined as collisions between birds and aircraft, pose a serious threat to aviation safety. They can cause damage to the aircraft, compromising passenger safety, leading to economic loss, and disturbing the natural flight patterns of birds. Identification of the species involved in aviation strikes is important to developing effective mitigation measures and wildlife management in and around airports.

We employed molecular techniques to identify species using specific mitochondrial gene markers. In this study, 315 unidentified strike samples preserved on FTA cards and tissue samples were received from three International Airports between January 2023 and November 2025. DNA was extracted from the samples, amplified, and sequenced using mitochondrial markers. Molecular analysis revealed multiple taxa involved in the strike events, including birds, insects, bats, and other mammals. Temporal patterns indicated that bat hits were recorded predominantly at night, consistent with their nocturnal activity patterns. Additionally, our data suggests that the majority of the collisions occurred at night, compared to daytime, indicating increased wildlife-aircraft interaction at night. Our findings highlight the effectiveness of DNA barcoding as a tool to accurately identify animal species involved in aviation strikes, which can help us design effective mitigation strategies to reduce wildlife and economic losses.

25

POPULATION STRUCTURE OF THE WHITE-STRIPED VIPER GECKO, *Hemidactylus albofasciatus*.

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Abstract - The White-striped viper gecko, Hemidactylus albofasciatus is a small-bodied, ground-dwelling and nocturnal species, endemic to the open habitats on the lateritic plateaus, in the Konkan region, Maharashtra. These plateaus are fragmented by several west-flowing rivers originating in the Western Ghats running parallel to each other, before draining into the Arabian sea. Given the species' limited dispersal ability, we hypothesized that these rivers may act as barriers to gene flow among populations of the gecko and each isolated plateau may harbor an independently evolving lineage. To test this, we divided and categorised the putative populations of the species into eight zones and collected tail-tissue samples from each zone for molecular analysis. As an initial step prior to genome-wide analyses, we sequenced a mitochondrial gene, 16S. The phylogeny and haplotype network analyses based on this gene revealed strong population structuring, with no shared haplotypes among most populations, suggesting an absence of gene flow. These preliminary results suggest that the rivers may function as barriers to dispersal leading to isolation of multiple populations across their distribution range. However, genomics data will be necessary to test this hypothesis more rigorously.

26

DISENTANGLING DETERMINISTIC AND STOCHASTIC PROCESSES IN BIRD COMMUNITY ASSEMBLY ALONG AN EASTERN HIMALAYAN ELEVATION GRADIENT

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Ramana Athreya (Indian Institute of Science Education and Research, Pune), Mansi Mungee (Azim Premji University, Bhopal)

Abstract - Community composition results from deterministic and stochastic ecological processes. Identifying the processes and their relative strength in community assembly is one of the goals of ecological studies. Mountains are suitable natural ecological systems to disentangle some of these processes in community assembly due to large environmental variations over smaller spatial scales, habitat heterogeneity, and complex topography. To quantify the balance between niche and dispersal processes in Eastern Himalayan bird communities, we applied two complementary, multi-site metrics, Dispersal–Niche Continuum Index (DNCI) and □-diversity, to data collected across a steep elevation gradient. We tested three hypotheses: summer and winter seasons drive niche-mediated community turnover; elevational differentiation between communities is niche process dominated and it strengthens with elevation difference; and stochastic processes prevail at local scales while deterministic processes dominate at broader regional scales. Our findings highlight that the bird communities in this montane gradient are structured by an interplay of dispersal and niche processes, where stochasticity governs local turnover but environmental filtering becomes increasingly important across larger elevational and regional scales. These results suggest that the community assembly processes may vary across scale and seasons and should be taken into account when planning conservation across montane landscapes.

