Pastoral Issues of the Central and Eastern Indian Himalaya: Prospects & Constraints

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INTRODUCTION

This paper presents a survey of livestock management systems and grazing resources affected by the process of modernisation in the Darma and Byans Valleys of Pithoragarh district in Uttar Pradesh, and the Tawang Valley in the district of Arunachal Pradesh, India. *Shauka Bhotia*(s) inhabit the Darma and Byans valleys, while *Monpa*(s) are found in Tawang. In the Darma and Byans valleys of the Indian central Himalayas, the *Shauka Bhotia*(s) use alpine pastures for transhumant grazing of their livestock. The ecological potential and limitations of winter pastures, the extremely inhospitable conditions present at such high altitude settlements, and shifting regional socioeconomic impacts all affect land use.

The overexploitation and mismanagement of alpine pastures have been the focus of much environmental discussion. A number of studies (Melkhania and Singh 1989; Ram et al, 1989; Rekhari et al, 1992; Bawa 1995; Sundriyal 1995) have estimated the dynamics of Alpine grazing resources, composition, growth rate, consumption pattern, and a number of other parameters. However, there is a remarkable gap in knowledge between human activities and the biosphere and impacts of modernisation and development on these traditional resource practices. Concomitantly, much of the available information about Alpine regions in India have been based on false assumptions and inaccurate estimates due to insufficient knowledge of local conditions (Ives and Messerli 1989; Kreutzmann 1993). Likewise, the social aspects of high pastures have received very little attention.

Throughout the Hindu-Kush Himalayas, starting from the Karakoram range in the west to the Tawang Valley of Arunachal Pradesh in the Eastern Himalayas, there is a general decline in animal husbandry and high altitude postoral activities, although populations continue to grow. According to Snoy (1993), in the Hindu-Kush, Karakoram, and northwest Himalayas, the work force is no longer large enough to fulfill the demands of Alpine animal husbandry because of the convenience and economic advantage of non-agrarian income opportunities. Similarly, among pastoral communities of the Indian Himalayas such as the *Bakarwal*(s) and *Gaddi*(s) in Jammu and Kashmir, the *Gaddi*(s) in Himachal Pradesh, the *Mercha Bhotiya*(s) and *Shauka Bhotia*(s) in Uttar Pradesh, the *Lepcha*(s) in Sikkim, and the *Monpa*(s) in Arunachal Pradesh, the actual number of families using Alpine pastures has declined substantially. As a result of his study in Darma and Byans Valleys, Farooquee (1994) regards this decline as a result of development, market-oriented cash

economy, and modernisation. High altitude pasture management has also changed; the responsibility for pasture management and herding is shifting from actual livestock owners to hired labourers.

The linking of remote areas with motorable roads and the increased levels of communication between peripheral societies and large market economies has, in turn, changed the priorities in production even among remote transhumant communities. Population pressure and external socioeconomic innovations have influenced the production process, as have new income avenues from off-farm employment. Transhumant pastoralists such as *Shauka Bhotia*(s) have historically employed flexible methods of rangeland management. Whereas they were once trans-border traders linking India with Tibet, they are now finding employment in the tourism sector and altering trading strategies to adapt to changing sociopolitical circumstances.

PASTORAL OWNERSHIP AND PRODUCTION

In the case of the *Shauka Bhotia*(s), environmental uncertainties have changed their production processes. The major production processes are agriculture, pastoralism, livestock production, the sale of woollen garments, and trade in minor agro-based and medicinal herbs. These production processes, as well as compulsory biannual migration between summer and winter settlements, have substantially influenced livestock ownership. The general characteristics of four out of nineteen *Shauka Bhotia* villages are presented in (Table 1).

The *Shauka Bhotia*(s) raise a mixed bovine and ovine population consisting of cattle, sheep, and goats. The relative contribution of each species to household income is important. Cattle provide manure and milk, while sheep and goats provide wool, manure, and meat. Cattle are also well suited for ploughing on the small terraced fields. Though both bovines and ovines are used as pack animals, sheep and goats are easier to maintain than cattle due to the fragility of the resource base and the rugged terrain.

