

## Herders of forty centuries: nomads of Tibetan rangelands in western China

DANIEL J. MILLER

*Institute of Land and Food Resources, University of Melbourne, Parkville, VIC 3052, Australia*

### Introduction

Rangelands of the Tibetan Plateau encompass 42% of China's total rangeland area. Nomads still thrive in this extremely harsh environment, practising a unique form of nomadic pastoralism that is distinct from pastoralism in most other semi-arid regions (Miller 1998). On the Tibetan Plateau, the key distinguishing factors that separate nomadic from cultivated areas are altitude and temperature, in contrast to most other pastoral areas of the world where the key factor is usually the lack of water. Tibetan nomadic pastoralism is found at altitudes from 3500 to 5400 m in environments too cold for crop cultivation (Fig. 1). Yet, at these altitudes there are still extensive and productive rangelands. Tibetan nomadic pastoralism is also characterized by a unique animal, the yak (*Bos grunniens*), which is superbly adapted to the high-altitude, cold environment. One important reason why Tibetan nomads continue to flourish is that they have not had to compete with the conversion of their rangelands to cropland. About two million nomads inhabit the Tibetan Plateau, maintaining an ancient pastoral history. According to Chinese sources (Cai & Weiner 1995), yak husbandry is 4500 years old.

Despite Tibetan nomads' long pastoral history and the continuation today of many of their traditional practices, views are widespread in China that Tibetan nomadic pastoralism is 'backward'. Traditional nomadic pastoralism is believed to lead to unsustainable increases in livestock numbers and to rangeland degradation. The structure of nomads' herds is thought to be irrational, and nomads are considered ignorant. For economic development to take place in Tibetan pastoral areas, authorities believe that nomads should be settled and modern livestock production systems should be introduced (Guo & Chen 1997). Are Tibetan nomads backward? Are their grazing and livestock management systems irrational? Do they lead to rangeland degradation?

### Material and methods

In 1997, I conducted fieldwork in a Tibetan nomadic area at 4900 m in Phala, Shigatse Prefecture, Tibetan Autonomous Region, China. Data on nomads and their livestock were obtained from observations, interviews with nomads, and government records. Vegetation was sampled by estimating canopy coverage by species on 10 circular plots, 0.25 m<sup>2</sup> each, along 50 m transects. Wildlife was also surveyed.

### Results

There were 27 households with a total population of 133 in the study area. These households had 3945 animals: 45% were sheep, 40% goats, 14% yaks and 1% horses. Herd structure for sheep and goats in one nomad group was 58% females, 31% males and 11% yearlings. About 95% of the adult female sheep and goats had given birth.

Transects in a *Stipa* rangeland, which was a major grazing area, revealed that grasses and sedges comprised 86% of vegetative composition, with *Stipa* spp. making up 48% (Table 1). About 50% of *Stipa* plants contained a seed stalk from last year's growth.

Wildlife such as Tibetan wild ass (*Equus kiang*), Tibetan gazelle (*Procapra picticaudata*) and blue sheep (*Pseudois nayaur*) were common in the area. Tibetan antelope (*Pantholops hodgsoni*) were seen and also signs of brown bear (*Ursus arctos*).



Fig. 1. Tibetan nomadic pastoral areas (shaded) in western China

### Discussion

Because of the periodic severe snowstorms, much of the Tibetan Plateau probably functions as a system that is not in equilibrium. Given the environmental constraints nomads operate under, their herd compositions and structures are designed to take advantage of the resources available to them. Raising different livestock species enables nomads to more efficiently utilize the rangeland and to ensure varied products for their own use. Large and diverse herds also minimize the risk of total livestock loss from disease or harsh winters. The absence of viable markets and high transaction costs often preclude nomads selling more animals, although critics contend that nomads keep many animals just as a status symbol. Herds contain a large percentage of adult male sheep and goats, but such a herd structure is rational because a major portion of income is derived from wool and cashmere harvested from males. Contrary to notions that nomadic pastoralism is backward and nomads are ignorant, the composition and structure of herds illustrate the vast indigenous knowledge and animal husbandry skills nomads possess and the complex management strategies they have perfected.

Contrasting with official views that livestock numbers have increased in recent years, data from Phala indicate livestock numbers have remained about the same since 1981. Findings from other Tibetan areas show that livestock numbers actually decreased in the last decade (Goldstein 1996). As Goldstein & Beall (1990) noted, official reports of expanding herds probably reflect political propaganda more than reality in many cases.

