

Conference Report
April 2025

LIVING LIGHTLY: Futures for Grasslands & Pastoralism in India

6th and 7th February, 2025

An interdisciplinary research conference organized as a part of
the Living Lightly Utsav 2025 - Deccan Edition.



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National Centre for Biological Sciences

Conference Organized by:

Centre for Pastoralism, New Delhi

National Centre for Biological Sciences, Bangalore

Centre for Pastoralism (CfP) works across India on collaborative programs to enhance pastoralist livelihood security, gain mainstream recognition of livestock breeds developed by pastoralists, explore ways of securing their access to grazing resources, promote research to enhance understanding of pastoral systems and undertake outreach to educate society on pastoralism and its many valuable contributions. In advancing these goals, CfP works in close partnership with civil society, academia, government agencies and the private sector.

National Centre for Biological Sciences (NCBS) is a premier research institution based in Bangalore, Karnataka. As a part of the Tata Institute of Fundamental Research under the Department of Atomic Energy of the Government of India, it is dedicated to fundamental research at all levels of biology covering a diverse set of subjects ranging from molecules to ecosystems and from nanoseconds to evolutionary time. Lab-22 has been a part of NCBS for the past 16 years. One of the broader themes of the current research in Lab-22 examines how interactions and feedbacks between climate, biogeochemistry, fires and herbivory influence the structure, composition and stability of ecosystems and the cycling and sequestration of nutrients across a wide range of ecosystem types including rainforests and grasslands.

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96, Anupam Apartments,
Mehrauli - Badarpur Road,
Saket. New Delhi.
Delhi - 110068

www.centreforpastoralism.org

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Acknowledgement

This report is based on the presentations and discussions from the Living Lightly: Futures for Grasslands and Pastoralism in India conference, held at the National Centre for Biological Sciences (NCBS), Bangalore, on February 6–7, 2025. The event was jointly organized by the Centre for Pastoralism (CfP), New Delhi, and NCBS, Bangalore.

We deeply appreciate the efforts of colleagues at CfP and NCBS for bringing this conference from concept to reality. Special thanks to Yash Ketkar, Vidur Datt, Shital Devidas Sangewar, and Anish Paul for their dedicated support throughout the two days. We also extend our gratitude to the logistics teams at NCBS and CfP for efficiently managing accommodation, food, and travel arrangements for the participants.

The conference was made possible with financial support from Rohini Nilekani Philanthropies, which supports CfP's research. We are also grateful to the presenters, panelists, and attendees for their insights and contributions to the discussions.

This report was prepared by
Priya Rajput and Aniruddh Sheth

Images : CfP research team
Design : Gagan Holkar

Background and Introduction

Living Lightly ~ Journeys with Pastoralists has been a flagship initiative of the Centre for Pastoralism since its inception in 2016, bringing the vibrant world of pastoralism to life through art exhibitions, workshops, talks, and performances across India. Held every two years, this widely recognized event serves as a dynamic space where culture, ecology, and livelihoods intersect, fostering curiosity and dialogue among diverse audiences. It brings together students, artists, academics, and pastoralists themselves to learn, exchange ideas, and celebrate the richness of pastoral traditions and diversity. The 6th edition of this iconic exhibition, with a principal focus on pastoralism of the Deccan, was hosted by the Indira Gandhi National Centre for Arts (IGNCA) in Bangalore, February 1-16, 2025.

As with earlier Living Lightly exhibitions, the Bangalore event was accompanied by an academic conference and co-hosted by the National Centre for Biological Sciences. Pastoralism in India has long been misunderstood and marginalized, often framed within narratives of irrational movement, enforced sedentarization, ecological degradation, or economic redundancy. Similarly, grasslands remain undervalued in conservation and policy discourse, frequently misclassified as wastelands or overshadowed by afforestation efforts. Against this backdrop, the conference sought to challenge such dominant assumptions, consolidate existing research, and provide a platform for discussing policy interventions that can sustain both pastoralist livelihoods and grassland ecosystems.

The conference featured a keynote address, thematic panel discussions, and moderated conversations on critical issues such as pastoral mobility, transitions, policy interventions, climate change adaptation, and conservation challenges. Researchers presented case studies from across India, highlighting socio-economic shifts impacting pastoralist communities, growing pressures on grasslands, and the adaptive strategies employed by different herding communities. The discussions aimed to bridge the gap between scholarship and policy, advocating for more inclusive governance frameworks that acknowledge the interconnected ecological and economic significance of pastoralism and grasslands.

By facilitating interdisciplinary engagement and fostering a deeper understanding of pastoralist transitions, the conference underscored the urgency of redefining pastoralism's place in India's environmental and development policies. The event concluded with reflections on the future of pastoral research and a visit to the LL Utsav, offering a rich visual and cultural exploration of pastoralist traditions.

Programme of the Conference

The conference opened with a keynote address by Dr. Purnendu Kavoori, which set the stage for broader discussions on pastoralist identities, governance, and historical trajectories. Speakers and panels during the rest of the day examined the nature of ongoing transitions within pastoral communities; pastoral mobility and its links to conservation and climate change, and the gendered nature of pastoral economies. Scholars presented case studies from Gujarat, Jammu & Kashmir, Himachal Pradesh, Tamil Nadu, and Ladakh. The day closed with a panel that discussed socio-ecological disruptions experienced by pastoral communities, emphasizing the need for more policy interventions more explicitly supportive of pastoral mobility and access to historically grazed landscapes.

The second day of the conference focused on grassland ecosystems, pastoralist land use, and

climate change mitigation. Panels addressed the role of pastoralists in maintaining grassland biodiversity, the challenges posed by afforestation and conservation policies, and the shifting dynamics of grazing rights and resource access. A key highlight was the final discussion on research and policy directions, where academicians and practitioners deliberated on the evolving landscape of pastoralist studies in India.

Throughout the conference, panel discussions were complemented by interactive sessions and participant engagement, allowing for cross-sectoral dialogue on the complexities of pastoralism in contemporary India. The conference concluded with a visit to the Living Lightly Utsav at the Indira Gandhi National Centre for the Arts, providing a visual and cultural exploration of pastoralist life and landscapes.

Conference Participants and Attendance

The conference received 65 abstract submissions, of which 21 were accepted for paper presentations. Over the course of two days, the event saw nearly 100 attendees, including researchers, and students. Participants represented a diverse range of institutions, including academic and research organisations, government agencies, non-governmental organisations, think tanks, and independent scholars.

From a disciplinary perspective, the conference brought together biologists, economists, anthropologists, geographers, development professionals, and policy analysts, fostering an interdisciplinary dialogue on pastoralism and grassland ecosystems.

Conference Proceedings

Keynote : Pastoralist as Commoner: Beyond the vocabularies of mainstreaming and inclusiveness

Dr Purnendu Kavoori

The keynote address by Purnendu Kavoori provided a thought-provoking exploration into the complexities of pastoralism, urging a shift away from rigid definitions towards a more nuanced understanding of its social, ecological, and economic dimensions. Rather than attempting to establish a singular definition, Kavoori framed pastoralism as an inherently elusive and dynamic practice, deeply embedded in diverse historical, material, and institutional contexts.

Kavoori began by highlighting the challenge of defining pastoralism within the constraints of academic discourse, suggesting that this difficulty is itself indicative of the practice's fluid and multifaceted nature. He cautioned against the oversimplification of pastoral systems, particularly in policymaking, where enumeration and classification often reduce pastoral realities to administratively convenient but misleading categories. Instead, he called for an approach that acknowledges pastoralism's extraordinary complexity and adaptability.

A central theme of the talk was the notion that pastoralism must be understood in relation to the broader contexts that enable and sustain it. This includes not only the material landscapes pastoralists inhabit but also the institutional and moral universes that shape their ways of living. Drawing on the idea of a "palimpsest", a manuscript with multiple layers of writing, he described pastoralism as a practice shaped by overlapping historical, economic, and ecological influences that are never fully erased but continuously reworked.

Kavoori then introduced the concept of the "commoner" as a lens to examine pastoralism. Historically, commoners were defined not by ownership but by their rights of access and use of

shared resources paralleling pastoralists' reliance on communal grazing lands. He underscored how contemporary policies often fail to differentiate between ownership and land use rights, leading to conflicts that jeopardize pastoral livelihoods. This perspective situates pastoralists within a broader category of communities that depend on common resources but lack formal ownership.

He further explored the idea of reproduction and stewardship, emphasizing that pastoralists' resistance to governance measures is not merely an act of defiance but a fundamental assertion of control over the reproduction of their livestock and way of life. He contrasted pastoralist breeding practices with state-led livestock development efforts, arguing that pastoralists reject external interventions such as hybrid breeds, when they undermine the naturalness and long-term viability of their production systems. By framing pastoralism as a practice of stewardship rather than mere extraction, he highlighted its role in maintaining ecological and economic sustainability through different strategies adapted over generations by different pastoral communities in different ecological niches.

