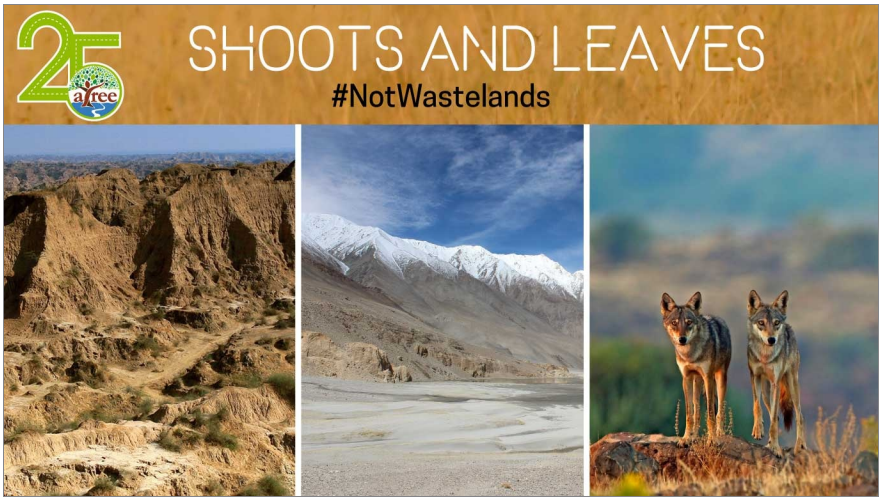


## Overhaul Wasteland Classification Systems

*By Aparna Watve, Vidya Athreya and Iravatee Majgaonkar*


The term “wastelands” originates from land governance systems in the colonial period, and it has been criticised in academia and conservation for being ecologically flawed. Although wastelands have been redefined in the post-independence period, there has been little change in the assumption that they were unproductive, degraded, and in need of external intervention for improvement. The eradication of the term “waste” and a thorough revision of the wastelands atlas, which can then meaningfully address national and global targets of sustainable development, are argued for here. This article weaves together historical contexts around wastelands and proposes a new approach for their mapping.

**Read more**

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## A grassland in words

*By Ramya Ravi*

An arid grassland can be breathtakingly green or screaming shades of brown, but both support thriving biodiversity. The only difference between the two states is good rainfall. Banni is one such system, exuberant when it rains, mellow at other times. Correspondingly, Banni goes by many names. Its people, the *Maldharis* (*Maal=livestock, dhari*=owners) call the dry spell *banjar/sookhi* (barren/dry), and the verdant phase jannat. *Prosopis juliflora*, the invasive plant, goes by the English name *jungle*. They were created in the early twentieth century under Princely rule to generate revenue and ensure wildlife abundance for hunting. The absence of an equivalent word in the local lexicon indicates its artificial state in the region as against *ghasiyaan zameen* (grassland).

The local lexicon can provide meaningful insights into the grassland, its history. More interesting is that the perception of the system can vary across ages. For instance, a *Maldhari* elder was careful to remark that "*banjar bhi kudrati hai*" (the state of dryness is also natural), and that "*humein kudrat ki pehchaan hai*". Both remarks show Maldharis understand the dynamic state of Banni and have constructed their culture around this dynamism. Thus, hinting at their historical resilience and capacity to adapt to environmental uncertainties. The elderly disparages the creation of jungle, a *Prosopis juliflora* woodland as daylight robbery of grazing land but adds it is not the fault of the "*gando bawal*" (mad tree), which is also a part of "*kudrat*".

The same reverence is missing in the youngsters. They understand the grassland and *Prosopis* in resource and income terms, *kharcha pani/guzaran/aamdani* (livelihood), indicating changing relations between the grassland and its younger pastoralists. While the elders call the grassland "hamara" (ours), suggesting resource sharing intent, the youngsters, on the other hand, describe the grassland as a collection of *panchayats*- that is their land, this is our land. The latter indicates an increasing sense of privatisation of the once common grazing land. The elders considered selling milk as "*haram*" (religious taboo), but the current generation of *Maldharis* are now known as the "*doodhwallahs* (milkmen) of Kutch". The local words are stories in themselves and crucial to understanding the entire system. In the case of Banni, words have demonstrated that there is more to the misplaced conception of just a grassland.

