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Livestock ownership patterns among transhumants in high-altitude villages of the central Himalayas

Nehal A. Farooquee and Annpurna Nautiyal

Introduction

Studies of pastoralism in the Indian Himalayas have so far largely neglected livestock ownership patterns and factors influencing these. Such information is, however, of importance to development programmes. Recent studies (e.g. Ashish, 1993) indicate that the livestock population of the Indian Central Himalayas exceeds available fodder resources. This may be due to the declining productivity of uncultivated land (Saxena, 1995). In this study we suggest that among high altitude transhumant agro-pastoralists technological and environmental concerns are the primary factors determining stock ownership patterns. In transhumant societies environmental uncertainities and changes in climate and terrain are often reflected in their resource bases and production processes. Here also, the major production processes and the constraints of their bi-annual migration between their summer and winter villages appear to substantially influence the size of individual livestock holdings. In a mixed bovine and ovine population the relative contribution of each species to household income is also important. Cattle provide manure, milk and draught power, while sheep and goats provide mainly wool, manure and meat.

We focus on nineteen transhumant villages in the central Himalayas, whose inhabitants have three main sources of livelihood: agriculture, animal husbandry and trade and manufacture (which consists of the production and sale of woollen garments, minor agro-based products and wild medicinal herbs). The entire population of each of these villages migrates to its respective winter settlements in the valley in November; they stay there till April and then move to their summer villages at high altitudes. After a preliminary survey of the area, four villages out of the nineteen – namely Dantu, Sela, Boondi and Nabi – were selected, as they were found to represent the transhumant system of the entire area and also possess the primary attributes of each of the nineteen villages (Table 1). These four villages were then studied in detail.

A number of techniques have been utilised in field work, ranging from participant observation and group interactions to more conventional household surveys over a period of four years (1991-94). An inventory was developed in each village to determine the family structure, agricultural output, cropping patterns, pastoral techniques and all other resource exploitation strategies.

The Study Area

This study was carried out in the Darma and Byans valleys of Dharchula block (29° 31' to 30° 2' N latitude and 80° 40' to 81° E longitude), within the Greater and trans-Himalayan zone. The entire region is marked by deep gorges and steep slopes, with a number of snow clad ranges ranging upto 7800 m. The ninetten villages are located between the snow fed Kali and Dhauli rivers, in the central Himalayan trijunction of India, Nepal and China (Fig. 1), at altitudes ranging between 1200m to 4100m. Each family has two dwellings – one for the winter (November to April) in the lower valleys, the other higher up for the summer where it stays along with its livestock from May to October. Table 1 gives some details of the summer and winter locations.

The four villages studied in detail varied in terms of altitude and location. Sela and Dantu are located in the Darma valley, which is characterized by greater vegetation and gentle slopes, whereas the villages Boondi and Nabi are located in the Byans valley which is marked by dry, rugged and steep ridges. The Darma valley is endowed with more grazing resources than the Byans valley. Thus Sela and Dantu are more suited for pastoralism than Boondi and Nabi. Dantu and Nabi have, on the other hand, more cultivable land than Boondi and Sela.