The mean livestock holdings of the four villages of *Shauka Bhotia*(s) studied are given in Table 2. This table indicates that ovine holdings are seven to eight times higher than bovine and equine numbers. This difference is due, primarily, to the fact that sheep are more suitable to the geographical environment than are, for instance, cattle and horses. The sizes of ovine holdings are given in Table 3. It is interesting to

Table 1: Geographical and Socioeconomic Features of the Studied *Shauka Bhotia* Villages

Variable	Dantu	Nabi	Boondi	Sela
Altitude (m)	3220	3566	3000	2438
Total geog. area (ha)	289.62	240.04	241.543	176.24
Total cultivable land (ha)	47.43	2.59	.22	26.59
Cultivable land (% of total)	16.9	17.6	17.8	15.0
Civil and comm. forest (ha)	25.07	5.05	4.95	119.63
Total population	203	315	250	147
Total cows and bullocks	63	133	103	61
Total sheep and goat	859	873	702	429
Total horses	10	18	12	19
Average land holding size (ha)	0.651	0.514	0.755	0.515

Source: Land Revenue Office, Dharchula (Pithoragarh) Primary Survey (1992)

Table 2: Mean of Livestock Holdings of Four *Shauka Bhotia* Villages Studied				
Village	Bovine	Ovine	Equine	Canine
Dantu	6.47 + 2.19	31.6 + 19.2	1.5 + 0.83	1.11 + 0.33
Sela	4.47 + 1.67	28.5 + 33.7	2.7 + 1.73	1.13 + 0.51
Nabi	4.32 + 1.24	26 + 16.42	1.5 + 1.08	1 + 0
Boondi	4.39 + 1.34	41.3 + 43.1	1.7 + 1.57	1.16 + 0.38

note that more than 50 per cent of the pastoralists in all four villages have sheep and goat holdings ranging between 10 to 50, and around 10 per cent of them have herds of more than 50 sheep and goats. The sizes of ovine holdings have reduced drastically in the last decade; earlier, each household had more than a 100.

Table 3 : Size of Sheep and Goat Holdings in the Four *Shauka Bhotia* Villages Studied		
Villages	Flock Size	% of Families
Dantu	No holdings	15.8
	1 to 10	10.5
	10 to 50	63.2
	Over 50	10.5
Sela	No holdings	31.5
	1 to 10	10.5
	10 to 50	52.6
	Over 50	5.4
Nabi	No holdings	17.5
	1 to 10	7.5
	10 to 50	65.0
	Over 50	10.0
Boondi	No holdings	30.3
	1 to 10	9.1
	10 to 50	51.5
	Over 50	9

These migratory pastoralists receive consistent income from sources such as agriculture, woollen products from livestock, and the sale of medicinal herbs (Table 4). Income from agriculture varied from 32 to 36 per cent of their total income; woollen products contributed 18 to 24 per cent; sale of livestock provided 28 to 38 per cent of overall income; and sale of medicinal herbs accounted for 12 to 13 per cent. Thus, livestock forms a regular source of income for

Table 4: Average Income from Various Sources in the Studied Villages of Dantu and Sela		
Income	Dantu	Sela
Agricultural produce	5537 (32%)	5773 (36%)
Woolen products	3178 (18%)	3738 (24%)
Sale of Livestock	6450 (38%)	4400 (28%)
Sale of Medicinal Herbs	2018 (12%)	1994 (13%)

Note: Income (Rs per year) with % of total income in parenthesis in the village
(Rs. 35 = 1 US$ in 1996)

these pastoralists and hence needs to be viewed as a land-based production system. Thus, agriculture, livestock, and natural vegetation are interlinked subsystems of the total pastoral production system (Farooquee and Saxena 1996). The nature and magnitude of the linkages between various subsystems differ from place to place, depending upon environmental conditions and sociocultural traditions.