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## Harriers in 'vanishing' grasslands

*By Arjun Kannan*

Habitat conversion from anthropogenic activities has been an increasing threat to Open Natural Ecosystems (ONEs) across the world. In India, ONEs such as the savannas and grasslands are the most endangered. Less than 1% of ONEs come under the protected area network. Recently, ONEs have also become targeted sites for various green energy projects. It is because they have been historically recognised as unproductive landscapes that support very little biodiversity. The paucity of research in these landscapes has also added to the lack of recognition of ONEs. With India setting an ambitious goal of doubling renewable energy capacity in the next 8 years, ONEs are under threat more than ever before. Several species such as the Great Indian bustard, Steppe eagle etc., which are adapted to the arid and dry conditions of grasslands, have become endangered

over the last three decades. More species are set to follow this declining trend, one example being harriers.

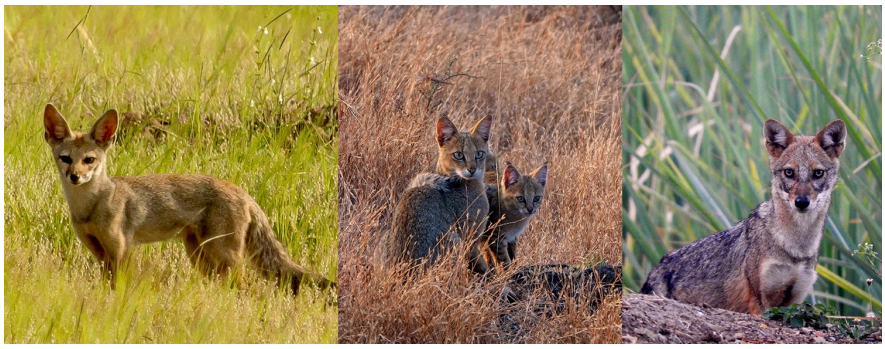
Harriers are ONE specialists that migrate from Central Asia to India to spend their non-breeding (wintering) periods. India harbours six species of harriers, of which the Montagu's and the Pallid harriers are adapted to arid and semi-arid grasslands. They flock together to roost on the ground during the evenings. Although this behaviour is fascinating, it also means that any little disturbance to their roosting can deter them from visiting the place. Our work on harrier roost monitoring over the last six years has exactly shown this. Even though the harrier can forage on agriculture and scrubland habitats, they choose only sites with fairly good grass cover for roosting. A few regular roosting sites of harriers have been abandoned by the birds due to disturbance. The major threats have been land conversion to canals, plantation, wind energy farms and quarrying activity. Since most roosting sites are located on private lands, the scope of protecting these sites remains minimal.

We are now equipping harriers with GPS tags to understand how they cope with such dynamic changes to the landscape. Understanding their movements can help in mapping important roosting sites. It can help plan a better management strategy not just for harriers but ONEs as well since harriers are flagship species in these ecosystems.