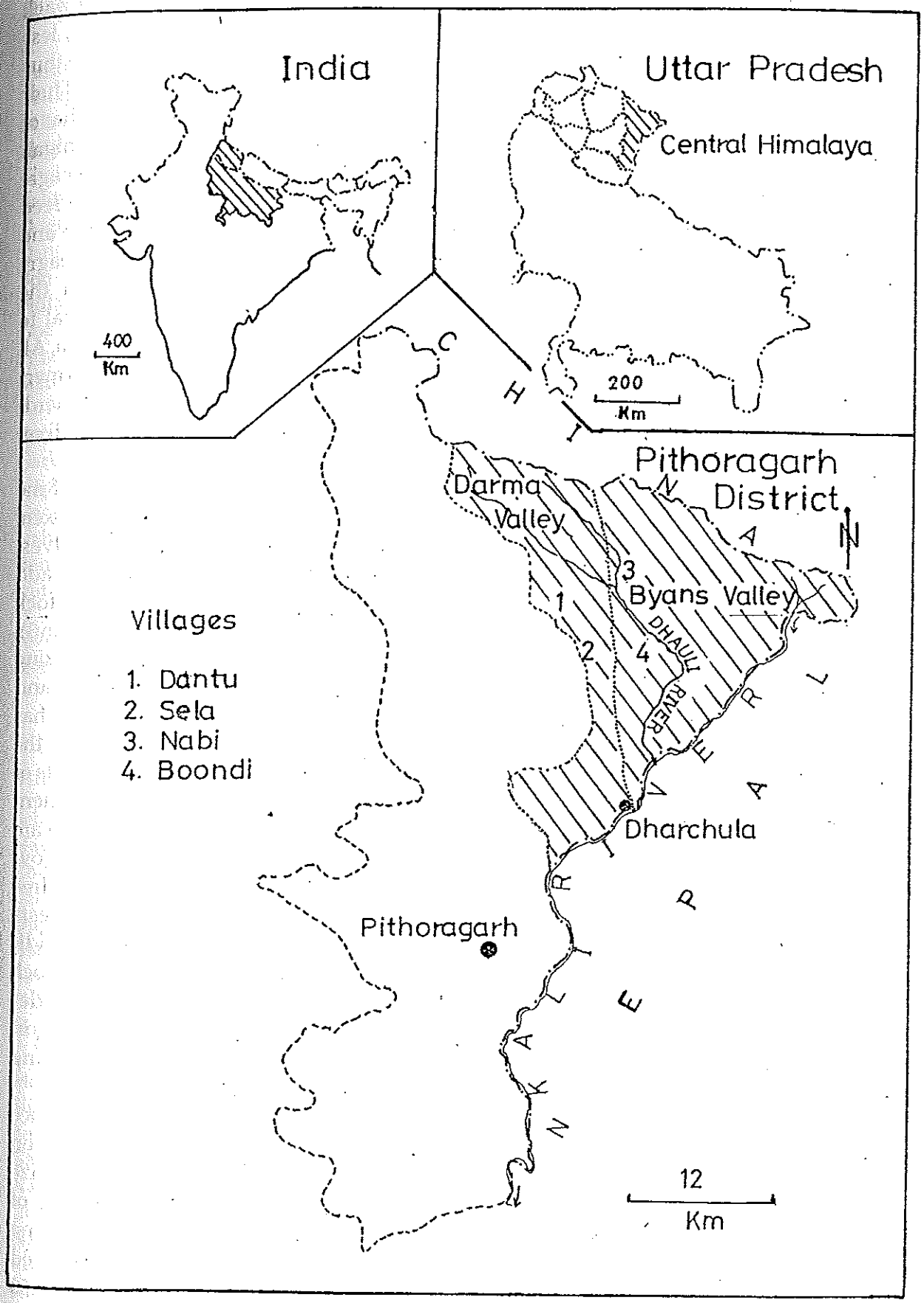
The climate throughout the region is characterized by extremely cold winters with frequent snowfalls at higher elevations from October to April and by mild summers, from May to August, with very erratic rainfall. In winter minimum temperatures range between –10° C to 5° C, while in summer the temperature can rise to 20° C. The average annual rainfall of the region is between 100 to 150 cm, about 60% of which occurs over a brief period between July and August.

The entire region is inhabited by a community known by the exonym Bhotiya. They consist of numerous sub-groups living in different valleys, and each of these has its specific traditions and cultural practices. The four major sub-groups are the Jauhar Bhotiyas residing in the Jauhar valley, the Darma Bhotiyas of the Darma valley, the Byans Bhotiyas of Byans valley and the Chaudas Bhotiyas living in the Chaudas valley. Whereas no inter-marriage takes place between the Jauhar Bhotiyas and those of Darma, Byans and Chaudas, the latter three sub-groups intermarry (Farooquee, 1994). Around 90% of all marriages are arranged by family members. Roughly 85% of all Bhotiyas live in nuclear families, the average family size being 6.12. Around 20% of the families have women as heads of household and the sex ratio is 900 females per 1000 males (Farooquee, 1994).

Table 1. Price of various livestock in Dharchula block in 1993.