CHANGING CHARACTERISTICS OF TRADITIONAL PASTORALISM

Livestock Management

The extreme geographical conditions of high altitude rangelands and the meagre resource base available have forced pastoralists to evolve strategies for optimal management of their available resources. The dependence of *Shauka Bhotia*(s) on livestock for their sustenance in an environment characteristically fragile, and the

migration of these tribal people twice a year between their high altitude summer settlements and winter settlements in the valleys, have compelled them to develop management strategies well adapted to their tenuous resource base.

As true for any nomadic, transhumant, or pastoralist society, the complex and variable patterns of animal husbandry depend on herders' ingenious orchestration of grazing resources and livestock. These indigenous management systems help balance resource use with subsistence needs. Random fluctuations in grazing resource availability, unpredictable climatic conditions, and wildlife predation are thought to condition pastoral behaviour in this society. Like pastoralists of the High Sierra in the South Central Andes, Central and Eastern Himalayan pastoralists respond to opportunities and limitations presented by the availability of forage, the growth potential of their flocks, and random fluctuations in herd size due to environmental and social hazards (Kuznar 1991).

Management of sheep and goats is required for the survival of Himalayan pastoralists. In order to produce improved herds, sheep and goats are divided into three categories depending on the functions they serve: sheep and goats used for breeding are managed differently than those used for wool production and those that function as porter animals.

Breeding animals receive the utmost care. They are generally kept indoors during rain and snow. They are also fed with the most nutritive grasses and are the first flocks to visit the pastures after winter snows melt when the best nutritive grasses and aromatic plants grow. Herders also try to ensure that these livestock are not confined to one place so they don't miss diversified grazing resources available in summer. This emphasis on nutrition helps encourage healthy offspring and overall breed improvement.

Wool producers receive less care and attention. Their breeds are also different, with some of Tibetan origin bearing high quality wool similar to 'pashmina' varieties. These sheep and goats are very hairy and hence are sheltered from high intensity sun to avoid excessive sweating and energy loss. They are sheared twice a year, in summer and winter.

Flocks used as pack animals are generally local breeds of sheep and goats. Just as camels in deserts, they are extensively used for transportation of food grains from lower settlements to summer encampments. This category of sheep and goats outnumbers the other two groups. These animals can carry up to 30kg each.

The *Monpa*(s) of Tawang primarily keep yaks *(Bos grunniens)*; their cross-breeds are not classified like the sheep and goats of the *Shauka Bhotia*(s). Yet, only male yaks are used to carry fuelwood. Pregnant female yaks are fed properly and given a regular supply of salt for better digestion and appetite. Yaks provide these pastoralists with milk, meat, wool, and hides; dairy products, in particular, are a staple of the *Monpa* diet. Selling milk and its by-products provides a a primary source of *Monpa* income. However, instead of cash, *Monpa* pastoralists prefer barter exchange of grains and other food items for their dairy products.

Community Regulation of Resource Use

Evidence suggests that community regulation of resource use and livestock movements evolved to stop conflicts and encour-

age the equal sharing of resources by the entire community. The ceremonial exclusion of livestock from particular areas for a specified period of time is a crucial component of their resource management system. A similar system has also been reported among the *Sherpa*(s) of Khumbu (Brower 1991). This practice protects village crops and also creates a *de facto* deferred grazing system which distributes livestock impact through space and time.

Though most of their agricultural fields have a wall-fencing, the growth of potato and buckwheat plants determine the date on which livestock are moved towards the *'bughiyal'* or Alpine pasture. Defaulters are fined by the community for each day their livestock remain on the restricted side. Other restrictions are also imposed on entry into village fields and similar activities considered to jeopardise crops and village welfare. Thus, villages have instituted protection methods for both their rangelands and their cultivated areas. A similar ban is also imposed on any land providing cereal grasses, or any plant or vegetation promising seed, nutrient storage, or floral diversity. Sometimes these restrictions are also imposed on the growing of good grazing resources; occasionally, a particular day is fixed for grazing in a particular area so that grazing resources are shared between all villagers. In most of Darma and Byans, the bans on various grazing resources are removed sequentially and grass cutting is permitted just before crops are harvested.