**Watch Video**

## Tracking predators in savannas

*By Anjan Katna*



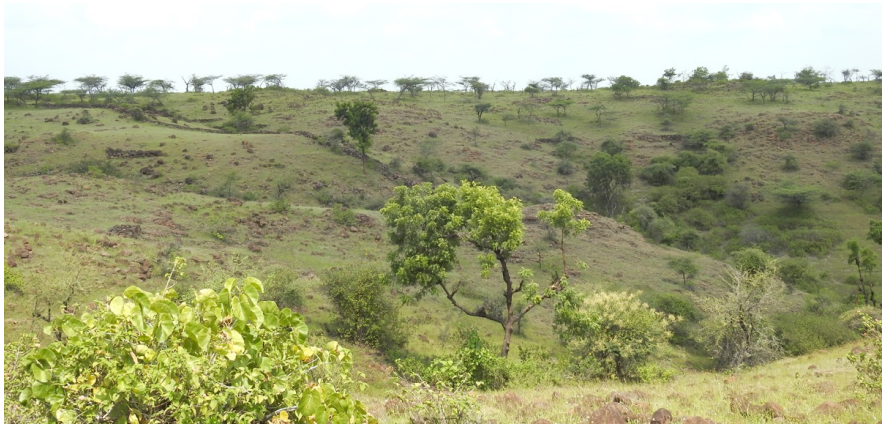
Conservation efforts worldwide have predominantly focussed on protecting large areas devoid of human influence. Semi-arid savannas in India, however, are mostly found outside these protected areas Despite harbouring several critical species like Indian fox, golden Jackal, striped hyena, jungle cat and the Indian wolf they continue to be heavily underrepresented.  A key feature of the semi-arid savanna biomes in India is that these are coupled social-ecological systems, with high dependencies and feedback between anthropogenic use and biodiversity persistence. These landscapes thus harbour a variety of native plant and animal species by providing a matrix of several habitat types, from savanna to intensive agriculture.

In a study spanning 6 years on the movement ecology of mesocarnivores in the central Indian savanna-agriculture matrix, we have set out to identify conditions that allow for the continued persistence of generalist and specialist species, using high-resolution movement data of the resident mesocarnivores. We found that the habitat specialist Indian fox primarily preferred the remnant native grasslands and plantations, while the generalists like the golden jackal and jungle cat selected more human-modified land cover types at both the landscape and home-range scales. This study highlights the importance of maintaining natural habitats within production landscapes, especially for the habitat specialists more constrained in their requirements than generalist species. The future of these ecosystems, and the species that survive here, are also closely linked to the level of ongoing continued transformation. Rapid and large-scale changes in these landscapes owing to the intensification of agriculture, infrastructure development and urbanisation result in a change in species composition skewing towards only highly adaptable, opportunistic species versus habitat specialist species.

Watch Video

## Livestock keepers and tree-less ecosystems of India

*By Iravatee Majgaonkar*



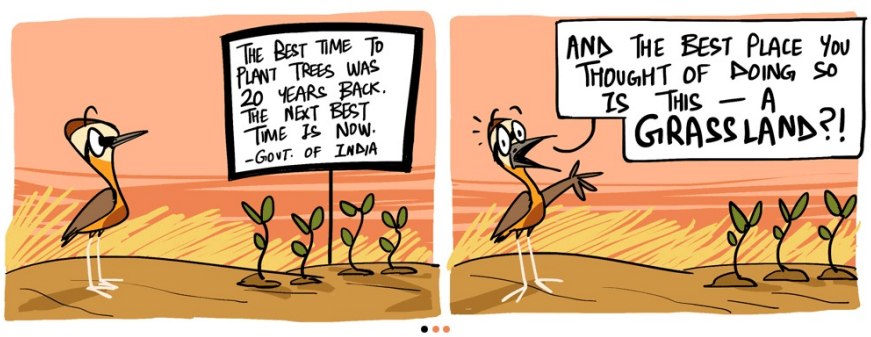
It is natural to assume that brown rocky hills and plains devoid of trees and water bodies do not support life. After all, probably no biological process can occur without water. Planting trees and letting water percolate into the soil seem to be the choicest ways of restoring such arid regions. Isn't it also ultimately good for the people there?

Not really. Extensive pastoralism – movement-based practices of herding and breeding animals such as sheep, cows, camels and yaks – helps us understand why.

There are millions of people with strong pastoral identities, practising specific cultures and possessing traditional ecological knowledge. Their livelihood is well-adapted to utilize the changing environments in rangelands where the plant matter, temperature and water availability vary with seasons and crop cultivation is difficult. Pastoralism enables the production of meat and other animal products, while avoiding spatially concentrated intensive year-round use of natural habitats.