Livestock	**Price (Indian Rupees)**
Yak	5000 – 8000
cow	2500 – 3500
Jumo	2500 – 4000
Jhupu	1500 – 2500
Sheep	300 – 1500
Goat	500 – 1800
Tibetan goat	1500 – 3000

Fig. 1


India
400
Km
Uttar Pradesh
Central Himalaya
200
Km
C
H
I
N
A
Pithoragarh
District
Darma
Valley
Byans Valley
DHAULI
RIVER
Villages
1. Dantu
2. Sela
3. Nabi
4. Boondi
Dharchula
Pithoragarh
12
Km

The physical isolation of the Bhotiyas from caste Hindu society has contributed largely to their maintaining their traditional institutions and continuing to consider their traditional values as a guiding force. The village council (*panchayat*) remains the supreme institution for settling all kinds of disputes and is also authorised to impose social sanctions. The regulation and management of the alpine meadows and other village grazing lands is also undertaken by the village council, which is concerned with the equal distribution of grazing resources among all villagers. It also ensures that these grazing resources are not over-exploited, and are utilised judiciously. The other important organisations at the village level are the *Mahila Mangal Dal* and the *Yuva Manch*. The former is a womens' welfare organisation which deals with cases of divorce, widow remarriage, family quarrels and arrangements for festivals and marriage ceremonies. The *Yuva Manch* are local youth fora.

The Agro-Pastoral System

Among the Bhotiyas a father's entire property is divided equally amongst his sons. Land is regarded as a major immovable commodity and is bought and sold. Small and scattered land holdings, uneven and terraced fields, low investment capacity of farmers and above all, the geographical and topographical features of the hill farming system preclude any possibility of mechanisation in these villages (Tripathi, 1990). In the lower altitudes of the Central Himalayas farmers use bullocks as draught animals. In these high altitude transhumant villages *Jhupu* are used instead. The *Jhupu*, which is the result of the cross-breeding of a Yak and a cow, is well adapted to the extreme cold (Farooquee *et al*, 1994). During migration it also serves – in addition to sheep and goats – as a pack animal. Small stock are, however, less expensive to buy than cattle and are thus valued more by small farmers. Their maintenance is also cheaper than that of cattle because firstly, they require no stall feeding and secondly, due to the meagre availability of crop residue, cattle feed has to be imported, whereas sheep and goats are able to survive on the meagre grazing resources available. On the whole, then, it is more economical to tend ovines than bovines in this area. All livestock are bought from local farmers or sometimes from other Bhotiya herders. The prevalent local prices of livestock are given in Table 2.

The total livestock population of the four villages consisted of 203 *Jhupu* oxen, 157 cross-bred cows (*Jumo*), 50 calves, 1697 sheep and 1167 goats – which add up to a total of 3274 heads of livestock during the period 1992-1993 (cf. Table 3). All these depended entirely on grazing in village and Government forests and on the alpine meadows. Each village has its own forest which partially meets the grazing, fuel and fodder requirements of its inhabitants. In addition, government forests and alpine meadows – which are strictly speaking also owned by the government – are also used for grazing, free of cost. For use of government forests prior permission must be sought, indicating the number and type of livestock to be grazed. Each village council decides the dates and period of grazing in village forests and common grazing lands.

Due to the extreme economic reliance of transhumant farming communities on their animals stock composition and size were analysed in relation to the size of land holdings. For this, farms were first classified according to size. This showed that in these four villages there were 63 small farms (with upto 0.5 ha land), 31

Table 2. Geographical features of the studied villages. Source : Land revenue office, Dharchula, 1992

Summer Village	Altitude (m)	Winter Village	Distance between two settlements (km)
Sela	2438	Balwakot	55
Nagling	2743	Galati	62
Chal	2650	Kalika	67
Baling	2890	Jauljibi	68
Dugtu	3048	Chilkila	72
Dantu	3220	Nayabasti	74
Bon	3350	Ghatibagar	76
Philam	3360	Balwakot	78
Goe	3810	Balwakot	77
Tidang	3970	Kalika	82
Mercha	4050	Balwakot	87
Sipu	4135	Nayabasti	96
Boondi	3000	Dharchula	97
Garbyang	3333	Dharchula	116
Napalchu	3560	Dharchula	121
Goonji	3500	Dharchula	119
Nabi	3566	Dharchula	124
Rongkong	3560	Dharchula	128
Kuti	4000	Dharchula	152

Table 3. Land use, human and livestock population of the studied villages. Source: Land revenue office, Dharchula, and Primary Survey (1992).

