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Mapping of the Seasonal Migration Routes of Cattle Pastoralists of the Deccan Plateau Region of India Using Ethnographic Geographic Information System Technique

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Abstract

Annual seasonal migration is one of the main characteristics of pastoralism. However, large-scale studies focusing on mapping seasonal migration patterns using advanced spatial analysis tools like the geographic information system (GIS), hitherto remain meager in India. The lack of such studies has many implications for holistically understanding pastoralism in India. The few spatial analysis studies conducted in the Himalayan region of India found a lack of amenities and conflict with large-scale state-promoted plantations under climate change-related projects. Similar studies have been absent in the country's Deccan Plateau region, which is home to a significant number of pastoralist communities and livestock populations. In this background, an exploratory study was conducted to map the seasonal migration routes of pastoralist communities in the Deccan Plateau region adopting the Ethnographic Geographic Information System Technique (EGIST). The objective of the present study is to digitally map the seasonal migration routes of the pastoralists and document the issues and challenges (if any), along the seasonal migration routes in the study area. Seasonal migration routes of seven villages from Andhra Pradesh and Telangana states were mapped using EGIST and found that pastoralists of the study area practice both short and long-seasonal migration *in sync* with the monsoon and local cropping season. Pastoralists of Telangana were found to migrate to the neighboring state of Andhra Pradesh (AP) during long-distance migration. However, pastoralists of AP predominantly move within the state. A few major challenges faced by pastoralists during their seasonal migration in the study area includes – labour shortages, disease outbreaks and conflict with the forest department personnel for accessing the traditional grazing lands located inside the Amarabad and Nagarjunsagar-Srisailam Tiger Reserves of Nallamala forest of AP and Telangana states of India.

Keywords

Ethnographic Geographic Information System; Spatial analysis; Seasonal migration; Pastoralism; Deccan plateau; Foot-and-Mouth Disease

1. Introduction

Dating back to 9000 – 6000 B.P., pastoralism is one of the oldest, resilient, and sustainable livestock production systems in the world (Dong, 2016; Paddayya, 1974; Paddayya, 1992). Seasonal migration is one of the main characteristics of pastoralism (Sharma *et al*., 2003; Siripurapu *et al*., 2020). Similar to other parts of the world, pastoralists in India also practice seasonal migration (Sharma *et al*., 2003). The biogeographical diversity of the sub-continent presents the conditions necessary for the evolution of two major forms of pastoralist migration patterns: horizontal (predominantly found in plains) and vertical (popularly known as transhumant, the up and down movement over mountains) (Sharma *et al*., 2003). Although there is no official data available on the total number of pastoralists in India, but existing studies peg their number at 13 million (accounting to 1 percent of the population of India), traversing across the country for millennia (Kukreti, 2020; Kishore and Kohler-Rollefson, 2020; Bhatti and Ramaswamy, 2023; Siripurapu, 2023). However, large-scale (Pan-India) level and longitudinal research studies on mapping and documentation of the seasonal migration routes of pastoralists especially in the Indian context were hitherto meagre and insufficient to understand the dynamics of this age old livestock production system holistically. For instance, there is no official data on the exact number of people actively involved in pastoralism in India. Furthermore, mapping of the seasonal migration routes and patterns of pastoralists using advanced spatial analysis tools like the geographic information system (GIS), hitherto remain meager in India, including the Deccan Plateau region, also the study area (Sharma *et al*., 2003).

The International Center for Agricultural Research in the Dry Areas (ICARDA), Oregon State University, USA, and the Central Arid Zone Research Institute (CAZRI), India have conducted a multi-disciplinary study on seasonal migration patterns of the *Raikas,* a mobile pastoral community of Rajasthan state, India (ICARDA, 2014). The study focuses on the socio-economics and mapping the seasonal migration movements of the *Raikas,* using the Global Positioning System (GPS) collars mounted on the livestock of the *Raikas*. Besides, the ICARDA (2014) study, there were hardly any other studies available when this article was first drafted in 2018. However, few noteworthy recent studies on mapping the seasonal migration routes of pastoralists in India include Janastu Team (2022), which focuses on mapping the migratory routes of pastoralists across India. Khanyari *et al*. (2022) focus on understanding the changing practices of traditional pastoralists and their implications for parasite transmission between livestock and wildlife in the high Himalayan region of India. Meena *et al*. (2021) studied the migration pattern of *Raika* pastoralists of the Marwar region of Rajasthan, India. Kirmani *et al*. (2020) studied the routes adopted by Bakarwals during livestock migration and their constraints in the Anantnag and Ganderbal districts of the Jammu and Kashmir regions. A crucial study "Plantations and Pastoralists" by Ramprasad *et al*. (2020) on the impacts of afforestation activities on pastoralists in the Indian Himalayas. The study involves mapping the seasonal migration routes of the local pastoralists to identify the overlap between the traditional seasonal migration routes of the local pastoralists and the state-promoted climate change and other related plantation projects in the region.

Mapping of the seasonal migration routes of pastoralists has many positive implications. For instance, the ICARDA (2014) study helps the team of scientists consisting of rangeland experts, socio-economists, veterinarians, and Geographic Information System (GIS) spatial analysts in mapping the exact seasonal migration routes of the pastoralists, total distance of the migration routes, time spent for grazing at different locations, preferred fodder by the livestock, extant and location of watering points, etc. Results of the ICARDA (2014) study are now guiding policy-makers and government officials of India to take necessary measures in improving the condition of commons and the grazing lands, creating watering points, setting up forage resources, arranging mobile veterinary services along the route and access to near real-time information over cell-phones on the condition of forage resources, etc. along the migration routes of *Raikas*. The study was envisioned to improve the livelihoods of the *Raikas* by creating access to local markets to sell livestock and their products along the seasonal migration routes (Louhaichi, 2014).

Studies like Ramprasad *et al*. (2020) helps also in the identification of conflicts of interest between the vulnerable traditional local livelihoods and the global interests like the large-scale plantations for climate change and carbon markets. Studies have been increasingly criticizing the global policies for mitigation of climate change and biodiversity conservation on heavily incentivizing large-scale plantations and establishment of large-scale solar power plants, threatening fragile natural ecosystems like grasslands and deserts, undermining the well-being of local livelihoods, and interfering and disrupting the traditional seasonal migration routes of pastoralists across landscapes (Narwade *et al*., 2013; Paul and Vanak, 2020; Ramprasad *et al*., 2020; Gupta, 2023).

Similar to the study of ICARDA (2014) on seasonal migration routes of *Raikas* of Rajasthan, India, many studies have been conducted across the globe, especially in Africa (Kitchell *et al*., 2014; Alido, 2016; Bonnet, and Hérault, 2011; Ellis and Swift, 1988). The project on mapping the pastoralist-livestock corridors the eastern Senegal of Africa (Kitchell *et al*., 2014), includes local perceptions of:

1) the benefits and costs of corridors,
2) the effect of the recognition of corridors on competing land uses (particularly farming),
3) the need for and means to recognize and protect corridors, and
4) the appropriate level of authority to recognize and protect corridors.

Kitchell *et al*. (2014) observes that pastoralist corridors are perceived as a means of protecting local farms from livestock passing through and are critical for facilitating access to pastures.

In this background of inadequate studies on mapping of the pastoralist seasonal migration routes, escalating conflicts along their migration routes, and the need for establishment of amenities along the migration routes to improve pastoralist economy (Nori and Scoones, 2019; Siripurapu, 2021a; Siripurapu, 2021b), an exploratory study (Kurt *et al*., 2011) was commissioned in the year 2018 by Sahjeevan Centre for Pastoralism, an NGO based in Bhuj, Kutch, Gujarat state, India. The present study aims to map the seasonal

migration routes of the pastoralists across the Deccan Plateau region of India. The objective was to gain a better understanding of the seasonal migration patterns and challenges faced by the pastoralists in the Deccan Plateau region of India. The Watershed Support Services and Activities Network (WASSAN), a non-profit organization based in Hyderabad, Telangana state, India, conducted the research and extended the field support to this study.