Turning to accumulation and subsistence, Kavoori critiqued the traditional economic binaries that position subsistence and accumulation as opposing forces. He argued that pastoralists engage in market economies while simultaneously maintaining non-monetary systems of reciprocity, interdependence, and social capital and social reproduction. This challenges the perception of pastoralism as either a relic of the past or a purely subsistence-based livelihood, instead presenting it as a complex, adaptive practice that straddles both economic worlds.



Dr. Purnendu Kavoori

The talk concluded with a reflection on the transition from commoner to citizen, examining how state policies and legal frameworks have reshaped pastoralist identities. Kavoori linked this transition to historical processes of enclosure and dispossession, drawing parallels between the marginalization of commoners in medieval Europe and contemporary struggles faced by pastoralists in India. He argued that the rigidity of modern citizenship, with its emphasis on fixed territorial and legal categories, often clashes with the fluid, mobile, and context-dependent realities of pastoralist life. The increasing enclosure of grazing lands and the imposition of bureaucratic

structures have forced pastoralists into new forms of negotiation with the state, often at the cost of their traditional rights and practices.

In closing, Kavoori urged scholars and policymakers to move beyond rigid classifications and instead engage with pastoralism in all its historical, cultural, and economic complexity. His address set the stage for deeper discussions throughout the conference, challenging attendees to rethink prevailing assumptions and to approach pastoralist studies with a greater sensitivity to the realities on the ground.

Panel 1: Pastoralist Transitions Across India

Panel Chair: Priya Rajput, CfP, New Delhi

The panel on “Pastoralist Transitions Across India” brought together a diverse set of scholars examining the evolving dynamics of pastoralist communities across the country. Chaired by Priya Rajput, the panel featured discussions that spanned multiple geographies, themes, and methodologies, offering nuanced insights into mobility, identity, livelihood transitions, conservation, and policy interventions shaping contemporary pastoralist practices.

Natasha Maru’s presentation, “The Pace of Pastoral Mobility”, offered a conceptual lens through which to understand how pastoralists navigate socio-economic and climatic uncertainties. Drawing on research with the Rabari pastoralists in Kutch, Gujarat, she introduced the ideas of ‘pace’ and ‘pacing’ to capture the multi-scalar dimensions of pastoral mobility. Her work challenged the dominant ‘sedentist bias’ in pastoral development discourse by demonstrating the intricate ways in which mobility is attuned to ecological, social, and economic rhythms.

Bhat Iqbal Majeed and Ranvir Singh, in their paper “Nomadism at Crossroads: Bakkarwals of Jammu and Kashmir in Context”, examined the historical and contemporary forces driving the marginalisation of the Bakkarwal community. Their analysis highlighted how conservation policies, shrinking pastures, and state-led developmental initiatives have contributed to the sedentarisation of this nomadic group. Situating their findings within broader postcolonial critiques, they argued that the persistence of colonial-era perspectives in governance has exacerbated the vulnerabilities of Bakkarwal pastoral group.

Vidur Datt and Aniruddh Sheth’s study, “Transhumant Contemporaneity: Transitioning Livelihood Practices in Himachal Pradesh”, challenged deterministic narratives of pastoralism’s decline. Drawing on longitudinal

research across Himachal Pradesh, they identified emerging ‘neo-pastoralist’ strategies that reflect shifting economic, ecological, and labour dynamics. Their findings highlighted regionally specific trajectories of change, influenced by conservation areas, evolving aspirations, and commercial shifts, offering a counterpoint to narratives of inevitable pastoral decline.

Stanzin Namgial’s paper, “Preserving the Sacred: The Role of Religion in Environmental Conservation Among the Changpa”, explored the intersection of spiritual beliefs and environmental stewardship among the Changpa pastoralists of Ladakh. Based on ethnographic research, his work illuminated how religious traditions shape eco-centric and sustainable pastoral practices in the high-altitude landscape of Changthang. His presentation underscored the role of indigenous belief systems in conservation and the need for policy frameworks to engage with these practices meaningfully.

Faisal Rehman Syed, Mounthees Kuttan Kodikkal, and Ranjani Prasad Musunuri, in “Toda Cartographies: Reimagining the Lost Pasturages of the Nilgiris”, examined community-led cultural mapping efforts among the Toda pastoralists. They highlighted how these initiatives serve as tools for intergenerational knowledge transfer and territorial claims under the Forest Rights Act. Their study pointed to the historical marginalisation of pastoral spaces in the Nilgiris and the ongoing efforts to reclaim and document these landscapes as sites of cultural and ecological significance.

Vinay Kumar and Saloni Bhatia’s study, “Mobility, Gender, and Resource Dynamics of Pastoralist Communities in North India”, provided an intersectional analysis of Gaddi and Gujjar pastoralists, with a focus on gender roles, intra-community tensions, and shifting resource access. Their research brought attention to the increasing

challenges faced by small-scale herders due to climate variability, changing market dynamics, and evolving relationships with state institutions. Their findings underscored the centrality of women in pastoralist economies and the complex negotiations required for sustaining migratory livelihoods.

In their paper “Pastoralism and Agriculture in Kutch: Crop-Livestock Interactions Undergoing Profound Transformation”, Claire Aubron assessed historical shifts in the interactions between pastoralism and agriculture in Kutch, Gujarat. They traced the decline of traditional livestock-crop integration due to mechanisation, land-use change, and invasive species, while also identifying new adaptations such as commercial dairy production. Their work illustrated the resilience of pastoralists in adapting to contemporary agrarian economies, albeit with increased vulnerabilities.

Collectively, these papers challenged deterministic narratives of pastoral decline and instead highlighted the diverse and emerging strategies pastoralist communities employ to navigate changing ecological, socio-economic, and political landscapes. The discussions reinforced the need for policies that acknowledge and support the fluid, adaptive, and historically resilient nature of pastoralist livelihoods in India. This panel concluded with reflections on the urgency of incorporating pastoralist perspectives into conservation, development, and governance frameworks to ensure that these communities can continue to thrive in the face of multiple challenges.



Natasha Maru



Mounthees Kuttan Kodikkal

Panel Discussion: Where is Pastoralism Headed?

Questions that Need Addressing

Moderator: Matthieu Salpeuter, Institute of Research for Development, France

Panel: Natasha Maru, Emmanuel Theophilus, Tushar Dash, and Jayashree Ratnam

The panel discussion focused on the future of pastoralism in India, examining the intersection of ecological, socio-economic, and policy challenges. It explored the ongoing transitions within pastoral communities, the degradation and misclassification of grasslands, and the shifting trends and accessibility challenges observed in different regions. The key discussion points included:

- The need to connect questions of pastoral development to ground reality and pastoral agency and leadership;
- Changing trends in pastoralism in Kumaon region;

- Community forest rights of pastoralist communities in India, emerging trends and challenges; and
- Migrant pastoralist in arid and semi-arid regions as an ecologically sustainable and climate friendly way of life.

The discussion underscored the need for inclusive policies that recognize and appreciate pastoral knowledge systems, the ecological and economic logic that underscores pastoral mobility, and the multiple reasons that underpin the argument for ensuring long-term sustainability of India's pastoral systems.



(left to right): Matthieu Salpeuter, Tushar Dash, Natasha Maru, Emmanuel Theophilus, and Jayashree Ratnam

Panel 2: Pastoralist Futures and Policy Interventions

Panel Chair: Aniruddh Sheth, CfP, New Delhi

The second panel, chaired by Aniruddh Sheth, explored key policy and governance challenges facing pastoralists in India, focusing on issues of land use, conservation, climate change, and disaster resilience. The panel brought together diverse perspectives on how existing policies and environmental changes are reshaping pastoralist livelihoods and access to common resources.

Gautam Aredath and Sanjana Nair, in their paper “Realigning Policy Tools for Improved Management of India’s Open Natural Ecosystems”, examined how semi-arid Open Natural Ecosystems (ONEs) are misclassified as wastelands or degraded forests, leading to their mismanagement and conversion to other uses. By mapping the fragmented policy landscape governing these ecosystems, they identified the need for an integrated governance framework that considers the socio-ecological value of ONEs. Their findings highlighted how sectoral priorities and bureaucratic fragmentation undermine sustainable management of ONEs, calling for a multipurpose, multi-stakeholder approach to policy making.