Village	Total Geo. Area (ha)	Total Cultivable Land (ha)	Cultivable land % of total	Total Population	Total Cow & bullocks	Total sheep & goats	Total horse
Sela	204.62	26.59	15.0	315	133	873	18
Nagling	219.57	46.67	21.2	269	95	415	9
Chal	134.84	24.55	18.2	140	68	286	11
Baling	218.14	41.00	18.7	139	56	315	6
Dugtu	330.35	77.97	23.3	312	115	658	9
Dantu	289.62	47.43	16.3	250	103	702	12
Bon	278.67	85.84	30.8	268	156	89	15
Philam	104.8	29.04	27.6	117	97	70	10
Goe	390.9	93.98	24.0	158	85	100	9
Tidang	413.7	34.46	8.3	140	75	25	6
Mercha	132.4	33.16	25.0	143	63	150	4
Sipu	204.6	33.18	16.2	177	109	305	6
Boondi	241.5	43.22	17.8	203	85	859	10
Garbyang	579.4	49.15	8.4	357	46	315	12
Napachu	141.7	32.23	22.7	177	68	65	4
Goonji	194.3	37.40	19.0	374	55	75	16
Nabi	240.0	26.59	15.0	147	61	429	19
Rongkong	233.5	47.37	20.2	158	54	89	5
Kuti	250.9	52.90	21.7	264	89	210	6

medium sized holdings (between 0.6 to 1 ha), and 17 large farms (of 1 ha and above). Table 4 presents the numbers of bovine and ovine stock in small, medium-size, and large farms respectively. These data are presented as the mean number of animals owned by each household according to farm size and village. Horses account for only 6% of the livestock units and are owned by only a couple of farmers who depend on them entirely for their livelihood. Hence it was difficult to include them in the general analysis of these villages. On the other hand, oxen (*Jhupu*), cows (*Jumo*) and calves as well as sheep and goats were owned by almost all households and were thus taken into account in the analysis.

Small Farms

The largest number of small farmers (25) were found in village Nabi, followed by Boondi (17), Sela (12) and Dantu (9). Dantu had most *Jhupu* per household, followed by Nabi, Sela and Boondi. This may be due to the availability of more flat lands for cultivation in Dantu and Nabi than in Sela and Boondi. The last two villages are located on a very steep slope and hence have smaller flat lands for cultivation. The larger the area of flat lands available, the greater the amount of crops cultivated, and hence the greater the amount of crop residue which turns into good cattle feed. Thus, villages with more flat lands are likely to have more cattle. Following the same principle, Nabi also maintained more *Jumo* (cows) per household than other villages. The number of calves was relatively similar in all the four villages. Village Dantu had the maximum number of sheep per household, followed by Boondi, Nabi and Sela. Similarly, for goats also Dantu maintained the lead, followed by Nabi, Boondi and Sela.

Medium-Size Farms

Of the 31 medium-size farm households, 10 were in Boondi followed by Nabi with 9, Dantu 7 and Sela 5. The largest number of *Jhupu* per household (2.22), was in Nabi followed by Dantu, Sela and Boondi, but variations were marginal ranging from 2.22 to 2.00. Similarly, the differences in *Jumo* and calf holdings per household were less in this category of farms. But the range varied greatly in the case of sheep, from 29.20 in Sela to 10.30 in Boondi. A similar trend was visible in the holding of goats which varied from 21.57 in village Dantu to 9.70 in Boondi.

Large Farms

There were 6 large farms each in Boondi and Nabi followed by 3 in Dantu and 2 in Sela. The numbers of *Jhupu* and *Jumo* per household were very close to each other, and varied between only 2.83 and 2.50 and between 2.00 and 3.00 respectively. But for sheep it varied from 69.33 in Dantu to 20.00 in Sela, and in the case of goats from 44.66 in Dantu to 13.00 in Sela.

Table 5 summarizes the data of Table 4; here data have been presented for all small, medium-size, and large farms, irrespective of village. The trend is clear in all these transhumant villages that owners of bigger farms also have larger holdings of all categories of livestock, followed by medium size farmers and small size farmers. Table 6 presents the mean number of livestock per household per village, and shows that village Dantu has the highest number of *Jhupu* oxen, sheep and goats per household. The other three villages were quite close to each other in all categories of livestock holding per household.