27

DO CLOSELY RELATED BIRDS ALSO SHARE SONGS IN THE WHITE-BELLIED SHOLAKILI (*Sholicola albiventris*)

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Abstract - In open-ended learners, song learning extends over time and can be social, with the sharing of vocal signatures among spatially proximate individuals, or kin-based, where juveniles acquire songs from their fathers.
Our study focuses on the White-bellied Sholakili (Sholicola albiventris), an open-ended learner endemic to the Western Ghats. We estimate relatedness from a population of 52 individuals and compare the results across four methods. We analyse song sharing among a subset of related individuals (n = 17) using the Jensen-Shannon Divergence (JSD) and a partial Mantel test to examine the influence of kinship, geographic distance, and song sharing. We also analysed syntax-level sharing to identify central hub individuals in a given year (n = 17) and changes in the song network across seasons (n = 7).
We find that Ngsrelate was the best of the four, and there is no significant relationship between pairwise song similarity and genetic relatedness at any syntax level after controlling for geographic distance. Network hub individuals, identified using betweenness centrality and weighted degree in song networks, differed across syntactic levels, indicating that note-type sequence sharing is culturally influenced. Individuals maintained higher pairwise song sharing during the breeding season compared to the non-breeding season across all syntax levels.

28

THRIVING IN VULNERABILITY: ACTIVE BURROW CHARACTERISATION AND POPULATION STRUCTURE OF THE INDIAN SPINY-TAILED LIZARD IN THE KUTCH DESERT WILDLIFE SANCTUARY

Shahbaz Ahmed Khan, Aligarh Muslim University

Abdhullah Misver Thanveer (Department of Wildlife Sciences, Aligarh Muslim University), Nazneen Zehra (Department of Wildlife Sciences, Aligarh Muslim University), Jamal Ahmad Khan (Department of Wildlife Sciences, Aligarh Muslim University)

Abstract - The Indian Spiny-tailed Lizard (Saara hardwickii) is a Schedule I protected, solitary fossorial reptile distributed across the arid landscapes of northwestern India, Pakistan, and Afghanistan. This study provides the first quantitative characterisation of active burrow entrance morphology, population structure, and spatial distribution of S. hardwickii across 3.73 km² of Trigedy Beyt within the Kutch Desert Wildlife Sanctuary. A systematic survey recorded 344 active burrows (mean density: 92.23 ± 19.88 SE burrows/km²). Burrow width (median: 5.0 cm; IQR: 4.2–6.0 cm) and vertical opening (median: 4.5 cm; IQR: 3.5–6.0 cm) yielded a characteristic horizontally-elliptical burrow profile (median aspect ratio: 1.13) consistent with the species' dorsoventrally compressed body. Age-class distribution, inferred from burrow width as a proxy for occupant body size, indicated sub-adult dominance (63.1%) alongside juveniles (24.1%) and adults (12.8%), suggesting active recruitment. Spearman correlation confirmed strong dimensional association ($p = 0.646$, $p < 0.001$), with quantile regression indicating near-isometric scaling in burrow entrance morphology. Clark-Evans analysis revealed extreme spatial clustering (Clark-Evans $R = 0.073$, $p < 0.001$), indicating strong microhabitat fidelity. These findings establish a critical empirical baseline for habitat assessment, population monitoring, and conservation planning for this threatened species within their remaining habitats.

29

ACOUSTIC PREPROCESSING FOR WILDLIFE BIOACOUSTICS: A MODULAR FRAMEWORK ENABLING SCALABLE PASSIVE ACOUSTIC MONITORING AND BIODIVERSITY ASSESSMENT

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Abstract - Biodiversity monitoring through bioacoustics has gained momentum with the widespread deployment of Autonomous Recording Units (ARUs) across ecologically sensitive habitats. Despite their utility, ARUs generate vast volumes of raw audio mixed with irrelevant acoustic interference, including wind, rainfall, and anthropogenic noise, severely limiting automated recognition accuracy.

This study addresses these limitations by proposing a structured preprocessing pipeline that integrates down sampling, spectral denoising, energy normalisation, and syllable segmentation. Denoising strategies spanning time domain filtering, spectral subtraction, and wavelet decomposition are evaluated for their effectiveness in improving the signal-to-noise ratio across bird and anuran vocalisations. Segmentation further isolates discrete call events by removing silence and noise segments, focusing exclusively on acoustics of interest and enriching datasets for few shot learning classifiers operating under scarce labelled-data conditions.

Experimental results demonstrate the elimination of nearly 89% of non-target acoustic content, reducing computational demands while improving feature discriminability. This framework establishes a reproducible and scalable foundation for ecological research, conservation monitoring, and automated species identification in complex real-world soundscapes, offering an efficient solution for bioacoustic research communities engaged in large-scale PAM deployments.