2. Materials and Methods

2.1. Study Area

The Deccan plateau region (15°N 77°E / 15°N 77°E) of India known for its historical and anthropological significance in pastoralism (Paddayya, 1974; Paddayya, 1992) was designated as the study site. The hot arid eco-region exhibits a highly undulating and hilly topography covered in tall grasses, savannah and dry mixed deciduous forests. Four districts of Nagarkurnool, Kamareddy, Rajanna Sircilla of Telangana state, and Kurnool district of the neighbouring Andhra Pradesh state were selected for study sites of the present study. The choice was based on the ongoing projects of WASSAN for the identification of yet to be descript populations of endogenous cattle breeds which are predominantly bred and maintained by pastoralist communities in the study area (Siripurapu *et al.*, 2019a; Siripurapu *et al.*, 2019b; Siripurapu *et al.*, 2024).

Nagarkurnool district is geographically located at 16.4833°N 78.3333°E at an elevation of 458 m in the state of Telangana. It is spread over an area of 6,924 km^2 comprising 358 villages (Govt. of Telangana, 2020a). Kamareddy district is geographically located at (18.3167° N and 78.3500° E) in Telangana state. The geographical area of the district is 3,652 km^2 (Govt. of Telangana, 2020b). Similarly, Nizamabad and Rajanna Sircilla districts are also located in Telangana state. Nizamabad district is located at (18.6725° N, and 78.0941° E), (Govt. of Telangana, 2020c), and Rajanna Sircilla district is geographically located at (18.3889° N, and 78.8092° E) (Govt. of Telangana, 2020d). All four study sites in Telangana state experience a hot savannah-type climate with an average summer temperature of 42°C (Govt. of Telangana, 2019). Kurnool district is located at 15.6443° N, 78.1108° E at an elevation of 273 m in the Andhra Pradesh state of India. It has an area of 17,658 km^2. It experiences a hot savannah weather, with summer temperatures ranging from 26°C – 46°C (Govt. of Andhra Pradesh, 2019).

The entire study area falls under the scarce rainfall zones of India and receives an average annual rainfall of 500-750 mm. Agro-ecologically, the Deccan Plateau is a hot arid eco-region (Venkateswarlu *et al.*, 2011). All the six districts selected for the present study have significant livestock populations predominantly managed under different mobile pastoralist systems (Soy *et al.*, 2023; GOI, 2021; Siripurapu *et al.*, 2020).

2.2. Sampling

A total of seven villages were randomly selected from a pool of 320 villages collected during the rapid survey and reconnaissance study (Holtzman, 1986) conducted by WASSAN for the identification of yet-to-descript populations of

Indigenous cattle breeds in the study area. Details of the seven sample villages of the present study are presented in table 1.

Table 1: Details of the Sample Villages Selected for Ethnographic GIS Mapping of Pastoralist Seasonal Migration Routes in the Study Area

Sl. No.	*State*	*District*	*Mandal*	*Name of the Village*	*Endogenous Cattle Breed bred by the Pastoralists*
1.	Telangana	Nagarkurnool	Amarabad	Lakshampur tanda (BK)	Poda Thurpu
			Amarabad	Kalamalonipalli	
		Kamareddy	Ramareddy	School tanda	Vandhera
		Nizamabad	Sirkonda	Sarpanch tanda	
		Rajanna Sircilla	Rudrangi	Rudrangi	
2.	Andhra Pradesh	Kurnool	Atmakur	Kottalacheruvu	Nallamala-Pasa/ Kamma
			Atmakur	Krishapuram	

2.3. Data Collection and Analysis

The study adopts an Ethnographic Geographic Information Systems Technique (EGIST) for data collection and analysis (Oskarsson, 2012). It includes coupling geographic information system (GIS) technologies with ethnographic data (Matthews *et al.*, 2005). Data on the seasonal migration routes of the pastoralists was collected through focus group discussions (FGDs). FGDs were predominantly focused on the reasons for seasonal migration, migration routes, and opportunities and challenges along the migration routes. Data emerging from the FGDs was predominantly qualitative (reasons for migration, names of the major destinations along the seasonal migration routes, and opportunities and challenges). Names of the major destinations along the migration routes were then used to generate coordinates using Google Earth (GEO, 2024). Coordinates thus generated were used to determine the geographic location of such destinations along the pastoralist migration routes in the study area.

The coordinates thus generated were fed into the ArcGIS Location Platform (ArcGISLP) to generate digital maps featuring the seasonal migration routes of pastoralists of the study area. ArcGISLP is a Platform as a Service that provides access to locations, data services, and spatial analysis services to build mapping applications (Esri, 2024). In a preliminary attempt, digital maps of the seasonal migration routes of only three study villages of Lakshmapur Tanda (BK) (Figure 1), Kalamalonipalli (Figure 2) and School Tanda (Figure 3) of Telangana state were developed and discussed in this article. Data pertaining to seasonal migration routes, resource management practices, and issues and challenges associated with mobile pastoralism in the study area were transcribed and triangulated and presented in this article (Morgan, 1997; Vaughn *et al.*, 1996).

3. Results and Discussion

3.1. The Seasonal Migration Pattern of Mobile Pastoralists in the Study Area

The annual seasonal migration of pastoralists of Lakshmapur Tanda (BK), Amarabad Mandal, Nagarkurnool district, of Telangana state comprises of two phases across two different ecosystems (forest and farmlands). One includes a short-distance local movement in and around the Nallmala forest (which includes the Amarabad Tiger Reserve (ATR)), while the other is a long-distance inter-state migration across the agro-ecological systems of the adjacent state of Andhra Pradesh (Siripurapu *et al.*, 2020).

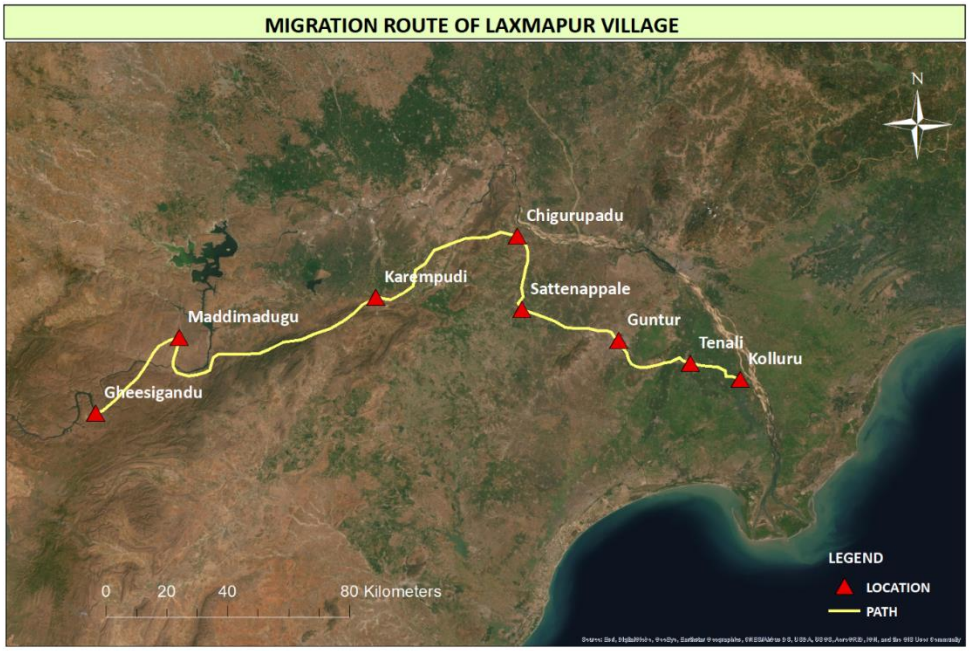

Figure 1: Map showing the seasonal migration route of cattle pastoralists of Lakshmapur tanda (BK)

The short-distance local movement starts during July and continues till January (7 months) when herds return home with the onset of monsoon season when fodder and water are aplenty. The herds spend this period of the year inside the Nallamala forest area grazing in the customarily used pasture lands called locally "*penta*". There are at least 26–27 pentas inside the Nallamala forest area. The herds move among these pentas spending a month or so at each penta or as long as resources exist before moving on to another penta. Herds usually travel 5–10 km every day grazing on pentas inside the Nallamala forest area. The names of a few customarily used pentas accessed by the cattle pastoralists of Lakshmapur tanda (BK) inside the Nallamala forest are provided in table (2).