These regulations protect wild grasses for most of the growing season, and hence provide good grazing resources to pastoralists. They also promote efficient labour use during the year's busiest season and, thus, are a good example of indigenous management systems which strive to synchronise human and natural resource use. The institution of community regulation of resource use and livestock movement is an example of self control, discipline, and community cohesion — all of which help sustain these pastoral lifestyles.

CONCLUSIONS

Over the centuries, pastoralists have developed adept grassland management and animal husbandry systems so that they may survive in their inhospitable, high altitude environments. The presence and continuity of transhumant pastoralism in places like the Central and Eastern Indian Himalayas attest to this. Yet, these pastoral communities are now witnessing tremendous pressure as a result of their integration into market-oriented cash economies, on the one hand, and their rapidly changing social structures on the other. Hence, it is very important for local social and cultural institutions to strike a balance between these two opposite forces. Questions concerning traditional knowledge and evaluation of natural environment in such societies have gained more importance in the recent literature (Sandford 1983; Fisher 1987; Miller 1990; Brower 1991). However, new perspectives regarding the assessment of changing pastoral production practices in light of the increasingly cash-oriented Indian economy, as well as changing local values, provide a valuable framework for studying Himalayan pastoral societies.

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REFERENCES

Bawa, R., 1995. 'Biomass Dynamics of Himalayan Grasslands'. In *International Journal of Ecol. S Environ. Sci.* Vol 21, No. 1, 25-36.

Brower, B., 1991. *Sherpas of Khumbu: People, Livestock and Landscape*. Delhi: Oxford University Press.

Farooquee, N.A., 1994. 'Transhumance in the Central Himalaya: A Study of Its Impact on Environment'. Ph.D. thesis, H.N.B. Garhwal University, Srinagar, India.

Farooquee, N.A. and Saxena, K.G., 1996. 'Conservation and Utilisation of Medicinal Plants in High Hills of [the] Central Himalayas'. In *Environmental Conservation*, Vol. 23, No. 1, 75-80.

Fisher, J.F., 1987. *Trans-Himalayan Traders: Economy, Society and Culture in Northwest Nepal*. Delhi: Motilal Banarsidass.

Ives, J.D. and Messerli, B., 1989. *The Himalayan Dilemma: Reconciling Development and Conservation*. London-New York: Routledge.

Kreutzmann, H., 1993. 'Challenge and Response in the Karakoram: Socioeconomic Transformation in Hunza, Northern Areas, Pakistan'. In *Mountain Research and Development*, Vol. 13, No. 1, 19-39.

Kuznar, L.A., 1991. 'Transhumant Pastoralism in the High Sierra of the South Central Andes: Human Responses to Environmental and Social Security'. In *Nomadic People*, Vol. 28, 93-105.

Melkania, N.P. and Singh, J.S., 1989. 'Ecology of Indian Grasslands'. In Singh, J.S. and Gopal, B. (eds), *Perspectives in Ecology*. New Delhi: Jagmandar Book Agency.

Miller, D.J., 1990. 'Grasslands of the Tibetan Plateau'. In *Rangelands* Vol. 12, No. 3, 159-163.

Ram, J.; Singh, J.S.; and Singh, S.P., 1989. 'Plant Biomass Species Diversity and Net Primary Production in a Central Himalayan High Altitude Grassland'. In *Journal of Ecology*. Vol. 77, 456-468.

Rikhari, H.C.; Negi, G.C.S.; Pant, G.B.; Rana, B.S.; and Singh, S.P., 1992. 'Phytomass and Primary Productivity in Several Communities of a Central Himalayan Alpine Meadows, India'. In *Arctic and Alpine Research*. Vol. 24, No. 4, 344-351.

Sandford, S., 1983. *Management of Pastoral Development in the Third World*. London: John Wiley and Sons.

Snoy, P., 1993. 'Alpwirtschaft im Hinduhusch und Karakorum'. In Schweinfurth, U. (ed), *Neue Forschungen im Himalaya.*, Erdkundliches Wissen, 112, Steiner Stuttgart, 49-73.

Sundriyal, R.C., 1995. 'Grassland Forage Production and Management in the Himalaya: A Review'. In *Journal of Hill Research*, Vol. 8, No. 2, 135-150.