30

INVESTIGATING THE CONVERGENCE OF ACOUSTIC TRAITS IN DISTANTLY RELATED FROG FAMILIES *Cycloramphidae and Ranixalidae*

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1. Dr. Gururaja KV (Anurans, Acoustics and Anthropogenic Climate Change Lab, Srishti Manipal Institute of Art, Design and Technology, Manipal Academy of Higher Education, Manipal, India.); 2. Dr. Nikhil Modak (Independant Researcher, Chennai)

Abstract - Ranixalidae from the Western Ghats of India and Cycloramphidae from Eastern Brazil are two of seven lineages that evolved semi-terrestrial tadpoles, likely driven by similar moist rock-dwelling habitats. Though phylogenetically distant, it is unclear if the convergence in larval ecology extends to acoustic traits. We tested whether acoustic traits also converge or remain constrained by phylogenetic divergence. We quantified acoustic divergence in advertisement calls using peak frequency and call duration . Cycloramphidae calls were obtained from Fonoteca Neotropical Jacques Viellard audio library, while Ranixalidae calls were field recorded in 2024-25 and analyzed with Raven Pro 1.6. The Shapiro-Wilk test confirmed non-normality (pf: $W=0.77$, $p<0.05$; cd: $W=0.75$,$p<0.05$). Kruskal-Wallis test showed significant species-level variation. Dunn's post hoc tests confirmed family-level differences ($p<0.05$). PCoA on z standardized Euclidean distances (Axis1:57.4%; Axis2: 26.2%) showed family-level clustering with partial overlap. Partial convergence occurred among Indirana chiravasi with Cycloramphus bandeirensis, and Walkerana leptodactyla overlapping Thoropa miliaris. The results suggest that, despite habitat-driven larval convergence, acoustic traits remain phylogenetically conserved, likely constrained by vocal anatomy and the microhabitat used while calling. However, this conclusion will be strengthened by including more species from both anuran families.

31

HONEST ADVERTISEMENT OF COMPETITIVE QUALITY IN FEMALE PSAMMOPHILUS DORSALIS - A CONDITION-DEPENDENT SIGNALLING APPROACH

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Abstract – Female intrasexual competition is an important but often overlooked selective force in socially polygynous mating systems. Mechanisms for maintaining honesty in female competitive signals remain poorly understood. In Psammophilus dorsalis, an agamid lizard, females escalate signalling intensity proportional to perceived rival threat, reserving the highest investment for direct territorial intrusions. Whether these signals honestly reflect individual competitive quality remains untested. We test predictions from signalling trade-off theory, which proposes that high quality individuals can afford more intense signals due to lower marginal energetic costs. Using morphometric and behavioural data from individually tagged wild females across multiple breeding seasons, we estimate body condition index and parasite load as measures of individual quality. We assess their effects on the strength of their behavioural responses to an increase in competitor threat, which was experimentally simulated by presenting models of its competitors. These experiments were conducted in several habitat patches of variable anthropogenic conditions. We test the prediction that high-quality females will signal more intensely and escalate faster under high threat. This study explores whether female signals are honest and condition-dependent, facilitating rival assessment and reducing costly physical conflict. This could also reveal population-level effects of human activity on signalling.

32

DOES MORE DATA MATTER? ASSESSING PHYLOGENOMIC CONGRUENCE WITHIN CENTIPEDES

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Abstract – Well-resolved molecular phylogenies are essential for understanding the evolutionary origins and maintenance of biodiversity, yet relationships in many groups remain unresolved using conventional markers. While high-throughput sequencing offers potential for improved resolution, its utility remains poorly studied across lineages, especially in non-model organisms. Centipedes are among the oldest predatory terrestrial arthropods, with >3,100 extant species globally. Higher-level relationships among centipede orders are well resolved using transcriptomic data, but relationships within orders remain poorly studied. Scolopendridae (>400 species), a diverse & largely tropical family, exhibits high endemism but unresolved internal relationships, with previous studies recovering weakly supported nodes and para- or polyphyletic genera based on a 3-marker phylogeny. Here, we conduct a comparative phylogenetic analysis to assess topological congruence and node support across multiple data types, including transcriptomes, mitogenomes, conventional markers, UCEs, & low-coverage genomes, sampling major lineages within the family. All datasets recovered monophyly of Scolopendridae, and two subfamilies, Otostigmini & Scolopendrini. Compared with 3-marker tree, mitogenome and transcriptome trees showed higher support values at both shallow & deep nodes. Ongoing analyses focus on developing a centipede-specific UCE probe set & statistically evaluating topological congruence across data types.