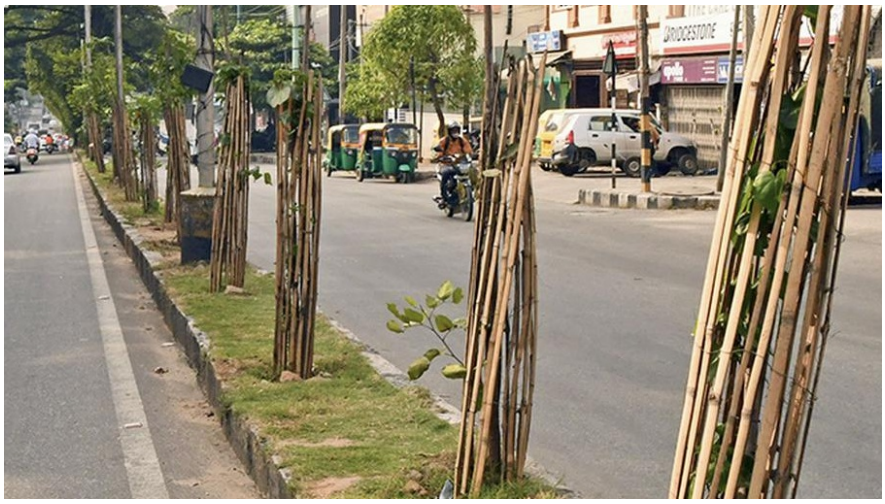
Livestock production is the backbone of Indian agriculture, providing livelihood for 70% of the rural population. Although there are no official figures of pastoralists, the estimation is about 13 million. Records show that 53% of milk and 74% of India's meat production comes from extensive pastoralism. Such pastoralism is dependent on Open Natural Ecosystems (ONEs) that form Common Pool Resources, where it benefits from tree-less ecosystems and in-turn helps maintain the habitats through seasonal, low-intensity livestock grazing. These ONEs are important wintering, feeding and breeding habitats for biodiversity adapted to aridity and open landscapes. Tree plantations in such systems will not only have severe consequences for biodiversity assemblages and nutrient cycles, but can also disenfranchise pastoral livelihoods.

Read more



## Have tree planting efforts borne fruit

*By Abi Vanak and Anuja Malhotra*



For decades, it has been drilled into us that planting trees is the “green” thing to do, a very large band-aid to the thousands of cuts that we’ve inflicted on the environment. To atone for the environmental sins of razing large tracts of primary forests, India has committed to having a third of its total land area, or 95 million hectares, under forest and tree cover by 2030. With the UN Decade of Ecosystem Restoration (2021-30) and other global commitments, mass tree-planting campaigns are often seen as a solution to mitigate the climate crisis by both government and non-government entities.

**Read more**

## A mad tree is troubling a Red fox

*By Chetan Misher and Abi Tamim Vanak*

Indian desert fox or white-footed fox (Vulpes vulpes pusilla) is a sub-species of red fox found across arid plains and sand-dunes of western India. Although red foxes are a well-studied carnivore across their distribution range, little information is available on the ecology of the sub-species. Frequently seen in the sandy Thar desert of Rajasthan, its sighting is surprisingly low in the Banni grassland of Kutch, Gujarat.

Banni spanning over 2500 sq. km was predominantly a mosaic of saline grasslands and brushland of Suaeda nudiflora along with seasonal wetlands formed during monsoon. In the last few decades, Banni has rapidly transformed into a Prosopis juliflora woodland. Known as “Ganda Bawal” or “mad-tree”, this invasive has not only affected the livestock-based livelihood of pastorals by reducing grazing areas but also has ecosystem-wide impacts. We assumed that the Indian desert fox, described as an open habitat specialist, will be adversely affected by such massive structural change in the landscape.

In our paper, we studied the influence of the invasive-induced habitat transformation on the Indian desert fox habitat in the Banni landscape. We were interested to know how the structural change in habitat drives habitat selection of the fox at the landscape and den-site level. We used a land-cover land-use map to extract data on the vegetation cover and collected ground-based variables at multiple den-sites. We also analysed scat samples from the den to determine its food habits.