Table: 2. Names of the Customarily used Pentas used by Pastoralists of Lakshmapur Tanda (BK), Amarabad Mandal, located inside the Nallamala Forest in Telangana State

Alatam penta	*Tammagarugu*	*Narsingbai*
Garasa penta	*Erjan*	*Bandamachilaka*
Gunivani penta	*Ghandaral*	*Gundalarevu*
Chinchelona		

Siripurapu *et al.* (2020) found that cattle pastoralists in Nagarkurnool district usually spend a month at each penta or as long as the fodder and water lasts. Many herds may graze at the same penta; however, local pastoralists follow certain protocols in order to avoid conflicts over shared resources as well as preventing over grazing of the pentas. Siripurapu *et al.* (2020) observe that eight cattle pastoralist families inhabiting the Uma Maheswar Tanda, Amarabad Mandal, Nagarkurnool district, of Telangana state split themselves into three groups. A group may have 2-3 cattle herds grazed together, but corralled separately. Each group herds their cattle herd to a specific penta for grazing. On an average, about 3-4 people herd each cattle herd. Usually, pentas are located 7–10 km distance apart and herders maintain 5–7 km distance between them. Cattle are never grazed continuously at one site, instead they are moved among the different pentas in a rotation as presented in figure 2, to avoid conflicts and prevent overgrazing.

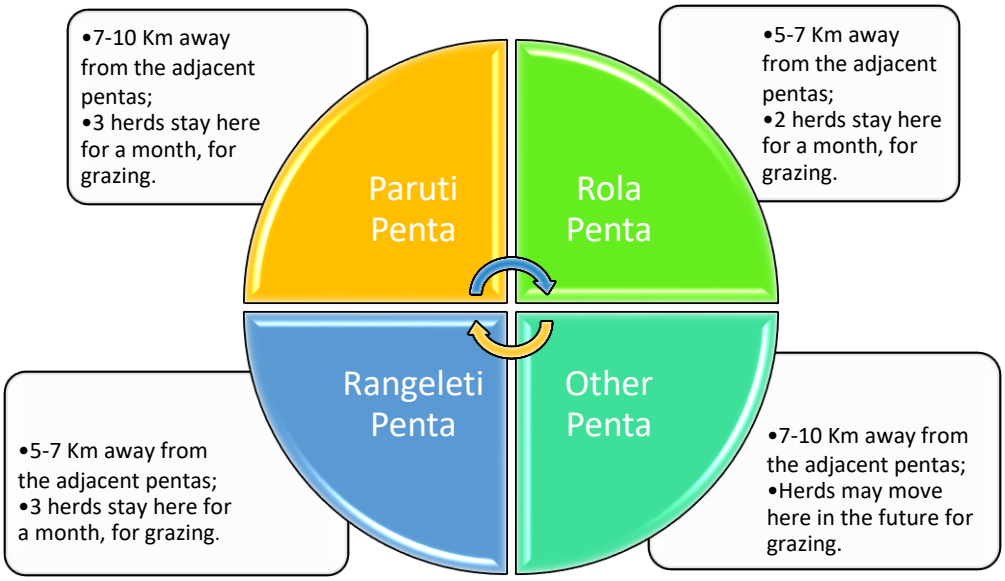

Figure 2: Resource Management Practice of Pastoralists of Umamaheshwar Tanda, Amarabad Mandal, Nagarkurnool district, of Telangana State (*Source:* Siripurapu *et al.*, 2020)

Pastoralists have a very strong mental map of location of the pentas, along their seasonal migration route, as they are used for generations. Local pastoralists use their traditional knowledge and animal behavior to predict the availability/scarcity of resources at a penta (Shahane *et al.*, 2024). When they find signs of resource exhaustion at a penta, one of the team members goes out in search of pentas with enough fodder and water. Simultaneously, they communicate and coordinate with other pastoralists in the vicinity updating each other about resource health and availability. Once the herder finds a promising location, he sends out the message to his team and the herd is moved to the newly found location. However, they make sure that the new penta was not claimed by any other pastoralists in advance in which case they abandon that place and simply move on to find some other penta, thereby, avoiding a conflict.

It was observed that local pastoralists usually have a good knowledge of the fodder species preferred by their cattle. For instance, pastoralists of Poda Thurpu cattle reports that the cattle feed on a wide variety of vegetation, which

includes *Nandara gaddi, Erra gaddi, Allam gaddi, Kamachi* (aromatic herb), *Pattadi aaku*, etc. Although it was not the main focus of the present study, but when an opportunity arises, an activity was conducted with pastoralists at few study villages to map the 'fodder basket' / 'fodder platter' of Poda Thurpu cattle breed in the study area. The findings of the participatory fodder basket mapping exercises are presented in table 3. Collection and preparation of the herbarium and consultation with botanists for scientific identification of the fodder species mentioned by the pastoralists in the study area shall be conducted in the subsequent studies.

Table 3: Local Names and Other Details of the Fodder Species Preferred by Poda Thurpu Cattle Breed Found in Nagarkurnool district, Telangana

Mandal Name	*Village Name*	*Local Name of the Fodder Species*	*Name of the Forest*	*Remarks*
Achampeta	Ankiranipally	*Nendra gaddi, Garaka, Utlagaddi, Errapoolagaddi, Kaarey gaddi, Gunugu gaddi*	Nallamala forest	
Amrabad	Mannanoor	*Tella nedla gaddi, Badda nendra gaddi, Mulla gaddi, Kara gaddi,*	Nallamala forest	
	Mannanoor	*Nendra gaddi, Erra gaddi, Mulla gaddi, Poota gaddi, Garika, Chama gaddi, Gokara gaddi*	Nallamala forest	Gokara gaddi is savored but it is hard to digest and cattle passes loose stool, it is available during summer. Found Pamabala vaagu, Loya (valley). Nedra gaddi is soft and not only delicious but also very healthy for cattle
	Kalamlonipalli	*Erra gaddi, Nendra gaddi, Baddera gaddi,*	Kommavani penta, Kalina marri, Kollam	
	BK. Thirumala-puram	*Nendra gaddi, Erra gaddi, Chilaka mukku allam*	Bandaman cheluka, Kunta bodu, Banks of river Krishna	
	BK. Laxmapur Thanda	*Nendra gaddi, Kappala gaddi, Sapparla gaddi, Boda gaddi, Garaka*	Rollapenta, Kalina marri, Ragileti, Kommavani penta, Timmanapalli, Ootagundala, Medimalaka, Darsipenta, Adamanupenta, Bowrapur	

Mandal Name	*Village Name*	*Local Name of the Fodder Species*	*Name of the Forest*	*Remarks*
			cheruvu, Eerlapenta	
Padara	Chitlamkunta	*Nendra gaddi, Kavva gaddi, Poota gaddi, Gokara gaddi*	Kalina marri, Vajrala madugu, Boguleti, Tangiri gundala, Eerla penta, Gunnamaanu penta,	
	Ippalapally	*Nendra gaddi, Baddera gaddi, Errapoota gaddi, Chara gaddi*	Adamanchenu, Baddelagaruvu, Cheddalagumma, Gunnamaanu penta, Medimaluka, Tangidigundala,	
Lingal	Yerrapenta	*Nendra gaddi, Kaara gaddi, Mulla gaddi, Modiga allam*	Pulibanda, Nallamala forest area	
Uppunoonthala	Aowvulonibai	*Kappala gaddi, Kavva gaddi, Garaka, Chama gaddi, Gokara gaddi*	Rayaleti, Kommavani penta, Vattavarlapalli, along the banks of streams and canals	

At Lakshmapur tanda (BK), long-distance inter-state seasonal migration commences during February and continues till the end of June (5 months). Local pastoralists leave for seasonal migration when local resources (fodder availability in the forest areas) shrink. It usually involves crossing inter-state borders to arrive at their destination located in and around the Tenali region of Andhra Pradesh. Cattle herds move across the agriculture fallows, grazing on the crop residues and stubbles of paddy, sorghum, and other crops. The inter-state migration is rather a recent phenomenon; which came into practice less than a decade ago as a coping mechanism to avert outbreaks. Details of the inter-state migration route of the pastoralists of Lakshmapur Tanda (BK) are provided in table 4.