Ovee Thorat’s presentation, “Neither Here, Nor There: Challenges Faced by the Migratory Bakarwal Community in Jammu and Kashmir”, focused on the socio-economic and political transformations affecting the Bakarwals, a transhumant pastoral group from Jammu and Kashmir. Using ethnographic research and movement mapping, she detailed the land rights issues, declining wool income, and inadequate state support that hinder the Bakarwals’ traditional livelihoods. Thorat also discussed the implications of the abrogation of Article 370, which has altered property rights, but has also resulted in the introduction of the Forest Rights Act, 2006 in the UT

M. Mathivanan presented “Facing the Deluge: How Floods Disrupted Grazing Communities in Tamil Nadu”, focusing on the catastrophic impact of the December 2023 floods on pastoralists in Tirunelveli and Thoothukudi districts of Tamil Nadu. He documented the loss of livestock, grazing land, and economic stability among sheep herders, linking these disruptions to unplanned industrial development, encroachments on water bodies,



Gautam Aredath

and inadequate flood preparedness. Mathivanan argued for urgent policy interventions, including better climate resilience planning, grazing land restoration, and early warning systems tailored to pastoralist communities.

Priyank Goswami and Priya Rajput, in their paper “Climate Justice and the Transformation of Bakarwal Pastoralism in the Indian Western Himalayas”, examined how anthropogenic climate change is accelerating the decline of transhumance practices. Through mixed-methods research in Jammu and Kashmir’s Rajouri district, they found that the repercussions posed by both slow and rapid onset events, pasture degradation, and increasing sedentarization pressures are undermining traditional pastoral knowledge systems. The paper advocated for climate justice approaches that

integrate indigenous knowledge and Weather Information Systems (WIS), provide institutional support, and develop equitable adaptation strategies for marginalised pastoral communities.

Rashmi Singh’s paper, “The State and Indigenous Politics in Himalayan Conservation”, explored the intersection of conservation policies and indigenous political dynamics, using the grazing ban in Khangchendzonga National Park, Sikkim as a case study. She emphasised how electoral politics and local power structures played a crucial role in enforcing the ban, often at the cost of pastoralist livelihoods. Singh’s research raised critical questions about the broader implications of state-led conservation policies, emphasising the need to balance ecological protection with pastoralist rights and community participation in decision-making.



Rashmi Singh

Panel 3: Grasslands and Pastoralism

Panel Chair: Mayank Kohli, NCBS, Bangalore

The third panel, chaired by Mayank Kohli, focused on the intricate relationship between pastoralist communities and India's diverse grassland ecosystems. The discussions explored pastoralist mobility patterns, the conservation and degradation of grazing commons, human-wildlife interactions, and the role of ecotourism and sustainable landscape development in supporting both pastoral livelihoods and biodiversity.

Iravatee Majgaonkar, Juliette Young, Siddhartha Krishnan, and Abi Tamim Vanak, in their paper "How do Pastoralists Use Fragmented Open Natural Ecosystems in Western Peninsular India?", examined pastoralists' movement across the Deccan's Open Natural Ecosystems (ONEs). Using GPS tracking and qualitative interviews, their study underscored the importance of seasonal shifts in grazing preferences with a greater reliance on natural grasslands during the monsoon and cultivated lands during the dry season. Their findings underscored the

significance of fallow lands and socio-economic networks in shaping grazing strategies, challenging the assumption that pastoralism in this region is primarily underpinned by access to common lands.

Malaika Mathew Chawla and Suresh Kuvadiya, in their paper "The Relationships Between Wolves and Pastoralists in the Context of Shrinking Grasslands in Surendranagar District, Gujarat", investigated pastoralist perceptions of the Indian grey wolf. Their research found that while pastoralists often retaliate against wolves due to livestock predation, their relationship with the species is shaped by broader economic and land-use changes, including industrial expansion and restrictions on grazing in reserved forests. The study raised concerns about the failure of state compensation schemes and the impact of afforestation policies that prioritise tree plantations over grassland conservation.



Malaika Mathew Chawla

Abhishek Kumar and Mahima Gopalkrishna's paper, "Exploring Ecotourism as a Pathway to Grassland Conservation and Pastoral Resilience", examined the potential of ecotourism to support pastoral economies while promoting grassland conservation. Drawing on case studies and pastoralist interviews, they assessed the benefits and risks associated with tourism-driven conservation models from different countries like Mongolia, France, Kenya, Uganda, etc. Their findings pointed to the need for community-driven approaches that prioritise pastoralist agency, rather than externally imposed ecotourism initiatives that might further marginalise these communities.

Saili K Palande Datar and Neha Rane, in their paper "Foraging for Life on Margins: Pastoral Footprints on Sada-Lateritic Landscapes", explored the resilience of Dhangar pastoralists in the rocky outcrops of Konkan. Their ethnographic research documented traditional knowledge systems related to medicinal plants, seasonal mobility, and adaptation to extreme landscapes. The study highlighted the intersections of cultural heritage, ecological stewardship, and climate resilience, drawing attention to the threats posed by changing land-use policies in the region.

Shahid Saleem, Javeed A Rather, Suheel Ahmad, and Mohammad Sajad Tass presented "Forage Dynamics and Livestock Carrying Capacity in the Alpine Grasslands of the Kashmir Himalayas", a study using remote sensing and field-based biomass assessments to estimate the carrying capacity of high-altitude pastures in Jammu and Kashmir. Their findings showed that while pastoral stocking rates remain within sustainable limits, localised overgrazing in certain areas requires targeted management strategies to prevent rangeland degradation.

The discussions reinforced the importance of context-specific, community-led conservation efforts that recognise the dynamic relationship between pastoralists, wildlife, and grassland ecosystems. The presentations collectively called for policy frameworks that move beyond afforestation-centric conservation models and instead focus on protecting India's threatened grasslands through sustainable pastoral practices and inclusive governance structures.



Shahid Saleem

Panel 4: Addressing Climate Change Mitigation and Pastoralist Land Use in Indian Grasslands

Panel Chair: Manan Bhan, ATREE, Bangalore

The fourth panel, chaired by Manan Bhan, focused on the intersection of climate change mitigation strategies and pastoralist land use in Indian grasslands. The discussions critically examined afforestation policies, carbon sequestration mechanisms, and the ecological consequences of land-use changes, highlighting the need for evidence-based policy approaches that balance carbon storage with ecosystem resilience and pastoralist livelihoods.

P. Pritha Reddy and Rajkamal Goswami, in their paper “Rethinking Afforestation in Semi-Arid Regions: A Carbon and Water Use Efficiency Perspective”, explored the trade-offs between carbon sequestration and water use in Semi-Arid Regions (SARs). They argued that grasslands, compared to forests, exhibit higher Carbon Use

Efficiency (CUE), Lower Water Use Efficiency (WUE), and greater drought resilience, making them efficient ecosystems for balancing carbon storage and water availability, particularly relevant in Semi-Arid Regions. Their review demonstrated that large-scale afforestation in SARs often leads to soil moisture depletion, biodiversity loss, and nutrient redistribution, exacerbating land degradation rather than mitigating climate change. They recommended that CUE and WUE metrics should be incorporated into afforestation and restoration policies to ensure sustainable climate change mitigation and adaptation strategies that align with local ecological conditions.

Jobin Varughese, Mayank Kohli, Jayashree Ratnam, and Mahesh Sankaran presented “Climate Change Mitigation in Rangelands: Responses of Soil Carbon



Manan Bhan

to Afforestation”, a study assessing the impact of afforestation on soil carbon sequestration in montane and savannas grasslands. Their research, conducted across thirteen sites in India, compared carbon stocks in paired plantations and adjacent grasslands, separating Soil Organic Carbon (SOC) into Mineral-Associated Organic Matter (MAOM) (a stable carbon stock) and Particulate Organic Matter (POM) (a more volatile stock). Preliminary findings showed that while above-ground carbon stocks were significantly higher in plantations, soils stored equivalent carbon stock. The POM and MAOM showed no significant difference between plantations and grasslands, although more analyses are required to confirm these expectations. These results do challenge the assumption that afforestation is always an effective climate mitigation strategy, since carbon stored in plantations is vulnerable to fire, drought, and ecosystem disturbances. The study underscored the need for a more nuanced approach to carbon sequestration that considers the long-term stability of soil carbon pools, particularly in arid and semi-arid zones.

The discussions stressed the importance of protecting grasslands as carbon sinks and climate-resilient ecosystems, rather than prioritising afforestation as a blanket climate solution. The speakers collectively called for grassland-inclusive climate policies that move beyond tree-centric approaches, incorporating scientific evidence on soil carbon dynamics, water efficiency, and the ecological services that natural grasslands provide. The discussions highlighted that pastoralists, as key stewards of these landscapes, must be included in policy frameworks to ensure sustainable land management that supports both climate adaptation and local livelihoods.



P. Pritha Reddy

Panel Discussion: What does Climate Change Action Mean for Indian Grasslands? How is it Seen by Different Actors?