33

VARIATION IN THERMAL LIMITS AND HEAT HARDENING IN FRESHWATER SNAILS FROM URBAN LAKES IN BENGALURU, INDIA.

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Abstract - The thermal tolerance of an organism determines its survival, distribution, and vulnerability to climate change. Tropical ectotherms are predicted to be particularly vulnerable to climate change, yet studies related to the thermal tolerance of freshwater ectotherms remain limited. In this study, we estimated the upper (CTmax) and lower (CTmin) critical thermal limits of two freshwater pulmonate snails, Lymnaea sp. and Indoplanorbis sp. We sampled 243 individuals from 5 freshwater systems in Bengaluru. Individuals were subjected to gradual temperature-ramping assays to estimate their thermal limits. Additionally, we quantified the short-term heat-hardening capability on CTmax of both species. CTmax values were high and broadly similar across species and lakes; in contrast, CTmin values differed significantly between species and across lakes, with Lymnaea having a lower CTmin than Indoplanorbis. Consequently, Lymnaea sp. exhibited a broader thermal range relative to Indoplanorbis sp. A short term heat hardening test resulted in a negligible increase in CTmax in both species. These findings suggest that the freshwater snails from urban lakes in Bengaluru will be able to survive a moderate increase in habitat temperature, without necessarily relying on short-term heat-hardening capability

34

PHYLOECHO: MAPPING THE DRY DECIDUOUS FOREST'S ENSIFERA DIVERSITY THROUGH ACOUSTICS AND PHYLOGENETICS.

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Abstract - A diverse ecosystem is a good indicator of its health, as biodiversity provides resilience and redundancies essential for ecosystem functioning. Accurately estimating biodiversity is critical for understanding the impacts of current environmental stressors. One of the most effective, non-invasive and passive approaches to biodiversity estimation involves tapping into acoustic communication. Ensiferans are highly diverse and widely distributed, form key components of trophic networks, and depend entirely on species-specific acoustic communication for reproduction, making them effective indicators of biodiversity and environmental change. However, Eastern India's dry deciduous forests remain poorly studied for these communities. This study provides the first comprehensive assessment of Ensifera community, addressing regional biodiversity knowledge gap. The study examines (1) taxonomic (combining call, morphology, and genetics) and call structure diversity; (2) diel calling patterns of species constituting the acoustic community; (3) seasonal variation within the community; and (4) phylogenetic diversity. It further enables inference of relationships among species, phylogenetic, and acoustic diversity. The community comprises 49 species, including several previously undescribed taxa lacking prior acoustic, morphological, and genetic data. This project lays a foundation for long-term monitoring to forecast biodiversity loss under changing climate and anthropogenic pressures.

35

CASTE DYNAMICS OF BREACH REPAIR BEHAVIOUR IN A MOUND-BUILDING TERMITE, ODONTOTERMES OBESUS

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Dr. Sanjay P. Sane, Sreekrishna Varma Raja - National Centre for Biological Sciences

Abstract - Termites are eusocial insects and important ecosystem engineers that construct complex mound structures influencing soil properties, microclimate, and nutrient cycling. These mounds serve as protective structures for the colony, and rapid repair is critical following any damage to mound walls. During repair, multiple castes, including soldiers, major workers, and minor workers, are active. The repair process involves sequential steps: sensing and localization of the breach, recruitment of workers, and deposition of soil boluses to seal the opening. We investigated caste dynamics during mound repair using a field-based assay in a mound-building termite, Odontotermes obesus. We observe that soldiers arrive first at the breach site, followed by workers, with minor workers consistently forming a higher proportion than other castes throughout the repair process. While both major and minor workers contribute to building for mound construction and expansion, minors appear to play a more prominent role during repair. We hypothesize a division of labour in which specific castes are functionally specialized for different stages of repair. To test this, we have developed a lab-based assay that allows controlled manipulation of caste composition. These experiments will clarify caste-specific roles in repair and provide insights into how collective responses maintain mound integrity and, consequently, ecosystem function.