We found the expansion of Prosopis negatively influences the occupancy of the desert fox at the landscape level. It is shrinking the Suaeda brushland and saline plains that the desert fox is more likely to occupy. Seasonal waterlogging and high salinity have helped these habitats avoid colonisation of Prosopis, providing open and visible grasslands to the desert fox. Den-making is crucial for most desert-dwelling animals to counter extreme climatic variability in deserts. We found the desert fox making its den close to seasonal wetlands with a rich cover of native grasses and forbs. Dietary analyses reveal it is highly dependent on insect- and plant-based diets, both rich sources of water and nutrients in resource-poor desert landscapes.

These preliminary results can have significant conservation implications in managing the threatened grasslands of India. Woody encroachment can have cascading impacts by affecting species at different levels. In grasslands, it can favour some generalist species such as Jackal but reduces the chances of Indian desert fox finding suitable habitat. It is important to understand these differential impacts that can alter the structure of the ecological communities to devise better management efforts in the landscape.

**Watch Video**

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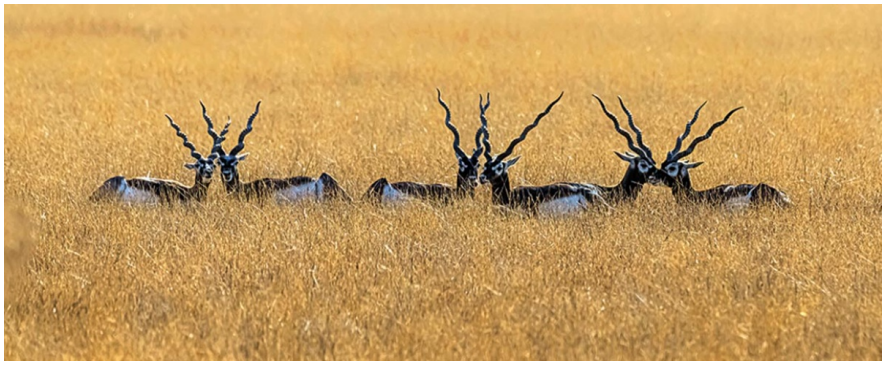
## Grasslands and their perils

*By Mihir Godbole, Dr. Abi Tamim Vanak, Iravatee Majgaonkar & Nikita Sabnis*



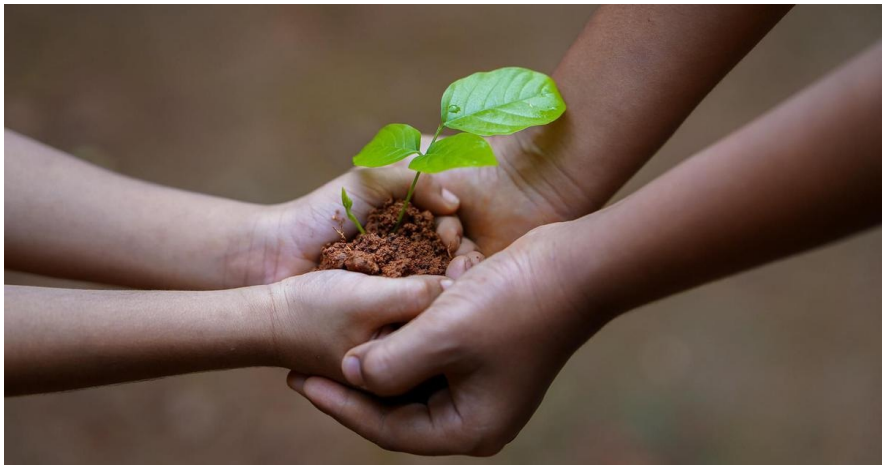
Grasslands account for 20 per cent of the global soil carbon stocks. Carbon is stored in the roots and soil underground in such ecosystems, unlike in forests,

which have a higher above-ground storage of carbon. Grassland plant species have an extensive fibrous root system. This underground biomass extends far below the surface and stores abundant carbon into the soil, resulting in fertile soils with high organic matter content. As such, soil carbon accounts for about 81 per cent of the total ecosystem carbon in grasslands. Studies have shown that within certain eco-climatic zones, grasslands are more stable carbon sinks than equivalent forests.