Similarly, one of the pastoralist family belonging to Lakshmapur tanda (BK) practices both short-distance movement in and around the Nallmala Forest and goes out on long-distance migration but within the Telangana state. The short-distance movement includes about 15 km of travel from the camp every day. The herd moves among the different customarily used penta (pasture lands) located inside the Nallamala forest. The seasonal short-distance migration starts with the onset of monsoon, usually in June, and continues up to January. Details of the few customarily accessed pentas by the herd are presented in table 5.

Traditionally, long-distance inter-state migration was unheard of among the local Golla community of Kalamalonipalli village, Amarabad mandal, Nagarkurnool district, Telangana. Rather, the Golla people perceive it as a

recent phenomenon. As per the information of the Golla family participated in the study, the long-distance migration at Kalamalonipalli started a decade ago, following the deadly outbreak of *Gudala rogam* or "*Gaddi rogam"* (grass disease), as it was assumed that grazing some type of grass causes the disease. As per the descriptions of the local veterinary surgeons the disease is very likely to be the foot-and-mouth disease (FMD) (WOAH, 2013). Local pastoralists describe symptoms of the disease include loss of appetite, locked chucks, immobility, followed by a sudden collapse and death of the animal infected with the disease. The family started taking their herd away to save the cattle from contracting the deadly disease. It was reported that *Gudala rogam* is fatal for calves, adolescents, and pregnant/lactating cows. It was reported that a couple of years ago local herders sold over 3,000 cattle for fear of losing them to the fatal disease.

Table 4: Route of the Inter-state Seasonal Migration of the Pastoralists of Lakshmapur Tanda (BK), Nagarkurnool district in Telangana State

Sl. No.	*Major Destinations along the Migration Route*	*Coordinates*	*State*
1.	*Gundanathi penta* (or any other penta)	Point of origin	Telangana
2.	*Cheeramani banda* (or any other penta)	Point of origin	Telangana
3.	*Aramancha penta* (or any other penta)	Point of origin	Telangana
4.	*Palenka Devudu gudi* (temple)	One of the landmarks	Telangana
5.	*Maddimadugu*	16°18'42.7"N 79°08'19.0"E	Telangana
6.	*Gheesigandu revu* (river bank)	16°05'17.3"N 78°53'26.3"E	Telangana
7.	*Chigurupadu*	16°36'42.6"N 80°08'14.7"E	Andhra Pradesh
8.	*Karampudi*	16°25'50.8"N 79°43'06.8"E	Andhra Pradesh
9.	*Sattenpalli*	16°23'41.4"N 80°09'03.1"E	Andhra Pradesh
10.	*Guntur*	16°18'12.5"N 80°26'08.0"E	Andhra Pradesh
11.	*Tenali*	16°14'10.6"N 80°38'52.0"E	Andhra Pradesh
12.	*Kolluru* (destination)	16°11'16.7"N 80°47'38.9"E	Andhra Pradesh

*Note: After arriving at the destination (*Guntur-Tenali-Kolluru*), herds spend most of the time grazing crop residue and stubble, traversing across the rice fallows. At the onset of monsoon season, pastoralists follow the same route to return home. Upon arrival at the native place, families gather at the village outskirts to greet and welcome the returning herds amid the performance of traditional rituals.

Table 5: Major Camping Sites of the Pastoralists of Kalamalonipalli Village during the Seasonal Short Distance Migration in Telangana State

Kommanapenta	*Kollam*	*Rayalacheruvu*
Erupulammacheruvu		

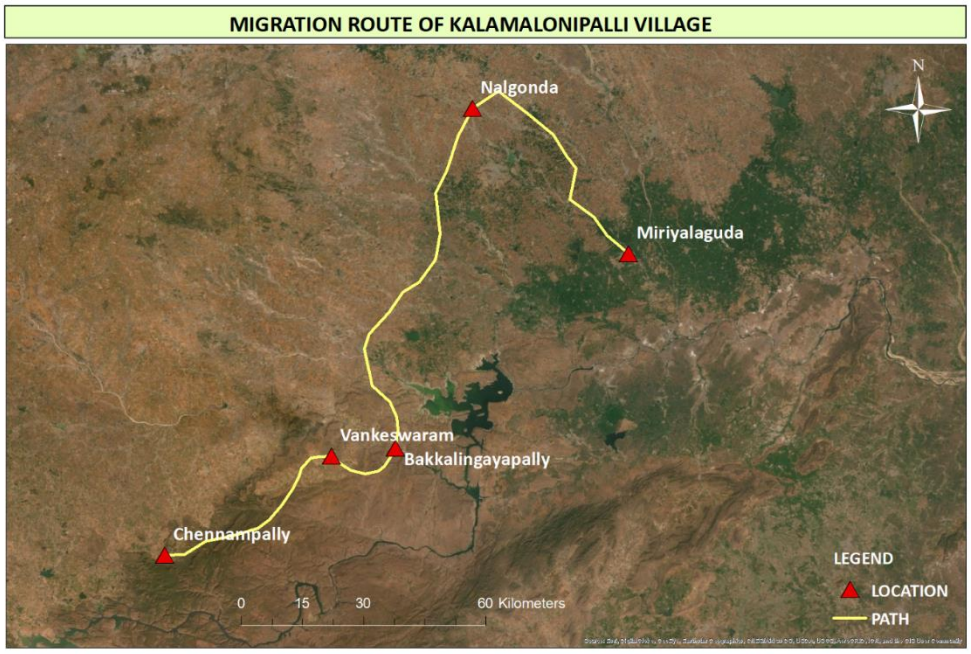

Figure 3: Map showing the seasonal migration route of cattle pastoralists of Kalamlonipalli

The seasonal long-distance migration starts in February after the celebration of *Sivaratri* and continues for 4 to 5 months, usually from February to June. The herd spends most of the time traversing across the rice fallows, grazing stubble, and other crop residue. Cows calve during January-pril which overlaps with the long migration. Usually, three people accompany the herd during migration. Herders take turns (shifts of 3 hours each from 6 PM to 6 AM) at night to prevent the cattle from going astray and raid crops. The herder is usually accompanied by a few dogs during both the long and short migration. Dogs not only alert the herder and herd from potential danger from predators and cattle lifters but also defend them from attacks by wildlife. Major destinations of the long migration are listed in table 6.

Pastoralists of School Tanda, Ramareddy mandal, Kamareddy district, Telangana state, stay home for about five months from July to October, during which the cattle herds are grazed predominantly over the village commons, cultivable fallows, and the adjacent forest areas. The herds usually move within a 10 kilometers radius, and cover a distance of about 18-20 km daily for grazing. Many customarily used grazing patches are located inside the adjacent forest. Few prominent ones are *Limidi, Lingannapeta, Kota devudu*, and *Chendra devudu*. Details of the grazing areas around School Tanda are presented in table 7. Traditionally, herds are penned adjacent to the houses but this practice has changed now. Currently, herds are penned away from the village at designated patches over the commons, adjacent to the forest with waterbodies to supply water for the cattle. Unlike the Golla/Yadava community, Lambadi do not build large penn/cattle shelters adjacent to their

homes. In comparison with Lambadi, the Golla/Yadava pastoralists of this region maintain better cleaning and sanitation of the cattle shelters.