Moderator: Manan Bhan

Panel: Anisha Jayadevan, Bhargavi Rao, and Benson Isaac



(left to right): Anisha Jayadevan, Bhargavi S. Rao, and Benson Isaac

The panel discussion aimed to understand the role of climate action (mitigation and adaptation measures) in maintaining the ONEs in India. The invited speakers have been active researchers while also dealing with climate action through storytelling, advocacy, outreach, and policymaking. The panellists discussed their interpretation of the biophysical and socio-ecological changes happening in ONEs in India and the needs of different land uses and land users in the country, all in the context of climate action.

The discussion initially focused on the interpretations and perceptions of the word 'climate action' in various communities - the scientists and

advocates, the government, the pastoralists, other stakeholders on the ground and social media. The panel discussed further by comparing the historic contestation between stakeholders and the present situation where climate change and mitigation actions have been added as a new dimension in national and international narratives.

One of the crucial points of discussion was the 'wasteland' narrative when talking about the grasslands. The panellists spoke about how narratives and misperceptions around tree planting as a solution to climate change and around degradation in open natural ecosystems continue to drive a range of actors, from governments

to NGOs to donors, to plant trees in ONEs. She further touched upon the mandate of the Forest Department to plant trees, the ways that this activity is encouraged within the Forest Department (FD) and by the state by linking it to incentives, promotions, and recognition, and the ways that tree planting is further enforced by state and national policies and funding to increase tree cover. Thus, a significant challenge is to break down the misperceptions surrounding tree planting and foster a better understanding of ONEs in India. This is important from the perspective of grassland management, but also from the perspective of how pastoralist communities are affected by the conversion of ONEs to plantations.

Overall the discussion ranged from understanding the kind of advocacy campaigns that can prove efficient in fighting issues regarding land access, mobile land use, and land use conversion to listing out ways to represent pastoralist communities and document their stories. It also focused on the incorporation of traditional and indigenous identities, culture and knowledge into conservation policies, and on the obstacles to partnerships between researchers, stakeholders and government, and how these can be addressed to foster knowledge exchange and to inform conservation policy and practice.

Panel Discussion: On the Academic and Research Landscape on Pastoralism in India: Current Situation and Ways Forward

Moderator: Matthieu Salpeteur, Institute of Research for Development, France

Panel: Anita Sharma, Rashmi Singh, Claire Aubron, Saloni Bhatia, Mridul Ganguly, Manish Kumar, Abhirami Ravichandran, and Iravatee Majgaonkar



(left to right): Saloni Bhatia, Mridul Ganguly, Iravatee Majgaonkar, Rashmi Singh, and Anita Sharma

The panel discussion focused on the academic and research landscape on pastoralism in India, exploring the challenges and opportunities in this field. The discussion also highlighted the formation and contributions of the India Pastoral Network (IPN) and the importance of fostering interdisciplinary collaborations.

Panelists representing academia, research institutions, think tanks, and civil society organizations emphasized the growing engagement with and understanding of pastoralism. There was commentary on the and the need for cross-sectoral collaborations. Panelists shared experiences on how researchers can move beyond working in silos to establish meaningful partnerships across disciplines. Several panelists stressed the importance of policy advocacy, identifying key nodal agencies that should be engaged to influence decision-making processes more effectively. One of the recurring themes was the increasing pressure on social sciences to demonstrate scientific rigor and establish their legitimacy within academic and policy circles.

Panelists noted a shift over the past decade, from isolated research efforts to an interdisciplinary approach where scholars from diverse fields are engaging with and appreciating each other's work.

This has led to the emergence of scholarly activism and the use of platforms like Massive Open Online Courses (MOOCs) on pastoralism to expand the reach of pastoralism studies.

Another crucial point raised was the need to develop specific skill sets to conduct interdisciplinary research and foster co-creation of knowledge. Some panelists emphasized the integration of ecological and social science methodologies, which allows for a more comprehensive understanding of pastoral systems. They also highlighted the role of changing perspectives and analytical frameworks in generating new insights and advancing research in this field.

Additionally, panelists discussed the impact of attending conferences and academic gatherings in inspiring young researchers to pursue careers in pastoralism studies. Such interactions provide opportunities to understand the resilience and challenges faced by pastoral communities while also fostering a supportive academic environment.

Overall, the discussion underscored the evolving nature of pastoralism research in India, emphasizing the need for interdisciplinary approaches, policy engagement, and enhanced knowledge dissemination through emerging educational platforms.



(left to right): Matthieu Salpeteur, Harshit Mishra, and Claire Aubron

Appendices

A. Programme Schedule

Day 1: February 6, 2025

09:00 - 09:30	Registration
09:30 - 10:00	Welcome - Jayashree Ratnam
10:00 - 11:00	Keynote: Dr Purnendu Kavoori Pastoralist as Commoner: Beyond the vocabularies of mainstreaming and inclusiveness
11:00 - 11:30	Tea/Coffee Break
11:30 - 13:30	Panel 1: Pastoralist Transitions Across India Panel Chair: Priya Rajput <ul style="list-style-type: none">Natasha Maru, The Pace of Pastoral MobilityBhat Iqball Majeed & Ranvir Singh, Nomadism at Crossroads: Bakkarwals of Jammu and Kashmir in ContextVidur Datt, Aniruddh Sheth, Transhumant Contemporaneity: Transitioning Livelihood Practices in Himachal PradeshStanzin Namgial, Preserving the Sacred: The Role of Religion in Environmental Conservation Among the ChangpaFaisal Rehman Syed, Mounthees Kuttan Kodikkal, Ranjani Prasad Musunuri, Toda Cartographies: Reimagining the lost Pasturages of the NilgirisVinay Kumar and Saloni Bhatia, Mobility, Gender and Resource Dynamics of Pastoralist Communities in North IndiaLouise Dalmaso, Jeanne Germanicus, Sébastien Bainville, Hubert Cochet, Marie Derville, Claire Aubron, Pastoralism and agriculture in Kutch: crop-livestock interactions undergoing profound transformation
	Lunch
13:30 - 14:30	Panel Discussion: Where is Pastoralism Headed? Questions that Need Addressing
14:30 - 15:30	Moderator: Matthieu Salpeuter Panel: Natasha Maru, Emmanuel Theophilus, Tushar Dash, and Jayashree Ratnam
15:30 - 16:00	Tea/ Coffee Break

16:00 - 17:30 **Panel 2: Pastoralist Futures and Policy Interventions**

Panel Chair: Aniruddh Sheth

- Gautam Aredath, Sanjana Nair, Realigning policy tools for improved management of India's open natural ecosystems.
- Ovee Thorat, Neither Here, Nor There: Challenges faced by migratory Bakarwal community in Jammu and Kashmir
- M. Mathivanan, Facing the Deluge: How Floods Disrupted Grazing Communities in Tamil Nadu
- Priyank Goswami, Priya Rajput, Climate Justice and the Transformation of Bakarwal Pastoralism in the Indian Western Himalayas
- Rashmi Singh, The State and Indigenous Politics in Himalayan Conservation

19:00 onwards Conference Dinner

Day 2: February 7, 2025

09:00 - 11:00 **Panel 3: Grasslands and Pastoralism**

Panel Chair: Mayank Kohli

- Iravatee Majgaonkar, Juliette Young, Siddhartha Krishnan, Abi Tamim Vanak, How do pastoralists use fragmented Open Natural Ecosystems in western peninsular India? An insight into daily grazing mobilities
- Rajkamal Goswami, Raju J.K., Ranjith H.T., Seena N. Karimbumkara, Quantifying provisioning services from rapidly declining Gomalas (grazing commons) of Chikkaballapur district
- Malaika Mathew Chawla, Suresh Kuvadiya, The relationships between wolves and pastoralists in the context of shrinking grasslands in Surendranagar district, Gujarat, India
- Abhishek Kumar, Mahima Gopalkrishna, Exploring Ecotourism as a Pathway to Grassland Conservation and Pastoral Resilience
- Saili K Palande Datar, Neha Rane, Foraging for life on Margins: Pastoral footprints on Sada- Lateritic Landscapes
- Kruti Shah, Saurabh Popli, Sustainable rural landscape development for livelihood of pastoral community: a case of Bhitara village, Western Banni, Kutch
- Shahid Saleem, Javeed A Rather, Suheel Ahmad, Mohammad Sajad Tass, Forage dynamics and Livestock Carrying Capacity in the Alpine Grasslands of the Kashmir Himalayas

11:00 - 11:30 Tea/Coffee Break

11:30 - 13:00 **Panel 4: Addressing Climate Change Mitigation and Pastoralist Land Use in Indian Grasslands**

Panel Chair: Manan Bhan

- P Pritha Reddy, Rajkamal Goswami, Rethinking Afforestation in Semi-Arid Regions: A Carbon and Water Use Efficiency Perspective
- Jobin Varughese, Mayank Kohli, Jayashree Ratnam & Mahesh Sankaran, Climate change mitigation in rangelands: responses of soil carbon to afforestation

Panel Discussion: What does Climate Change Action Mean for Indian Grasslands? How is it Seen by Different Actors?