Livestock ownership patterns among the transhumant Bhotiya were thus found to be directly linked to land ownership patterns. Management costs of various species were also found to be an

Table 4. Mean number of animals per household on small, medium, and large farms of four villages (1993)

Livestock	Boondi	Sela	Dantu	Nabi
Small Farms	n = 17	n = 12	n = 9	n = 25
Bovine				
Jhupu (oxen)	0.88	1.50	1.77	1.76
Jumo (cow)	0.76	1.08	0.88	1.12
Calf	0.11	0.33	0.22	0.36
Ovine				
Sheep	11.23	6.50	11.66	8.32
Goat	5.94	3.58	7.55	6.84
Medium Farms	n = 10	n = 5	n = 7	n= 9
Bovine				
Jhupu (oxen)	2.00	2.00	2.14	2.22
Jumo (cow)	2.30	1.80	1.28	1.55
Calf	0.04	0.80	0.42	1.11
Ovine				
Sheep	10.30	29.20	27.57	16.88
Goat	9.70	15.40	21.57	12.11
Large Farms	n = 6	n = 2	n = 3	n = 6
Bovine				
Jhupu (oxen)	2.83	2.50	2.66	2.50
Jumo (cow)	2.50	3.00	2.33	2.00
Calf	0.50	1.00	0.33	1.33
Ovine				
Sheep	22.00	20.00	69.33	23.50
Goat	13.00	22.50	44.66	15.50

Table 5. Mean number of animals per household per small, medium, and large farms

Livestock	Small	Medium	Large
	n = 63	n = 31	n = 17
Bovine			
Jhupu (oxen)	1.47	2.09	2.64
Jumo (cow)	0.98	1.77	2.35
Calf	0.26	0.67	0.82
Ovine			
Sheep	9.23	19.16	30.64
Goat	6.07	14.00	20.58

Table 6. Mean number of animals per household per village

Livestock	Boondi	Sela	Dantu	Nabi
	n = 63	n = 31	n = 17	n = 40
Bovine				
Jhupu (oxen)	1.57	1.73	2.05	1.97
Jumo (cow)	1.54	1.47	1.26	1.35
Calf	0.27	0.52	0.31	0.67
Ovine				
Sheep	12.90	13.89	26.63	12.52
Goat	8.36	8.68	18.57	9.32

important factor in stock composition. Sheep being the cheapest to maintain and with high returns was found to be the commonest animal herded. It was also found that the cost of livestock was inversely proportional to the size of livestock holding (Tables 2 & 6). If we consider the mean number of animals per household, sheep were most numerous (26.63 per household) followed by goats with 18.68, *Jhupu* oxen with 2.05, *Jumo* cows (1.54) and calves 0.27 (Table 6). Though the villages Sela and Dantu have better grazing resources and villages Dantu and Nabi have better agricultural lands, neither of these pairs of villages present any trend in livestock holdings.

Conclusion

It is then, suggested that livestock holdings are more directly dependent upon farm size than upon any other variable. But in the high altitude central Himalayas farm size itself is closely linked to the precise topographical location of a village. It is easier and cheaper to grow foodcrops than to purchase them and for the management and maintenance of more livestock more labour is required and hence, more food. Thus herd sizes are directly proportional to the size of land holding. There is, however, no relationship between size of landholding and grazing rights; the latter are uniform and open to all local herdsmen.

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Résumé

En réponse aux incertitudes de l'environnement dans les hautes vallées de l'Himalaya central, les Bhotiya disposent d'un vaste répertoire de pratiques économiques – l'agriculture, l'élevage transhumant, la vente de produits mineurs de forêts et la préparation et vente de produits en laine. Dans cette étude les auteurs essaient de comprendre les formes de propriété du bétail ainsi que d'analyser les facteurs qui influencent l'élevage et l'adaptation économique de ces sociétés aux conditions très difficiles en haute altitude.

Resumen

Los Bhotiyas, que viven en las tierras altas del Himalaya Central, son un grupo transhumante que migra todos los años con sus rebaños entre asentamientos de verano y campamentos de invierno. Debido a las inseguridades ambientales de regiones altas han diversificado su producción, cultivando no solamente plantas y criando animales, sino también produciendo y vendiendo tejidos y vendiendo productos menores provenientes del bosque. El estudio analiza la naturaleza y los esquemas de la tenencia de animales y los factores implicados en el tamaño de las tierras teniendo en cuenta el manejo y la adaptación de estas sociedades a las condiciones inhóspitas de las tierras altas.

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