Table 6: Route of the Long Seasonal Migration of Pastoralists of Kalamalonipalli Village, Amarabad mandal, Nagarkurnool district, in Telangana State

Name of the Major Destinations along the Migration Route	*Coordinates*
Vankeswaram (origin)	16°25'51.2"N 78°54'38.9"E
Chennamapalli	16°12'47.7"N 78°32'33.7"E
Bakkalingalapalli	16°26'53.4"N 79°03'04.7"E
Nalgonda	17°11'50.1"N 79°13'17.4"E
Bedaburiya	Could not be generated online
Aligarh	Could not be generated online
Miriyalaguda (destination)	16°52'37.3"N 79°33'57.7"E

Table 7: Details of the Grazing Areas around School Tanda When Herds Stay at the Native Village in Kamareddy district, Telangana from late October to early November

School Tanda (Origin)	*Maddi kota*
Reddy peta	*Kondapur*

The seasonal long-distance migration of pastoralists of School Tanda commences immediately after the celebration of the Diwali festival, which is usually the last week of October or the first week of November and continues up to June. The herds linger around the grazing patches inside the forests until the *Shivaraathri* festival, or until the harvesting season of the Rabi sorghum (*Sorghum bicolor*) crop draws to an end. Soon after harvesting of sorghum crop, cattle herds traverse across the cultivable fallows for grazing. Herds spend about 10–15 days at each village along the migration route, penning (Siripurapu, 2023) at farms for a price (cash and kind). The long-distance migration route of pastoralists of School Tanda extends up to Balakonda from their native place. The local pastoralists follow the same route to return home. Details of the long migration route are presented in table 8.

Table 8: Details of the Route and Season of Annual Long-Distance Migration of Pastoralists of School Tanda, Ramareddy Mandal in Kamareddy District, Telangana

Name of the Major Destinations along the Migration Route	*Coordinates*
School Tanda (Origin)	18°24'56.8"N 78°26'41.7"E
Maddi kota	Could not be generated online
Reddy peta	Could not be generated online
Kondapur	Could not be generated online
Gadukol	18°32'23.5"N 78°25'43.0"E
Sirikonda	18°34'47.8"N 78°27'04.1"E
Kundoor	Could not be generated online
Gunugopula	Could not be generated online
Bada Bheemgal	18°41'38.9"N 78°24'60.0"E
Armur	18°47'22.2"N 78°17'16.2"E
Chengal	18°42'26.2"N 78°22'55.1"E
Arugula	Could not be generated online
Balakonda (destination)	18°52'13.1"N 78°20'09.7"E

Note: The pastorals use the same migration route to return home

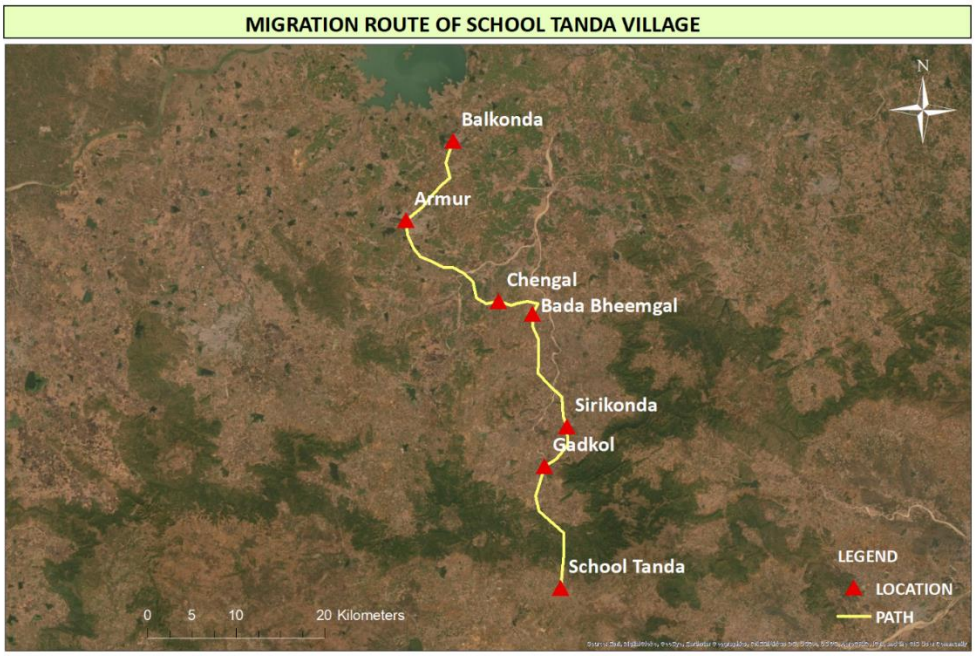

Figure 4: Map showing the seasonal migration route of cattle pastoralists of School Tanda

The pastoralist family of Sarpanch Tanda, Sirkonda Mandal, Nizamabad district, Telangana State, practices both short and long-distance seasonal migration. The family stays at home from July to October, during which they practice short-distance movement covering a distance of 8–10 km (one way) every day, grazing over village commons, cultivable fallows, and forest areas surrounding their village. The herds move out for long-distance seasonal migration during late October – early November, after the celebration of the Diwali festival. The long-distance seasonal migration continues from October/November to June, predominantly grazing over cultivable fallows and penning over farmlands. Three to five people usually accompany the herd on migration. Details of the movement of pastoralists of Sarpanch Tanda are presented in table 9.

Table 9: Details of the Route and Season of Annual Migration of Pastoralists of Sarpanch Tanda, Sirkonda Mandal, Nizamabad district, Telangana State

Name of the Major Destinations along the Migration Route	*Coordinates*	*District Name*
Sarpanch Tanda (Origin)	18°29'41.9"N 78°25'47.7"E	Nizamabad
Tumpally	18°29'12.3"N 78°27'31.9"E	Nizamabad
Gadkol	18°32'23.5"N 78°25'43.0"E	Nizamabad
Ram madugu	Could not be generated online	Nizamabad
Kondur	Could not be generated online	Nizamabad
Muchkur	18°38'15.7"N 78°27'40.8"E	Nizamabad

Name of the Major Destinations along the Migration Route	*Coordinates*	*District Name*
Bheemgal	18°42'05.3"N 78°27'14.6"E	Nizamabad
Bada Bheemgal	18°41'38.9"N 78°24'60.0"E	Nizamabad
Elpur	18°45'50.9"N 78°23'38.9"E	Nizamabad
Fatehpur	18°50'51.6"N 78°18'11.6"E	Nizamabad
Balkonda	18°52'13.7"N 78°20'13.1"E	Nizamabad
Nirmal (Destination)	19°05'42.9"N 78°20'36.9"E	Nirmal

Note: The pastorals use the same migration route to return home – however, they seldom use an alternate route that passes via Bhainsa.

Unlike the local Lambadi and Golla pastoralists of Rudrangi village, Rudrangi mandal, Rajanna Siricilla district, Telangana do not practice long-distance seasonal migration, instead, they move the herds within a radius of 15–20 km around the village, all year around. Herds are grazed over the village commons and cultivable fallows for the most part (eight months) of the season (November – June) and put up inside the forest for about four months from July to October. There are about 16–20 customary grazing patches located inside the forest and herds are moved over the customary grazing patches depending on the availability of fodder and water. Details of the movement of pastoralists of Rudrangi village are presented in table 10.

Table 10: Details of the Customary Grazing Areas inside the Forest of Rudrangi Village, Rudrangi mandal in Rajanna Siricilla District, Telangana

Name of the Major Destinations along the Migration Route	*Name of the Major Destinations along the Migration Route*	*Name of the Major Destinations along the Migration Route*
Rudrangi Village (Origin) (Coordinates: 18°37'32.4"N 78°42'27.7"E)	*Nalla gutta*	*Kalagandi*
Bugga devastanam area	*Sir Bugga rjarajeshwari swamy area*	*Lonka rameswara swamy area*
Patcha gutta	*Kalapayya*	*Kottapeta*
Malyala	*Haindalupi*	*Bolabanda*
Konda gutta	*Guba gutta* (destination at the neighbouring village, Salugula)	*Rajula gutta* (destination at the neighbouring village, Salugula)

Note: Cattle rely on forest vegetation for fodder and the duration of the seasonal migration – from late July to early November.

Pastoralists of Kottalacheruvu village, Atmakur mandal, Kurnool district, AP, graze their cattle herds over the village commons and agriculture fallows for eight months (November – June) and move them into the surrounding

Nallmala forest for the rest four months (July – October) of the year. Herds are kept inside the forest from July to October to prevent them from raiding crops. Herds are grazed at customarily used *pentas* (places with fodder and water) located inside the Nallamala forest. There are approximately seven pentas spread across two forest beats namely: Indreswaram beat (located on the east of the village) and Golukuntala beat (located on the west of the village). There are two pentas located inside the Indreswaram beat: Sasanam and Kanuguntala peta and five pentas are located inside the Indreswaram beat: Sadaram, Aara, Lingamayya, Egasari, and Sari pentas. Calves are born during February – April when herds are moving inside the forest. Animals often fall sick from eating *Nuruku gaddi* (a type of grass) found in this region. Around 30 animals died recently from a sudden outbreak.