36

LINKING MORPHOLOGY AND PERFORMANCE: SKELETAL GROWTH AND SEX-SPECIFIC FORM–FUNCTION RELATIONSHIPS IN AN AGAMID LIZARD.

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Abstract - Linking morphology to performance is essential for understanding how skeletal growth shapes functional capabilities. In sexually dimorphic species, males and females often experience distinct selection pressures, leading to differences in growth rate, allometric patterns, and adult performance. Using longitudinal X-ray imaging, we quantified skeletal growth in the agamid lizard, Psammophilus dorsalis, from juvenile to adult stages, to examine sex differences in growth trajectories, allometric patterns, whole-body performance, and morphology–performance relationships. We found that body length increased non-linearly in both sexes and growth trajectories were parallel. Key morphological traits scaled isometrically relative to body length. As adults, sexes did not differ in absolute sprint speed, but males had higher absolute bite force. Hindlimb length and body shape poorly predicted sprint speed, while head length predicted bite force in females. Overall, our results suggest broadly similar growth patterns and performance outcomes in both sexes, indicating possible constraints on morphology and performance.

37

ROLE OF GEOGRAPHY AND CLIMATE IN SHAPING THE SPECIATION IN SELECT SCOLOPENDRID CENTIPEDES IN PENINSULAR INDIA

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Abstract - In low-dispersal taxa, speciation is often driven by geographic isolation and could be accompanied by climatic niche conservatism or divergence. Here, we test these alternative scenarios in the endemic centipede genus Ethmostigmus from peninsular India, a region characterised by strong topographic and climatic heterogeneity. We conducted extensive fieldwork across the Western and Eastern Ghats to sample Ethmostigmus (n=166), built a molecular phylogeny (MrBayes, IQtree) and estimated divergence time (BEAST). Further, performed historical biogeography analyses (BioGeoBEARS), modelled geographical ranges and constructed climatic niches. We recovered the monophyly of the genus Ethmostigmus and identified 13 distinct species, of which eight were new. The divergence time estimate suggested that the genus Ethmostigmus began diversifying ~100 Ma in peninsular India. Historical biogeography analyses (BioGeoBEARS) indicated the southern Western Ghats as the likely ancestral area for the genus. Sister species pairs were allopatric in distribution and exhibited climatic niche divergence (Schoener's D). These results demonstrate that allopatric speciation in low-dispersal tropical taxa is coupled with ecological divergence, rather than niche conservatism, highlighting a key role for environmental differentiation in driving speciation.

38

GENOMICS-BASED DISCOVERY OF (POTENTIAL) PATHOGENS FOR INDIA'S NORTH-EASTERN REGION (GDP-FINER)

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Abstract - Over 60% of pathogens that cause disease in humans are zoonotic, highlighting the need for early detection of spillover from animals to humans. The COVID-19 pandemic brought the One Health perspective into the limelight. Predicting zoonotic outbreaks demands a deeper understanding of pathogen reservoirs, host-pathogen coevolution, and the ecological factors driving their emergence.

Northeast India harbours the country's highest mammal diversity alongside intense human-wildlife interaction, making it a potential hotspot for zoonotic spillover. Recognising this complexity, a consortium of ten institutes supported by the Department of Biotechnology, Government of India, has initiated research to understand zoonotic disease risk across Meghalaya, Nagaland, and Arunachal Pradesh. The project adopts an integrated approach that uses genomic tools to conduct broad-scale surveillance of wild animals (bats, small mammals and primates, when available) and livestock to determine hazard. We complement this with serological analysis to understand human exposure to potential spillover. We aim to understand how host traits, habitat, and climate influence pathogen distribution across the landscape, and use mathematical models to predict spillover risk.

By identifying critical points in the spillover pathway, this initiative aims to inform evidence-based policy, using systems-level thinking to anticipate and prevent zoonotic outbreaks.

39

GENOMIC INSIGHTS OF THE MIGRATORY DIVIDE IN AN ARCTIC SHOERBIRD

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Abstract - Red-necked phalaropes (*Phalaropus lobatus*) are polyandrous shorebirds with a circumpolar breeding range. Recent research has shown that two geographically close breeding populations show highly distinct migration routes and wintering areas: Icelandic phalaropes migrate ca. 10,000 km over the sea to the tropical eastern Pacific Ocean, whilst phalaropes breeding in Fennoscandia and Russia migrate ca. 6,000 km — largely over land — to the Arabian Sea. Here we test whether this migratory divide reflects population structure through PCA, STRUCTURE, and Fst-based analysis of whole-genome-sequencing data.