**Read more**

## Planting more trees is a lazy solution to the climate crisis

*By Karishma Shelar and Anuja Malhotra*



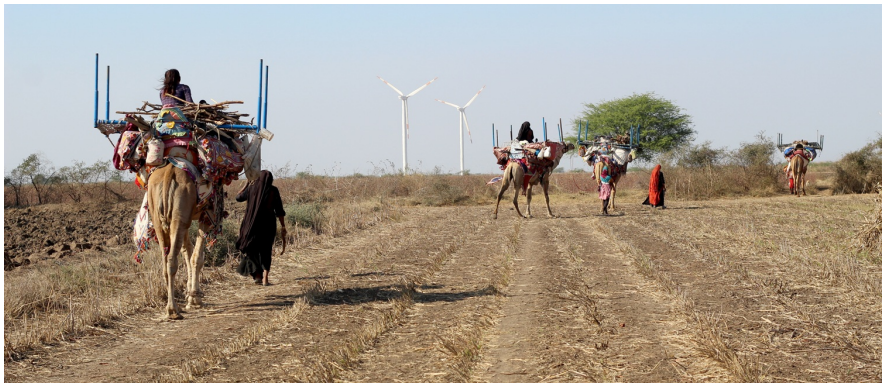
Afforestation appeals have become a clichéd call-to-action but such initiatives can be counterproductive and sideline the importance of savannas and grasslands.

The United Nation's Intergovernmental Panel on Climate Change, in its sixth assessment report released in August, reiterated its analysis of the role played by human-induced activities in contributing to catastrophic heatwaves, droughts and cyclones. It noted that in 2019, the carbon dioxide concentration in the atmosphere was at its highest in at least two million years.

**Read more**

## Pastoralists and small patches of grasslands in Gujarat: feed, refuges and corridors

*By Matthieu Salpeteur*



The Open Natural Ecosystems (ONEs) in India offer a wealth of nutritive feed for

domestic herds. During monsoon and winter, when fields are sown, pastoralists seek refuge in these large ecosystems, like the Banni grasslands in Kutch, while they wait to move back to the fields after harvest.

In Gujarat, ONEs also occur as small patches interspersed with cultivated fields. But are such patches useful for the herders is a question largely overlooked and forms the focus of our research.

We analysed the mobility patterns and strategies of three groups of the Dhebaria Rabari community during their yearly migration cycle. They followed a classical migration route, from Kutch in the west to south-east Gujarat, relying on ONEs to camp and graze their animals.

One would assume small patches are of limited interest to pastoralists. But our results show  they play a key role for several reasons. First, during migration in densely cultivated landscapes, pastoralists find it difficult to secure daily fodder and camping place as it means bargaining with the farmers, often to no avail. Whereas ONEs offer short-term refuge, enabling a quick move to the fields whenever opportunity arises. Second, ONEs provide trouble-free corridors when crossing lands under cultivation with large herds. Lastly, ONEs provide valuable wild plants as feed.

But access is not always easy as these areas come under various legal frames, from wastelands to reserved forests and gauchars and pastoralists have to use different strategies to secure access, sometimes with limited success.

While ecological sciences have shown that small ONEs play a key role in enabling ecological connectivity, this research suggests they are also important for nomadic pastoralists. Such ONEs require our attention in relation to their users.

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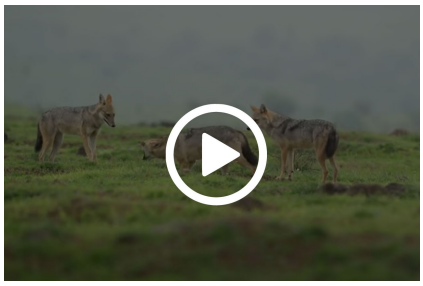
## Watch our films on the importance of India's Grasslands.



***Meso-Carnivore Collaring***

***Once upon a Desert***

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