Moderator: Manan Bhan

Panel: Anisha Jayadevan, Bhargavi Rao, and Benson Isaac

13:00 - 14:00 Lunch

14:00 - 16:00 **Panel Discussion: On the Academic and Research Landscape on Pastoralism in India: Current Situation and Ways Forward**

Moderator: Matthieu Salpeteur

Panel: Anita Sharma, Rashmi Singh, Claire Aubron, Saloni Bhatia, Mridul Ganguly, Manish Kumar, Abhirami Ravichandran, Iravatee Majgaonkar, and Harshit Mishra

16:00 - 16:30 Tea/Coffee and Closing - Aniruddh Sheth

16:30 onwards Travel to Living Lightly Exhibition at Indira Gandhi National Centre For Arts

B. Biographies of Organisers, Panelists, and Presenters

Organisers

Name	Affiliation	Email Address
Aniruddh Sheth	CfP, New Delhi	aniruddh@centreforpastoralism.org
Jayashree Ratnam	NCBS, Bangalore	jratnam@ncbs.res.in
Jobin Varughese	NCBS, Bangalore	jobinv@ncbs.res.in
Mahesh Sankaran	NCBS, Bangalore	mahesh@ncbs.res.in
Mayank Kohli	NCBS, Bangalore	mayankk@ncbs.res.in
Priya Rajput	CfP, New Delhi	priya@centreforpastoralism.org
Vasant Saberwal	CfP, New Delhi	vasant@centreforpastoralism.org

Panelists

Name	Affiliation	Email Address
Abhirami Ravichandran	ATREE, Bangalore	abhirami.ravichandran@atree.org
Anisha Jayadevan	University of Maryland, Baltimore County	anisha.jayadevan@gmail.com
Anita Sharma	Shiv Nadar University, Noida	anita.sharma@snu.edu.in
Benson Isaac	Rootbridge Academy	benson.issac@gmail.com
Bhargavi Rao	Independent Researcher	bhargavi.srao@gmail.com
Claire Aubron	Institut Agro Montpellier, France	claire.aubron@supagro.fr
Dr Purnendu Kavoori	Center for Social Ecology, Jaipur	purnendukavoori@censeindia.org
Emmanuel Theophilus	CfP, New Delhi	etheophilus@gmail.com
Harshit Mishra	FES, Maharashtra	harshit.mishra@fes.org.in
Iravatee Majgaonkar	ATREE, Bangalore	iravatee.m@atree.org
Jayashree Ratnam	NCBS, Bangalore	jratnam@ncbs.res.in
Manan Bhan	ATREE, Bangalore	manan.bhan@atree.org
Manish Kumar	Shiv Nadar University, Noida	mk289@snu.edu.in
Matthieu Salpeuter	Institute of Research for Development, France	matthieu.salpeuter@ird.fr
Mridul Ganguly	Revitalising Rainfed Agriculture Network, Hyderabad	livestock@rainfedindia.org
Natasha Maru	Independent Researcher	N.Maru@alumni.ids.ac.uk
Rashmi Singh	IIT, Hyderabad	rashmi89singh@gmail.com
Saloni Bhatia	ATREE, Bangalore	saloni.bhatia@atree.org
Tushar Dash	Independent Researcher	tushardash01@gmail.com

Presenters

Name	Affiliation	Email Address
Abhishek Kumar	National Council for Hotel Management	emailabhisheknow@gmail.com
Bhat Iqbal Majeed	Central University of Jammu, J&K	bhat.iqbal@gmail.com
Claire Aubron	Institut Agro Montpellier, France	claire.aubron@supagro.fr
Faisal Rehman	KeyStone Foundation, Tamil Nadu	faisal@keystone-foundation.org
Gautam Aredath	ATREE, Bangalore	gautam.aredath@atree.org
Iravatee Majgaonkar	ATREE, Bangalore	iravatee.m@atree.org
Jobin Varughese	NCBS, Bangalore	jobinv@ncbs.res.in
M. Mathivanan	ATREE, Bangalore	mathi@atree.org
Malaika Mathew Chawla	Sahjeevan, Bhuj	malaika@sahjeevan.org
Natasha Maru	Independent Researcher	N.Maru@alumni.ids.ac.uk
Ovee Thorat	Independent Researcher	ovthorat@gmail.com
P Pritha Reddy	ATREE, Bangalore	reddy.pritha@students.iiserpune.ac.in
Priyank Goswami	IIPA, New Delhi	priyank.policy@gmail.com
Rajkamal Goswami	ATREE, Bangalore	rajkamal@atree.org
Rashmi Singh	IIT, Hyderabad	rashmi89singh@gmail.com
Saili K Palande Datar	University of Exeter, UK	sailikdatar@gmail.com
Sanjana Nair	ATREE, Bangalore	sanjana.nair@atree.org
Shahid Saleem	University of Kashmir, J&K	shahidsulmani630@gmail.com
Stanzin Namgial	EJM College, Leh	stanzinstakpa@gmail.com
Suresh Kuvadiya	Sahjeevan, Bhuj	suresh@sahjeevan.org
Vidur Datt	CfP, New Delhi	vidur@centreforpastoralism.org
Vinay Kumar	ATREE, Bangalore	vinay.kumar@atree.org

C. Conference Abstracts

1. Exploring Ecotourism as a Pathway to Grassland Conservation and Pastoral Resilience

Abhishek Kumar*, Mahima Gopalkrishna



Participants at the conference

Pastoralism, a livelihood system centred around the herding and management of livestock, has been an integral part of India's socio-economic fabric for centuries. Pastoralists, relying on extensive grazing across diverse landscapes, contribute significantly to food production, livestock breeding, and the maintenance of open ecosystems like grasslands. Due to the nature of natural vegetation dominated by herbaceous plants, grasslands form one of the largest ecosystems in the world. India is home to five major types of grasslands across its diverse landscape (Dabadghao & Shankarnarayan 1973). Despite their ecological importance, Grasslands are among India's most threatened ecosystems, with less than 5% of these landscapes falling under protected areas (Madhusudan & Vanak, 2021). Over recent decades, there has been a sharp decline in grassland coverage across the country (Pandey, 2019). Furthermore, pastoral communities that form their backbone have been historically marginalised and face increasing challenges due to growing afforestation, land enclosures, infrastructure expansion, etc. To address these growing concerns, various conservation interventions have been introduced, including eco-tourism initiatives. In several countries, eco-tourism has been implemented in grassland areas dominated by pastoral systems as a dual strategy to conserve these fragile ecosystems while also enhancing the livelihoods of pastoral communities.

While the intersection of grasslands, pastoralism, and tourism is not new, concerns about tourism's negative environmental and social impacts remain a major concern for the fragile grassland ecosystems of India that are already depleting. In line with this development, the objective of the study is to investigate the emerging role of eco-tourism in supporting the conservation of pastoral ecosystems while boosting the resilience of pastoralists in India. This research adopts a two-fold approach to data collection: firstly, a review of case studies on existing pastoral tourism initiatives to identify successful strategies and recurring challenges; and secondly, data is collected directly from pastoral communities to gain insight into their perceptions of tourism and assess whether they believe tourism has the potential to address the growing grassland-related issues and support their livelihoods. Through keyword and theme analysis of data sourced directly from pastoral communities, the study evaluates whether eco-tourism, though often debated as a developmental tool and criticised for its drawbacks, can indeed serve as a viable and sustainable conservation approach. Ultimately, this paper aims to contribute a pragmatic perspective on integrating ecotourism with pastoralism and serves as a reality check of the consequences of tourism on both pastoralism as well as preservation of grassland ecosystems.

2. Nomadism at Crossroads: Bakkarwals of Jammu and Kashmir in Context

Bhat Iqbal Majeed* & Ranvir Singh

Nomadic lifestyle is one of the divergent lifestyles that humans have adapted across the evolutionary ladder. With the advent of time and the influence of modernity, the challenges faced by nomadic people are increasing. Nomadic communities across the globe have either been forced to settle down under the grab of 'civilizing the uncivilized'. The unfortunate aspect of the knowledge production is that many colonial anthropologists framed discourse of development, which went all against the nomadic populations. The postcolonial studies, though prominent in highlighting the curses of colonialism, yet decolonized countries could not do much for their nomadic communities. This has led to the further marginalization of the nomadic communities even under the notion of so-called development. From the African region up to the South Americas, nomadic people face the wrath of climate change, the influence of modern technological development, armed conflict, the

outbreak of numerous pandemics, and largely the shrinking pastures and lands meant for them. At the cost of the ghost of development, a number of nomadic communities are facing the existential crisis. This paper particularly focuses on the challenges of Bakkarwals, a nomadic group residing in the state of Jammu and Kashmir. The paper is an outcome of decadal research that has been conducted with this group. The paper tries to delve into the question of how shrinking pastures in the name of conservation, development is forcing nomads towards sedentarization. The paper also brings in how modernity and state induced capitalistic oriented development are shaping the relations between nomads and modern nation states. The paper critically looks at the issues of identity assertion, shrinking pastures, conservation policies, and environmental degradation from policy interventions.