Pastoralists of Krishnapuram village, Atmakur mandal, Kurnool district, AP take their cattle herds to the surrounding hillocks for grazing for nine months during the monsoon/winter seasons (June – February). The customary grazing areas of Gaji banda, Garigalamma, and Tirumala Konda are located on Bendi Konda (hillock) located about 10 kilometers from the village. Bendi Konda is spread over an area of approximately 20 km^2. Herds are moved across the cultivable fallows for three months during summer (March-May), grazing over the stubble and crop residue. The movement of pastoralists of Nallamala-Pasa cattle of the Kurnool district is provided in table 11.

Table 11: Details of the Pentas located inside the Nallamala Forest customarily used by the Pastoralists in the Kurnool District

Sl. No.	*Name of the Mandal*	*Name of Forest Patch customarily used for Grazing*
1.	Atmakur	Rollapenta
		Nallapasu konda
2.	Bandi Atmakur	*Same as Velugodu*
3.	Gaddivemula	Gmmadi Konda
		Palabuggajendla
		Vundutla jenda
		Gunki banda
4.	Kothapalli	Sangameswaram Konda
		Ankalamma kota
		Mallayyaashala
5.	Pamaulapadu	*Same as Gaddivemula*
6.	Velugodu	Pavuralagutta
		Rudrakodu
		Mallelamma cheruvu
		Annaram cheruvu
		Kammakunta cheruvu
		Pallaebai vanka
		Peddalinu

There is some variation in the seasonal migration of pastoralists among the sample villages. Pastoralists of Lakshmapur Tanda (BK) and Kalamalonipalli villages of Amarabad mandal, Nagarkurnool district of Telangana state follow the same pattern in terms of season and duration of short and long-term migration but the distance they cover during migration differs significantly. Pastoralists of School Tanda, Ramareddy mandal, Kamareddy district and

Sarpanch Tanda, Sirkonda mandal of Nizamabad district in Telangana follow the same pattern in terms of season and duration short and long-term migration but the distance they cover varies. Although Rudrangi village in Rudrangi mandal, Rajanna Siricilla district of Telangana and Kottalacheruvu village, Atmakur mandal, Kurnool district of AP are geographically located in different states and located far apart, but, interestingly pastoralists of both the villages were found to follow the same seasonal migration pattern in terms of short and long-seasonal migration. Although pastoralists of Krishnapuram village, Atmakur mandal, Kurnool district of AP do not practice long-distance migration, nonetheless they spend a relatively longer time grazing their herds inside the forests and a relatively spend shorter time grazing their herds on commons and cultivable fallows found in and around the village. The summary of the seasonal migration pattern of the study villages is presented in table 12.

Table 12: Summary of the Seasonal Migration Pattern of Pastoralists in the Study Area

Sl. No.	*State*	*District*	*Name of the Village*	*Period of Short Distance Migration*	*No. of Months*	*Period of Long-Distance Migration*	*No. of Months*	*Approx. Distance (one way) of Long distance Migration (in km)*
1.	Telangana	Nagarkurnool	Lakshampuram tanda	Jul - Jan	7	Feb - Jun	5	571
			Kalamalonipalli	Jul - Jan	7	Feb - Jun	5	327
		Kamareddy	School tanda	Jul - Oct	4	Nov - Jun	8	40 - 45
		Nizamabad	Sarpanch tanda	Jul - Oct	4	Nov - Jun	8	40 - 50
		Rajanna sircilla	Rudrangi	Nov - Jun	8	Jul - Oct	4	40 - 44
2.	Andhra Pradesh	Kurnool	Kottalacheruvu	Nov - Jun	8	Jul - Oct	4	40 - 44
			Krishapuram	Mar-May	3	Jun - Feb	9	10 - 20

3.2 Issues of Social Mobility and Seasonal Mobility of Pastoralists in the Study Area

Broadly four main challenges faced by the pastoralists in the study area were identified in the present study. The major challenges reported by the pastoralists in the study area are - shortage of labour, disease outbreaks, fodder scarcity and restrictions on access to customary grazing lands located inside forests. The most pressing issue reported by the pastoralists in Telangana was labour shortage. Traditionally the Golla, Kuruma and Lambadi pastoralist communities of Nagarkurnool district have been dependent on Chenchus (a hunter and gatherer, belonging to the particularly vulnerable tribal group (PVTG) (Ota & Mall, 2016) for taking care of their cattle herds during migration through Nallamala forest.

Traditionally, the pastoralist communities and the Chenchu people shared a symbiotic relationship in managing the cattle herds for ages (Omkaramaiah & Rakesh, 2022). This traditional inter-community relationship, however, seems to be changing for the past few decades, with the state government rolling out more and more socio-economic development programmes for mainstreaming the Chenchu people. With the encouragement of the government and few non-

profit organizations the Chenchu people are bidding adieu to their traditional hunter and gatherer lifestyles and started migrating to the nearby towns and villages, in search of better prospects (Swamy *et al*., 2018). Furthermore, with the improvement in the socio-economic conditions, literacy rates and changing aspirations among the pastoralists, the next generation is reluctant to inherit pastoralism, adding to severe labor shortages in this sector (Singh & Kerven, 2023). Except for a handful of young people in Kamareddy, Nizamabad and Rajanna Sircialla districts of Telangana, majority of the youth are neither interested in the traditional nomadic way of life nor rearing livestock (Siripurapu *et al*., 2020). Maru (2017) points out that despite the growing global recognition and technological advancements, the youth in Kenya are disinclined towards inheriting pastoralism due to loss of resources and exclusion from policies, which is quite similar to the Indian context. Most of the pastoralists in the study area took up settled farming, employment at private companies, or migrated to nearby cities or moved to the middle-east for better prospects. Almost every pastoralist household in Kamareddy, Nizamabad and Rajanna Sircialla districts have someone either lived or currently living in the middle-east sending remittance. It was noticed that some level of remittance economy is flourishing in this part of the state.

The other most pressing issues for pastoralists of Telangana during seasonal migration are mass mortality of cattle from disease outbreaks and scarcity of fodder from proliferation of exotic and invasive weeds – *Lantana camera, Cassia uniflora, Parthenium hysterophorus* (Reddy *et al*., 2008). Pastoralists of Nagarkurnool report that large number of cattle die from a fatal disease, locally called as *"Gudala rogam*" or "*Gaddi rogam"* (grass disease), most likely to be FMD. Pastoralists of this region bemoan that *Gudala rogam* has forced many local cattle pastoralists to give up cattle rearing in this area. Pastoralists of Kamareddy, Nizamabad and Rajanna Sircialla districts of Telangana state complains about the proliferation of exotic weeds like *Lantana camara*. Pastoralists say that Lantana suppresses native fodder species, resulting in acute fodder scarcities and also sometimes death of unwary cattle browsing it, especially the young ones. Studies suggests that 40 percent of the India's Tiger range (including Nallamala forest) is invaded by Lantana (Rastogi, 2020; Reddy *et al*., 2008).

The other pressing issue across Nagarkurnool, Kamareddy, Nizamabad and Rajanna Sircialla districts of Telangana is the restrictions imposed by the forest department on access to the customary grazing patches located inside the Nallamala forest. Pastoralists complain that the situation has worsened since the establishment of the Amarabad Tiger Reserve[1]. It was reported that pastoralists were allowed to graze their livestock up to 15 km inside the forest, until 1975-76. However, things have changed drastically since then, and now they are restricted to enter only up to 3 km into the tiger reserve. These restrictions forbid the local pastoralists from accessing their traditional pentas,

[1] Amrabad Tiger Reserve (ATR), the largest protected area of Telangana state. It is extended over three forest divisions of Amarabad, Achampet of Nagarkurnool district, and Nagarjunsagar division of Nalgonda district of Telangana. The ATR is spread over an area of 2611.4 sq. km covering both Nagarkurnool and Nalgonda districts. ATR is the second-largest Tiger Reserve in the country and it is contiguous with the Nagarjunasagar-Srisailam Tiger Reserve of Andhra Pradesh. Together they form the largest protected dry deciduous forest in the country.

thereby, causing fodder shortages and economic loses from bribing the forest department personnel to gain temporary access.