40

LATITUDE AND TOPOGRAPHY STRUCTURE CLIMATIC DISTANCE FROM A GLACIAL BASELINE ACROSS GLOBAL MOUNTAIN SYSTEMS

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Abstract - Mountain systems exhibit pronounced climatic heterogeneity, however it remains unclear whether long-term divergence from glacial baselines is largely idiosyncratic to individual ranges or structured by broader macroecological gradients. This study quantified how latitude and topographic complexity regulate post-glacial climatic divergence across global mountain systems. Multivariate climatic distance in principal component space was calculated between the Last Glacial Maximum and the Mid-Holocene, Historical (1981–2010), and Late Future (2071–2100) periods for each mountain system. Divergence was summarised using the 5th–95th percentile range of climate-space change. Then hierarchical generalised additive models partitioned the contributions of latitude, topographic relief, and mountain identity to climatic divergence. Mountain identity explained substantial variation in absolute divergence; however, consistent geographic structure emerged through time. Temperate latitudes showed late-future climatic distances exceeding those of the Mid-Holocene, whereas the tropics exhibited comparatively limited divergence. Overall, post-glacial climatic divergence in global mountain systems follows consistent geographic patterns, with implications for biodiversity conservation.

41

ANTS DON'T GROW ON TREES: EXPLORING THE INTERACTION OF ANTS AND TREES IN A SEMI-ARID LANDSCAPE

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Prof. Saskya van Nouhuys (Indian Institute of Science)

Abstract - Ant-plant symbioses are textbook examples of mutualism, where plants invest in food rewards to attract ants that defend against herbivores. Additionally, ants are often mutualistic with honeydew-providing homoptera (planthoppers and scale-insects) that end up harming the plant through their herbivory. My work characterises the pattern of ant-tree interaction in the semi-arid grassland-scrubland community of Challakere (Northern Karnataka). Here, plant food rewards are seemingly absent, but similar species of trees and ants are present, with homoptera acting as mediators. I explored the community-level structure of this interaction network, and how the presence of ants (Camponotus compressus) and their homoptera plays out for the tree (Albizia amara) in terms of the costs and benefits. I hypothesized that ants would reduce non-homopteran herbivory by deterring ungulate and invertebrate herbivores. However, I found that

ants had no effect on the leaf herbivory, but unexpectedly, decreased seed abortion in the fruit. This could be attributed to the addition of ant faecal matter in the soil, which is rich in nitrogen (a limiting nutrient for plants). My thesis attempts to shed light on an understudied system and shows how even the well-known ant-plant symbioses are much more complex than they seem on paper.

42

MOVEMENT ECOLOGY OF STREAM ANURANS IN THE NORTHERN WESTERN GHATS: DISENTANGLING THE ROLE OF DISEASE BURDEN AND ABIOTIC FACTORS

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Abstract - Chytridiomycosis caused by Batrachochytrium dendrobatidis (Bd) threatens amphibians globally. Indian anurans have sub-clinical infections. To investigate the interplay between Bd infections and abiotic factors on anurans, we carried out seven years of Capture-Mark-Recapture (CMR) from 2018 to 2024 in the Tillari Conservation Reserve. We focussed Euphlyctis cyanophlyctis (EC), in two seasons (Wet and Dry). Since movement ecology influences survival of adult anurans, we asked if Scale Mass Index (SMI), abiotic factors (Tmax, Tmin, rainfall, number of rainy days), and Bd load influenced movement in EC using a two-step hurdle model. The probability of movement was positively influenced by SMI and negatively influenced by Tmax. Bd load did not influence movement probability. Daily displacement was negatively influenced by number of rainy days and Tmax, and positively influenced by Tmin and rainfall. EC showed no clear preference for upstream or downstream displacement. While both biotic and abiotic factors influenced the probability of movement, only abiotic factors influenced daily displacement. Impacts of raising ambient temperature and altered monsoon regime caused by climate change in the region could have consequences for anurans. Since climate change is a prominent threat to anuran species globally, long-term population monitoring datasets would be invaluable in assessing the impacts.


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