3. Pastoralism and Agriculture in Kutch: Crop-livestock Interactions Undergoing Profound Transformation

Louise Dalmasso, Jeanne Germanicus, Sébastien Bainville, Hubert Cochet, Marie Derville, and Claire Aubron*

In the central part of the semi-arid region of Kutch, pastoralism historically played a key role in agriculture. Various pastoral communities, moving in search of grasslands in the salty plain of Banni during the monsoon and rabi seasons, provided farmers with draft (Kankrej cattle) and transport (camels) animals. After the harvests, the pastoralists would move to cultivated areas, where, in exchange for grazing on crop residues and common village lands, they would pen their animals on the crop fields at night, thus contributing to soil fertility renewal through manure. From the 1970s onward, this system was challenged to the detriment of the pastoralists. Mechanization reduced the demand for draft animals, and the expansion of irrigated agriculture extended cropping periods, limiting post-harvest grazing opportunities. The spread of *Prosopis Juliflora*, introduced in 1965 and

now covering half of the Banni, further reduced the quality and quantity of pastoral resources. A more favorable period began in 2010 with the establishment of dairy cooperatives in Banni for bovines, and then camels. To support buffalo milk production and reduce their need to move towards cultivated areas, the pastoralists adapted their animals' diet by providing concentrated feed and purchased crop residues. This allows them to achieve incomes with 20 buffalos comparable to those of farmers with 8 irrigated acres, but at the cost of significantly more labor and greater vulnerability to droughts. This work is based on an agrarian diagnosis conducted by two French students with support of Satvik and Sahjeevan organizations in the TransIndianDairy project.

4. Realigning policy tools for improved management of India's open natural ecosystems.

Gautam Aredath*, Sanjana Nair

Semi-arid Open Natural Ecosystems (ONEs) in India are largely miscategorised as wastelands or degraded forests, despite their ecological distinctness and socio-ecological importance for pastoralist livelihoods. This leads to conversion of ONEs towards other uses and land degradation. Additionally, they are subject to multiple contestations by various sectors, such as industry, agriculture and conservation leading to the mismanagement of ONEs. Given the scattered nature of land use of ONEs in India there is a need to evolve a comprehensive policy framework for their management. ONEs are influenced by numerous policies, programmes and governance frameworks. The paper maps the policy landscape across ministries that directly and indirectly influences ONEs. We find that the use and management of ONEs is governed by a fragmented terrain of policy

tools and state actors pursuing sectoral priorities and mandates. Such fragmentation results in the neglect of the trade-offs inherent in such actions vis-à-vis the benefits provided by ONEs. We identify central government actors (i.e., ministries) and policy tools (i.e., laws, policies, and programs) that influence and have the potential to influence land use in ONEs. We then evaluate the relevance (high, medium, low) and influence (positive, variable, negative) of these policy tools and propose a matrix that recommends policy actions to reduce mismanagement of ONEs as unique socio-ecological systems. Management strategies for ONEs must account for a multipurpose, multi-stakeholder governance framework to inform, evaluate, and prioritise interventions to safeguard their socio-ecological value.

5. How do pastoralists use fragmented Open Natural Ecosystems in western peninsular India? An insight into daily grazing mobilities

Iravatee Majgaonkar*, Juliette Young, Siddhartha Krishnan, Abi Tamim Vanak

Open Natural Ecosystems (ONEs) cover ~ 98,000 sq km of India's Deccan peninsula and are extremely fragmented because of land use diversions. Sustainable use of ONEs for livelihoods like extensive pastoralism requires an understanding of the nature of dependence of pastoralists on these native habitats. This is especially important knowing such socio-ecological systems in dry regions lack rightful recognition in policy and legislation for the livelihood security they provide to millions of people. I tracked livestock movement in different land uses of western Maharashtra's ONEs for 109 days between 2022-2023. I used non-participant observations and interviews with pastoralist men and women to understand movement related decision making. I use generalized linear models and availability vs use frameworks to infer on pastoralism's fine scale use of the landscape. Livestock movement patterns show that pastoralist dependence on ONEs is significantly higher

in the monsoon compared to the dry season, when it shifts to croplands. Daily distances vary significantly with season and appear to be governed by decisions around the availability of irrigation and a household's social networks and not on herd sizes or number of herders. However, long-distance migration was found to be linked to herd and household sizes. The impact of expansion of agriculture on pastoralism is not always negative and some households appear to benefit from year-round cropping through different socio-economic arrangements. I highlight that pastoralism in this region of the Deccan is largely governed by individual access to fallow lands and not as much by commons. My findings help to develop a better understanding of the poorly documented arrangements supporting Deccan pastoralism in agrarian landscapes.

6. Climate Change Mitigation in Rangelands: Responses of Soil Carbon to Afforestation

Jobin Varughese*, Mayank Kohli, Jayashree Ratnam, Mahesh Sankaran

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 (SOC). Whether such afforestation actually increases C sequestration and, if so, by how much has not been quantified. We propose to study above- and below-ground carbon stocks in grasslands and quantify changes in ecosystem C stocks following afforestation. We quantify C stocks in paired plantations and adjacent grasslands at thirteen sites across India. Soil samples are collected, and the SOC is separated into mineral-associated organic matter (MAOM) and particulate organic matter (POM). MAOM represents a more stable SOC stock in the longer term. Early analysis

from the montane sites shows that, as expected, the above-ground carbon stocks are significantly higher in the plantations ($64.28 \pm 53.85 \text{ tC/ha}$) than in the grasslands ($1.19 \pm 2.73 \text{ tC/ha}$) ($p\text{-value}=0.0005$). However, MAOM is slightly greater in grasslands ($3.565 \pm 1.743 \text{ tC/ha}$) than in plantations ($2.376 \pm 0.471 \text{ tC/ha}$) ($p\text{-value}=0.3588$). These findings suggest that the total C stocks might be greater in plantations. However, the added C is in the form of aboveground biomass and POM, which are vulnerable to fire, drought, herbivory, diseases, and soil respiration losses. Thus, the potential of MAOM for climate mitigation becomes essential. Considering the importance of grasslands, the study assesses the efficacy of afforestation vis-a-vis its intended carbon sequestration benefits.

7. Facing the Deluge: How Floods Disrupted Grazing Communities in Tamil Nadu

M. Mathivanan

The devastating floods in Tirunelveli and Thoothukudi districts in December 2023 severely impacted the grazing community, compounding their already vulnerable livelihoods. The Northeast Monsoon, typically the primary rainy season for these regions, brought unprecedented rainfall. Tirunelveli, which normally averages 514.9 mm during the monsoon, recorded a staggering 1,329.6 mm, while Thoothukudi, with an average of 441.9 mm, saw 812.4 mm. On December 17 and 18, rainfall exceeded 30 cm in both districts, causing rivers and reservoirs to overflow. This led to the submergence of 224,000 acres of farmland and the tragic loss of nearly 100,000 livestock. To assess the challenges faced by pastoralists during and after the floods, we interviewed 20 sheep herders across Tirunelveli and Thoothukudi districts. While floods are not uncommon in these areas, their increasing frequency and intensity have been

exacerbated by poorly planned infrastructure and unchecked industrial development, particularly in regions such as Gangikondan and Paruthipadu. For pastoralists, whose livelihoods depend on livestock, the economic and emotional toll was immense. Many reported sheep deaths from flash floods, waterborne diseases, and malnutrition due to the inundation of grazing lands. In particular, the pastoralists in Vilathikulam and Ottapidaram Taluks in Thoothukudi were severely affected. In Milagunatham village alone, 750 sheep were washed away, while in Koothalurani village, over 500 sheep perished. Economic losses ranged from Rs 20,000 to Rs 1,00,000 for individual families. Human-induced changes such as industrial estates, unplanned housing, and encroachments on water bodies and natural waterways amplified the flood's impact. The grazing community continues to grapple with the shrinking availability of grazing

lands and the decline of traditional, family-based grazing practices. To mitigate future disasters and ensure the resilience of pastoralist communities, key recommendations include reviving and protecting grazing lands, desilting water bodies, and providing

enhanced weather warnings tailored for shepherds. Immediate action is crucial to safeguard the livelihoods of these communities, which are deeply intertwined with access to secure grazing areas and effective disaster preparedness.