Siripurapu (2020) found that until a few decades ago local pastoralists were allowed to buy grazing permits from the forest department by paying a rupee (USD 0.013) per animal to graze inside the forest. The issue of grazing permits has been shelved by the forest department since 1976, making the life extremely difficult to both pastoralists and their livestock. Local pastoralists report manhandling and destruction of their camps by the forest department personnel during their seasonal migration through the Nallamala forest.

In connection to the atrocities endured by pastoralists in the study area, Mallavarapu and Rathod (2013) elucidates that many progressive laws have been passed in the post-independent India to safeguard the marginalized segments of the society – the Scheduled Castes (SC) and the Scheduled Tribes (ST). In accordance with the fifth and sixth schedules mentioned in the Indian Constitution and the article 46 of the same, the welfare of the STs is vested in the hands of the state governments of India. In consonance, the government of the undivided Andhra Pradesh, framed the 'Andhra Pradesh State Agency Land Transfer Regulation (APSALTR) of 1959, which was amended subsequently to safeguard and protect the interests of tribal communities with regards to land. Furthermore, the other protective regulations and acts like the Andhra Pradesh Scheduled Areas Money Lenders Regulation (APSAMLR) 1960s, the Andhra Pradesh Scheduled Areas Debt Relief Regulation (APSADRR) 1960s, National Forest Policy (NFP) 1894, 1952 and 1988, the Panchayatraj Extension Act to Scheduled Areas (PESA) 1996, and the Scheduled Tribes and Other Traditional Forest Dwellers Recognition of Forest Rights Act (FRA) 2006, and several other prominent judgments of the Supreme Court and High Courts of India safeguards the interests of tribal and other traditional forest dwellers in the country (Samata, 2003; Ganjivarapu, 2009; Bhagirath, 2023).

It was however found that none of the pastoralists of Telangana and Andhra Pradesh participated in the present study were familiar and aware about the FRA, 2006 and its provisions, during data collection in 2018-19. Mallavarapu and Rathod (2013) points out that herding and grazing communities inhabiting the Kawal Wildlife Sanctuary, Adilabad district of Telangana state have been struggling to file claims for seasonal grazing rights under the FRA, 2006 and their claims have been ignored (Palla, 2016). In this juncture where pastoralism is shrouded in conflicts and uncertainties in the study area, the suggestions of Maru *et al.* (2022) that migration policies needs rethinking, open up to diverse local knowledge and practices and adopt a more flexible, creative and adaptive governance approach gains prominence.

It was found that pastoralists of AP also face similar challenges, however, their order of priority of issues was slightly different from pastoralists of Telangana. The most pressing issue for AP pastoralists was the escalating conflict with the forest department over access to their customary grazing lands located inside the Nagarjunsagar-Srisailam Tiger Reserve. Pastoralists complain that they are not only beaten and manhandled by the forest department personnel but also wrench money and goods with force and coercion. The second most important issue for AP pastoralists was the difficulty in accessing health care services due to constant mobility and large herd sizes. Pastoralists of AP have also reported

mass mortality of cattle from eating *Nuruku gaddi* (a type of grass) found in the region. A pastoralist family of Kottalacheruvu village, Atmakur mandal, Kurnool district, reports that 30 animals died from the FMD outbreak (Siripurapu, 2020).

4. Conclusion

It was observed that mobile pastoral communities of the study area practice both short and long-seasonal migration *in sync* with the monsoon and local cropping season. It was reported that pastoralists of Nagarkurnool district, Telangana started migrating longer distances and spreading wider to maintain distance among the herds to prevent disease outbreaks. However, further studies are necessary to ascertain these claims. The seasonal migration route of the local pastoralists includes traversing and grazing over forest ecosystems (Nallamala forest range), commons, village pastures, and cultivable fallows. The study finds that pastoralists in the study area have been facing many challenges concerning their mobility. Much of these challenges stems from unavailability of labour, disease outbreaks, and restrictions imposed by the forest department on accessing their traditional customary grazing lands located inside the Nallamla forest (Amarabad Tiger Reserve and Nagarjunsagar-Srisailam Tiger Reserve).

The present exploratory study is confined to ethnographic GIS mapping of the seasonal migration routes and major challenges faced by pastoralists along the seasonal migration routes. The present study covers only a handful of villages due to time and financial resource constraints. Therefore, it was assumed that further studies are necessary to understand the availability and accessibility of amenities (veterinary services and cattle shelters in case of emergency), the impact of large-scale plantations and solar power plants promoted under climate change-related projects, and risks and hazards that the livestock and pastoralists face along the seasonal migration routes in the study area. In depth and large-scale studies are necessary to gain better understanding of the pastoralist system and designing appropriate policies for safeguarding the interests of pastoralists and improving pastoralism in the study area.

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Authors' Declarations and Essential Ethical Compliances

Authors' Contributions (in accordance with ICMJE criteria for authorship)

Contribution	*Author 1*	*Author 2*	*Author 3*	*Author 4*	*Author 5*
Conceived and designed the research or analysis	Yes	Yes	Yes	No	No
Collected the data	Yes	No	No	No	No
Contributed to data analysis & interpretation	Yes	No	Yes	Yes	No
Wrote the article/paper	Yes	No	No	No	No
Critical revision of the article/paper	Yes	Yes	No	No	Yes
Editing of the article/paper	Yes	Yes	No	Yes	No
Supervision	No	Yes	No	No	Yes
Project Administration	Yes	No	No	No	Yes
Funding Acquisition	Yes	No	No	No	Yes
Overall Contribution Proportion (%)	40	20	10	10	20

Funding
The funding for this research was made available by Sahjeevan Centre for Pastoralism, an NGO based in Bhuj, Kutch, Gujarat state, India.

Research involving human bodies or organs or tissues (Helsinki Declaration)
The author(s) solemnly declare(s) that this research has not involved any human subject (body or organs) for experimentation. It was not a clinical research. The contexts of human population/participation were only indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) or ethical obligation of Helsinki Declaration does not apply in cases of this study or written work.

Research involving animals (ARRIVE Checklist)
The author(s) solemnly declare(s) that this research has not involved any animal subject (body or organs) for experimentation. The research was not based on laboratory experiment involving any kind of animal. Some contexts of animals are also indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) does not apply in cases of this study or written work.

Research on Indigenous Peoples and/or Traditional Knowledge
The author(s) solemnly declare(s) that this research has involved Indigenous Peoples as participants or respondents, with the documentation of their Indigenous Knowledge. Some other contexts of Indigenous Peoples or Indigenous Knowledge are only indirectly covered through literature review. An Ethical Clearance 'to conduct research on indigenous peoples' Indigenous knowledge is not relevant. Yet, a Self-Declaration in this regard applies in cases of this study or written work. It is appended.

Research involving Plants

The author(s) solemnly declare(s) that this research has not involved the plants for experiment or field studies. The contexts of plants were only indirectly covered through literature review. Thus, during this research the author(s) obeyed the principles of the Convention on Biological Diversity and the Convention on the Trade in Endangered Species of Wild Fauna and Flora.

(Optional) Research Involving Local Community Participants (Non-Indigenous)
The author(s) solemnly declare(s) that this research has not involved local community participants or respondents belonging to non-Indigenous peoples. Yet, this study did not involve any child in any form directly. The contexts of different humans, people, populations, men/women/children and ethnic people are also indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) or prior informed consent (PIC) of the respondents or Self-Declaration in this regard does not apply in cases of this study or written work.

(Optional) PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)
The author(s) has/have NOT complied with PRISMA standards. It is not relevant in case of this study or written work.

Competing Interests/Conflict of Interest
Author(s) has/have no competing financial, professional, or personal interests from other parties or in publishing this manuscript. There is no conflict of interest with the publisher or the editorial team or the reviewers.