8. The Relationships Between Wolves and Pastoralists in the Context of Shrinking Grasslands in Surendranagar District, Gujarat, India

Malaika Mathew Chawla*, Suresh Kuvadiya

The conservation of the endangered Indian grey wolf (*Canis lupus pallipes*) in India's grasslands has received little government support compared to the efforts focused on forest-dwelling large carnivores. Indian wolves primarily occupy grasslands, thorn forests and agro-pastoral landscapes that are integral to the livelihoods of livestock-keeping communities. In Gujarat, wolves have greatly declined across most of their former range. The state's Forest Department attributes this decline primarily to retaliatory killings by pastoralists. In our study, we seek to capture pastoralist's perspectives of wolves and the larger context in which these perspectives are embedded in. We individually interview sheep and goat pastoralists spread across Surendranagar district in Gujarat in areas where wolves are both absent and present in current times. We also undertake field observations in a village in Surendranagar. Pastoralists here graze their livestock in remnant patches of grassland, some of which overlap with the village's Reserved Forest, owned and controlled by the state's Forest Department. Outside the Reserved Forest, the grasslands are prominently used for industrial activities like sandstone extraction, stone crushing, coal mining and as a dumping ground for ceramic waste. Residents of the village are dependent on the Reserved Forest for grazing or for fuelwood. However, they are stopped and confronted by the ground staff of the Forest Department who

prevent them from grazing and from collecting wood. The Indian wolf continues to survive in this landscape despite it being largely extinct in many parts of the district. The wolf's presence here is thought to coincide with the movement of sheep and goat pastoralists. Pastoralists generally know the whereabouts of the wolves and shut potential breeding dens with thorny branches to prevent wolves from residing in the area, as a means of protecting their livestock. Compensation for livestock losses due to wildlife by the Forest Department is either not provided or significantly delayed. The Forest Department's management strategies for wildlife conservation are largely focused on tree-based afforestation and regulating people's entry and use of the forest rather than efforts to decrease industrial pressures at the boundaries or providing timely compensation to pastoralists. The relationship between the sheep and goat pastoralists and the wolf is embedded in a larger context of shrinking grasslands that affect both pastoral livelihoods and wildlife survival. Our study aims to bring out this larger context and ask two primary questions. First, how do pastoralists think of the wolf in areas where they are present versus where they are absent? Second, how do broader economic and political structures in the landscape shape the way pastoralists perceive and interact with wolves? This study is a work in progress.

9. Toda Cartographies: Reimagining the lost Pasturages of the Nilgiris

Faisal Rehman Syed, Mounthees Kuttan Kodikkal*, and Ranjani Prasad Musunuri

In the last few years, community-led cultural mapping of ancestral domains has been taken up by Toda villages in the Nilgiris as a way to facilitate inter-generational knowledge transfer, led by youth groups. Cultural Mapping is also an indispensable approach to building evidence from the ground for claiming tenurial rights under the Forest Rights Act. The Todas, a pastoral community and a Particularly Vulnerable Tribal Group, are some of the oldest inhabitants of the Nilgiris. They practised Transhumant Pastoralism, which has seen a sharp decline since the 1970s. A system of Ritual Pastoralism with the complex spiritual ideologies and ritual life of being with the unique native buffaloes has been retained quite effectively since it constitutes their core cultural identity today. Successive regimes whether it be the British or Indian/Tamil governments, have manufactured this situation with policies favouring

Agronomic perspectives and cultivation over the solely pastoral. With big infrastructure projects accompanied by forestry practices where the sholas and grasslands of the Nilgiris have fallen to plantations of eucalyptus, acacia, pine, invasive plants, Toda pasturages and migratory routes have been lost to technocratic policies. Reclaiming Toda ancestral domains or historic migratory routes is difficult, but community-led cartographies have led to a process of reimagining the declining pasturages of the community, and finding new ways to experience Toda knowledge systems. This paper seeks to share the understandings related to the status of Toda grazing lands, their Traditional Cultural Expressions & Ecological Knowledge gleaned through the Indigenous Cartographies initiatives supported by Keystone Foundation.

10. The Pace of Pastoral Mobility

Natasha Maru

Through my paper, I will offer the concepts of 'pace' and 'pacing' as a lens to understand how pastoralists engage with growing socio-economic and climatic stressors. Drawing on research with the Rabari pastoralists of Kutch, Gujarat, I will show how they plan, organise and enact their movements at various spatial, temporal and social scales to seize windows of opportunity. I will show how pastoralists organise their movements at the daily, intra-seasonal, inter-seasonal and long-term scales, and how these scales are deeply intertwined. By doing so, I hope to push discussions on pastoral mobility beyond what it is, that is, its extent, degree and pattern, to what it does and how. I begin with mobility to unpack the intersection of weather and crop cycles, animal and human life cycles, production objectives, social relations and affective experiences, and the histories and politics it is embedded within. Therefore, I challenge the 'sedentist bias' often found in pastoral development

that not only privileges spatial concerns but also a framework of fixity, regularity, and boundedness by revealing the flexibility, ambiguity and multiplicity of pastoral mobility, and its adaptation and attunement to context.

11. “Neither Here, Nor There”: Challenges faced by migratory Bakarwal community in Jammu and Kashmir

Ovee Thorat

Bakarwals of Jammu and Kashmir belong to the largest group of Scheduled Tribes in the region and are known for their transhumance. Over the years, they have undergone social, economic, and political transformations. They currently engage in livestock rearing, and often work as labourers in orchards and construction sites. I used in-depth interviews and ethnographic methods based on seasonality and geography to understand the lives of the Bakarwal community. I mapped their critical grazing and camping sites and routes based on interviews and visited a set of families regularly across different seasons to get an idea of their movement patterns and the environment. Results show that

the challenges faced by the Bakarwals revolve around land rights issues, access to education and medical facilities, reducing income from wool, and government support during migration. The challenges in Kashmir, where many Bakarwals live during the summers, are distinctly different from those in Jammu, and hence might need different approaches to tackle the issues. The study also shows that the abrogation of Article 370, which led to introduction of new laws around property rights and industrial development in the region, has given rise to a new set of challenges, especially concerning the Forest Rights Act, 2006.

12. Rethinking Afforestation in Semi-Arid Regions: A Carbon and Water Use Efficiency Perspective

P Pritha Reddy*, Dr. Rajkamal Goswami

This study examines the water cost associated with afforestation efforts, particularly emphasising the trade-offs between carbon sequestration and water use in semi-arid regions (SAR). In contrast to forests, grasslands have a higher Carbon Use Efficiency (CUE), a lower Water Use Efficiency (WUE) and greater resilience to droughts and fires, making them more suitable for balancing carbon storage and water resources in SAR. Despite this, the ecological efficiency of these ecosystems is neglected in global climate policies, prioritising carbon-sequestered through biomass while disregarding the critical limitations of water scarcity in SAR. The review explores the key drivers of CUE and WUE, as well as the hydrological, ecological, and socio-economic consequences of replacing grasslands with tree plantations. The findings reveal that afforestation often depletes soil moisture due to high transpiration while yielding negligible benefits on soil organic carbon. Furthermore, the greening of drylands exacerbates ecological degradation by reducing biodiversity, redistributing nutrients, increasing erosion and desertification risks, and negatively impacting pastoralists by displacing native fodder species and traditional

livelihoods. To overcome these challenges, this research recommends incorporating CUE and WUE into afforestation and restoration policies. These metrics provide a framework for balancing carbon sequestration with water demands sustainably. Policymakers are urged to adopt evidence-based, context-specific approaches in SAR, emphasising species with high CUE and WUE and prioritising native grassland restoration. Aligning these strategies with climate adaptation efforts that account for current and future climatic and anthropogenic conditions, ecosystem resilience can be enhanced, supporting long-term mitigation targets.

13. Climate Justice and the Transformation of Bakarwal Pastoralism in the Indian Western Himalayas

Priyank Goswami* and Priya Rajput

The Indian Western Himalayas are increasingly subject to slow-onset climatic changes and extreme weather events, driven by anthropogenic climate change. These environmental shifts disproportionately affect marginalized communities like the Bakarwal pastoral nomads, who contribute minimally to global carbon emissions but face significant threats to their livelihoods. Historically, transhumance has been a critical strategy for managing ecological variability and resource scarcity. However, with intensifying climate impacts, including erratic seasonal patterns, pasture degradation, and unseasonal snowfall, this adaptive strategy is being undermined. The Bakarwals now face growing pressures to abandon transhumance in favor of sedentarization and alternative livelihoods. This study investigates the transformation of Bakarwal pastoralism, focusing on three objectives: (i) documenting traditional transhumance practices, (ii) analyzing Bakarwal perceptions of climate change, and (iii) exploring

how the intersection of climate and socio-political factors reshapes pastoral livelihoods. Using a sequential exploratory mixed-methods approach, data were gathered through four focus group discussions, six key informant interviews, and sixty semi-structured interviews in the Rajouri and Kathua districts of Jammu and Kashmir. The findings reveal that climate change has led to significant alterations in livestock management, increased reliance on non-pastoral income, and shifts toward sedentarization. The erosion of traditional knowledge systems and limited institutional support exacerbate the community's vulnerability. The study highlights the urgent need for climate justice, advocating for equitable adaptation policies that integrate indigenous knowledge and support marginalized communities. These measures are essential for protecting the socio-cultural identity of the Bakarwals and ensuring sustainable futures.

14. The State and Indigenous Politics in Himalayan Conservation

Rashmi Singh

The global politics of rangeland conservation continues to be shaped by traditional equilibrium models of rangeland function. These dominant narratives have significantly influenced conservation strategies in the Himalayan region, often leading to the forced eviction of pastoralists. While there has been considerable research on the outcomes of state interventions for rural communities, the political dynamics between pastoral groups and the state in policy formation remain under explored. This paper aims to fill that

gap by examining the case of the grazing ban in Khangchendzonga National Park, Sikkim. It will analyse the electoral politics that contributed to the ban's enforcement and the role of local indigenous political dynamics that facilitated its implementation. By unpacking these interconnected political layers, the study sheds light on the broader implications of conservation policies on pastoral communities, local ecologies and wildlife conservation efforts.

15. Foraging for Life on Margins: Pastoral Footprints on Sada- Lateritic Landscapes

Saili K Palande Datar* and Neha Rane

The Laterite rocky outcrops of Konkan form one of the most fragile and rare ecosystems in India. Rich in Aluminium and Iron, they are devoid of good soil cover and experience harsh climate throughout the year. Consequently, the plateaus lack tree cover and vast tracks are covered with varieties of grasses, making it a resourceful grassland scape. Unlike the nomadic pastoralists of peninsular India, the Dhangars and other communities in the central Konkan region practice a sedentary lifestyle. Along with indigenous Dakhani sheep, they are known for rearing buffaloes, cows & goats. Hence, they are called “Gavli”, Mhaske” or “Dange” Dhangars. Under the exploration study for traditional knowledge systems and practices related to rocky outcrops, the authors have documented the pastoral lifestyles and adaptations of these communities to this extreme landscape through a multidisciplinary

approach. The seasonal aspects of practices allow for diverse and dynamic livelihood adaptations throughout the year which makes the subsistence lifestyle viable. The ethnographic study attempts to mark their presence in the landscape through study of various cultural practices that have prehistoric origins. The results also reveal the Dhangar community’s nuanced medicinal plant knowledge and indigenous healing systems practices for both humans and pastoral animals. Though perceived as marginal and subsistence based, the Dhangar communities in central Konkan highlight the crucial indigenous resilience to climate change phenomenon with respect to extreme and fragile landscapes of Konkan. Through discussing the case of rural commons of Konkan region, the paper discusses the changing land use and policy challenges to these indigenous pastoral livelihoods.

16. Forage Dynamics and Livestock Carrying Capacity in the Alpine Grasslands of the Kashmir Himalayas

Shahid Saleem*, Javeed A Rather, Suheel Ahmad, Mohammad Sajad Tass

The alpine grasslands of the Kashmir Himalayas serve as a lifeline for the region’s pastoral communities, providing the primary source of forage for their livestock and also play a significant role in maintaining the ecological balance of the area. However, sustainable pastoralism in these fragile ecosystem hinges on a thorough understanding of forage availability and livestock carrying capacity. This study presents a comprehensive analysis of Alpine pastures in the Kashmir Himalayas through a multidisciplinary approach, combining remote sensing and field-based assessments for biomass estimation and livestock carrying capacity of these high-altitude grasslands. Through comprehensive biomass sampling across 23 strategically selected sites, we calculated an average dry matter above ground biomass yield of 5.10 metric tons per hectare, resulting in a total dry biomass weight of approximately (820,489,220 kilograms) 820,489.22 metric tons, over the entire grassland area of 160,974 hectares. Using a daily forage intake of 1.3

kg per Sheep Unit (SU) over 50 grazing days, time period which corresponds to the renewal period for new grass growth, the average carrying capacity of the rangelands was determined to be 39.08 Animal Units (AU) per hectare and the total carrying capacity was estimated 62,78,556. The current stocking rate of 4,661,800 SU utilizes about 74.21% of this Carrying capacity, leaving a surplus of 25.77% or 1,616,756 Animal Sheep Units. However, localized overgrazing in areas such as Thajwas and Mohand Marg highlights the need for targeted management practices to prevent rangeland degradation. This data is critical as it provides a baseline for understanding the potential of these rangelands to support livestock. This study underscores the importance of sustainable livestock management to optimize carrying capacity while maintaining the ecological balance of the grasslands. Engaging local pastoral communities in these efforts is essential for the effective and sustainable management of the alpine grasslands in the Kashmir Himalayas.

17. Preserving the Sacred: The Role of Religion in Environmental Conservation Among the Changpa

Stanzin Namgial

This study investigates the deep connection between traditional religious beliefs and community-based conservation practices among the Changpa tribe in Changthang, Ladakh. The Changpa, a nomadic pastoral community, inhabit this vast, high-altitude region spanning 21,000 square kilometers at an average elevation of 4,000 meters. Following a seasonal migration pattern, they move their herds to lush, high pastures in the summer and return to sheltered villages during the harsh winters, where temperatures can drop as low as minus 30 degrees Celsius. Despite the pressures of a changing environment and shifting socio-economic conditions, the Changpa have preserved a close relationship with their indigenous

knowledge systems, which are deeply rooted in their religious beliefs. These beliefs play a pivotal role in maintaining the fragile ecosystem of Changthang, guiding the community in their sustainable use of natural resources. Drawing on four years of ethnographic research conducted during my PhD, including active participation in nomadic festivals and daily life, this paper offers a detailed micro-level analysis of how religious beliefs influence community-based conservation from a symbolic interactionist perspective. The findings shed light on how one of the world's most remote communities integrates spiritual practices with environmental stewardship.

18. Transhumant Contemporaneity: Transitioning Livelihood Practices in Himachal Pradesh

Vidur Datt*, Aniruddh Sheth

This paper is interested in understanding an evolving transition among pastoralist communities in Himachal Pradesh. Contrary to predictions of pastoralism's total demise, it argues that shifting livestock management dynamics reflect an emerging transition in the systems of animal husbandry—a neo-pastoralism. Whilst there is evidence of sedentarisation among Himachali pastoralists, this paper traces changing—commercial logic, labour practices, land use preferences, migration patterns, livestock holdings, and access regimes—to understand the contemporary rationale for pastoralism in the state. Building on research and experience in this landscape of over thirty years, the data collected surveyed transitions in herd size, and migratory routes in over 30 villages across 3 districts. It further relied on Semi-structured interviews and conversations with key informants to contextualise the narratives of change. This research uncovers the drivers behind the various trajectories of change across these regions. By mapping the forces behind these shifts, the research identifies distinct trajectories: the implications of protected areas like the Great Himalayan National

Park in Kullu. The evolving economic and ecological dimensions of pastoral systems, shaped by growing affluence and changing aspirations among herding households in Kinnaur and Chamba. The paper highlights altering preferences for smaller herds managed over a more limited landscape, increasing reliance on labor, a larger spread of households participating in pastoral systems of production, and an evolving decision-making process among pastoralist households. The paper concludes with a reflection on the ever-evolving nature of pastoralism urging for an understanding of such developments as part of pastoralism's long-standing resilience in responding to future uncertainties rather than interpreting emerging trends as a moment of crisis in pastoralism.

19. Mobility, Gender and Resource Dynamics of Pastoralist Communities in North India

Vinay Kumar* and Saloni Bhatia

A narrative-based study involving field surveys, interactions with local forest officials and communities to gain insights into migratory routes and socio-economic dynamics of Gaddi and Gujjar pastoralists. Drawing on interactions with the two communities, the research reveals several pressing issues faced by pastoralists, including challenges related to access to land and pastures, lack of support for small-scale herders, and disruptions to traditional migration patterns due to weather changes. We interviewed both men and women pastoralists and found that women have a significant role to play within the two communities. They are involved with daily herd management, resource gathering, and maintaining cultural traditions, often balancing these responsibilities

with family and community obligations. Additionally, intra-community tensions, particularly regarding resource competition and, the misuse of grazing permits were significant concerns as well, apart from shifting social relations with other communities, difficulties over market access, the breakdown of intergenerational knowledge transfer, poorly maintained pastoral routes, seasonal market variability and resource limitations, and illegal sharing of information with the forest department. The findings from this study are not only important for understanding the issue from an academic point of view, but also have implications for policy, especially for small-sized herders whose livelihood is highly threatened by the rapidly changing socio-ecological fabric.