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To see original copy of these declarations signed by Corresponding/First Author (on behalf of other co-authors too), please download associated zip folder [Ethical Declarations] from the published Abstract page accessible through and linked with the DOI: https://doi.org/10.33002/pp0206.

SELF-DECLARATION FORM
Research on Indigenous Peoples and/or Traditional Knowledge

The nature and extent of community engagement should be determined jointly by the researcher and the relevant community or collective, taking into account the characteristics and protocols of the community and the nature of the research.

If your research involved/involves the Indigenous Peoples as participants or respondents, you should fill in and upload this Self-Declaration and/or Prior Informed Consent (PIC) from the Indigenous Peoples. [Please read carefully https://grassrootsjournals.org/credibility-compliance.php#Research-Ethics]

1. Conditions of the Research

1.1 Was or will the research (be) conducted on (an) Indigenous land, including reserve, settlement, and land governed under a self-government rule/agreement or?

No

1.2 Did/does any of the criteria for participation include membership in an Indigenous community, group of communities, or organization, including urban Indigenous populations?

No

1.3 Did/does the research seek inputs from participants (members of the Indigenous community) regarding a community's cultural heritage, artifacts, traditional knowledge, biocultural or biological resources or unique characteristics/practices?

No, the present study does not necessarily focus on any of the things listed above, however, there was a cursory mention of the fodder species consumed by cattle in the study area.

1.4 Did/will Aboriginal identity or membership in an Indigenous community used or be used as a variable for the purposes of analysis?

No

2. Community Engagement

2.1 If you answered "Yes" to questions 1.1, 1.2, 1.3 or 1.4, have you initiated or do you intend to initiate an engagement process with the Indigenous collective, community or communities for this study?

The present study was commissioned by Sahjeevan-Centre for Pastoralism, an NGO based in Bhuj, Kutch, Gujarat state, India. The present study aims to map the seasonal migration

routes of pastoralists inhabiting the Deccan Plateau region of India. The objective of the present was to gain a better understanding of the seasonal migration patterns and challenges faced by the pastoralists in the Deccan Plateau region of India. The present study does not involve collection of any cultural heritage, artifacts, traditional knowledge, biocultural or biological resources or unique characteristics/practices of the Indigenous communities in the study area.

Since 2018, I have been closely associated with the Amrabad Poda Lakshmi Govu Sangham (APLGS) and Nallamala-Kamma Govu Sangham (NKGS), the collectives of Poda Thurpu and Nallamala-Pasa/Kamma cattle breeders, of Nagarkurnool and Kurnool districts of Telangana and Andhra Pradesh states. I have been working with the associations for conservation of the indigenous Poda Thurpu and Nallamala-Pasa/Kamma cattle breeds and improvement of local livelihoods. In the year 2019, a formal process was initiated with APLGS and NKGS for participatory research and documentation of biocultural diversity of pastoralists associated with breeding of the cattle breeds. The main objectives of such documentation was: (1). To nominate APLGS for the India Biodiversity Conservation Award, 2021. The documentation helped APLGS, in winning the India Biodiversity Conservation Award, 2021. For more information about the award: https://www.ecosystemsbasedsolutions.in/telangana-3.php (2). To publish the study in journals, giving due credit to APLGS and pastoralists. And (3). To register Nallamala-Pasa/Kamma as defined native cattle breed with the ICAR-NBAGR, India.

Besides documentation of the biocultural diversity of pastoralist communities and registration of pastoralist livestock cattle breeds, our long-term engagement with the pastoralist communities in the study area have also resulted in the development and implementation of a project among 80 pastoralist dominated villages covering nearly 0.1 million traditional forest dependant households in two districts of Nagarkurnool and Nalgdonda districts of Telangana state, with an objective to bring legal recognition to the customary rights of these communities under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. The project is jointly implemented by three NGOs the Centre for Pastoralism, Watershed Support Services and Activities Network, and Conare Foundation.

2.2 If you answered "Yes" to question 2.1, describe the process that you have followed or will follow with respect to community engagement. Include any documentation of consultations (*i.e., formal research agreement, letter of approval, PIC, email communications, etc*.) and the role or position of those consulted, including their names if appropriate:

The present study does not necessarily involve collection of data pertaining to cultural heritage, artifacts, traditional knowledge, biocultural or biological resources or unique characteristics/practices of the pastoralist communities in the study area. However, a formal letter of prior informed consent (PIC) was shared with the Executive Committee members and Chair Person of APLGS and NKGS, expressing the intentions (mentioned in response to Q. #2.1.), behind the participatory research study and sought their approval for the same. Upon, the receipt of formal letter of approval from the Chair Person of APLGS, participatory documentation of biocultural diversity of pastoralists was initiated for the objectives #1 and #2 mentioned in response to Q. #2.1. A copy of the same will be annexed with this form.

WASSAN

PRIOR INFORMED CONSENT (PIC) LETTER

Dt: 16/05/2019

From
Kanna K. Siripurapu
Sr. Project Officer, WASSAN.

To
The Chair Person,
Amrabad Poda Lakshmi Govu Sangham,
H.No. #15-148, Sainagar Colony,
Atchampeta – 509375, Nagarkurnool district,
Telangana, India.

Sub: PIC of Biocultural Diversity of Pastoralists documented from members of Amrabad Poda Lakshmi Govu Sangham (APLGS), for nomination of APLGS regarding: (1). to nominate APLGS for the India Biodiversity Conservation Award, 2021. And (2). to publish the study in journals, giving due credit to APLGS and pastoralists rearing the Indigenous Poda Thurpu cattle breed.

Dear Sir,

With reference to the above cited subject, I would like to bring to your kind notice that the Watershed Support Services and Activities Network (WASSAN), a NGO based out of Hyderabad, India, is planning to conduct a participatory research study on Biocultural Diversity of Pastoralists of Telangana, India.

It was believed and widely accepted that the knowledge and information related to Biocultural Diversity of Pastoralists in connection with the Indigenous Poda Thurpu cattle breed is a common knowledge, which is shared among the Pastoralist communities of your region. And, APLGS is the representative body of the pastoralists keeping the Indigenous Poda Thurpu cattle breed and Biocultural Diversity of the same.

In this connection, I would like to approach you for your consent and permission to participatory documentation of Biocultural Diversity of Pastoralists involved in rearing and breeding the Indigenous Poda Thurpu cattle breed in Telangana state.

I would like to seek your approval for the same. The information thus documented will be primarily used for (1). Nomination of APLGS for the India Biodiversity Conservation Award, 2021. And (2). Publication of the study in journals, giving due credit to APLGS and pastoralists.

If you are approval of our proposal, we would like to request you to kindly sign this letter below and provide a copy of the same as a proof of your consent and approval of the same.

Thanking you!
(Kanna K. Siripurapu)

With reference to the above cited subject, being the Chair Person of APLGS, I hereby approve the same.

(Chair Person, APLGS)

Watershed Support Services and Activities Network
Plot # 685, Street No.12, Lakshmi Narasimha Colony, [illegible] Road – 500 068
Ph: 040 - 27015295 / 96, 27016581, E-mail: wassanmail@gmail.com, Website: www.wassan.org

3. No Community Consultation or Engagement

If you answered "No" to question 2.1, briefly describe why community engagement will not be sought and how you can conduct a study that respects Aboriginal/ Indigenous communities and participants in the absence of community engagement.

The present study titled: "Mapping of the Seasonal Migration Routes of Cattle Pastoralists of the Deccan Plateau Region of India Using Ethnographic Geographic Information System Technique", involves community participation, however, the classification of the research participants, especially the Lambadi people varies in different states of India. They are classified as "Scheduled Tribes", by the Ministry of Tribal Affairs – The Government of India, in a few states and Other Backward Castes (non-tribal) in a few states of India.

Name of Principal Researcher: Kanna Kumar Siripurapu
Affiliation of Principal Researcher: School of Arts and Design, Woxsen University, Kamkole, Sadasivpet, Sangareddy District, Hyderabad - 502 345, Telangana, India. Website: https://woxsen.edu.in/

Declaration: Submitting this note by email to any journal published by The Grassroots Institute is your confirmation that the information declared above is correct and devoid of any manipulation.