There was little sign of overgrazing in the study area. While some rangelands on the Tibetan Plateau are overgrazed, the eco-system in Phala is still intact, despite centuries of livestock use. Most of the range was in good condition and could have supported even more livestock. Productivity levels of livestock were high, with a large percentage of female sheep and goats bearing young. The study area also supported remarkable wildlife populations, which would not be found if rangelands were degraded. This case study provides data showing that the general perception of widespread degradation is inaccurate. Rather than being a universal problem, rangeland degradation varies from site to site.

**Table 1.** Composition of vegetation (by percentage) of plant communities based on transects with a 0.25 m<sup>2</sup> circular plot

	<i>Stipa</i> rangeland	Degraded <i>Stipa</i> rangeland	Sand dune area	<i>Kobresia</i> slope	Degraded <i>Kobresia</i> slope	<i>Artemisia</i> rangeland
Number of plots	90	30	20	30	20	20
Average % bare ground	75.52	91.16	64.15	62.05	78.66	82.15
Average % vegetation	22.01	8.24	30.70	36.65	20.25	14.35
Average % litter	2.47	0.60	5.15	1.30	1.09	3.50
<b>GRAMINOIDS</b>						
<i>Stipa</i> spp.	48.79	35.15	15.51	9.12	28.92	12.20
<i>Poa</i> sp.	4.18	1.42	4.11		17.57	8.79
<i>Calamagrostis</i> sp.	2.77			0.08		
<i>Agropyron cristatum</i>			2.75			
<i>Kobresia/Carex</i> spp.	23.19	11.16	21.28	1.29		28.17
<i>Kobresia pygmaea</i>	6.87			75.39	35.17	4.71
<i>Carex moorcroftii</i>			44.14	0.61		
Unidentified grass			8.26			
Subtotal	(85.80)	(47.73)	(96.15)	(86.59)	(81.66)	(53.87)
<b>FORBS</b>						
<i>Potentilla bifurca</i>	6.25	49.57	0.85	1.55	2.10	5.02
<i>Leontopodium</i> sp.	4.18			6.89	8.28	
<i>Arenaria</i> sp.				2.07	2.82	
<i>Morina</i> sp.	0.07					
<i>Heteropapus</i> sp.	0.89	1.76	0.34			
<i>Sibbaldia tetrandra</i>	1.61	0.92	0.68			
<i>Astragalus</i> sp.			0.68			
Unidentified forbs	1.17		1.29	2.87	5.14	
Subtotal	(14.17)	(52.25)	(3.84)	(13.38)	(18.34)	(5.02)
<b>DWARF SHRUBS</b>						
<i>Artemisia</i> sp.						41.11
Subtotal						(41.11)
Total	99.97	99.98	99.99	99.97	100.0	100.0

Government policies and legislative actions (National Rangeland Law and Grassland Use Contracts) now promote the settling of nomads, privatization of rangeland, fencing, growing of fodder, and restructuring of herds as the best solution to maximize livestock production and control degradation in Tibetan rangelands. Limits are also being placed on livestock numbers. This process is fundamentally changing the nature of Tibetan nomadic pastoralism. It reduces or eliminates herd movements between seasonal rangelands and increases the tendency toward year-round grazing of livestock in smaller, specific areas. The long term sustainability of huge, subsidized investments in fencing also needs to be questioned.

It is argued that current policies and development plans for Tibetan nomadic pastoral areas are based on limited understanding of rangeland dynamics, misconceptions about nomadic pastoralism, flawed information about herd sizes, and incorrect assumptions about the destructiveness of nomads' grazing practices. Research reported here agrees with Coughenour (1991) who concluded that nomadic pastoralism often proves to be a rational, efficient, and sustainable system for utilizing rangeland resources. These findings also concur with those of Sneath (1998) and Williams (1996) in Inner Mongolia and Wu (1997) in Sichuan, who found that many of the present pastoral policies in China may actually intensify grazing-related problems and lead to further marginalization of nomads.

The survival of Tibetan nomads today bears witness to their depth of indigenous knowledge and vast repertoire of animal husbandry skills. The fact that many rangelands are in good condition is evidence that certain aspects of nomads' grazing management systems are rational and sustainable ways of making a living in rangeland areas. Greater appreciation of the complexity, and ecological and economic efficiency, of Tibetan pastoralism needs to be encouraged. In the light of new information emerging on the dynamics of Tibetan rangelands and the efficacy of Tibetan nomadic pastoralism, current pastoral policies and development plans should be re-evaluated.

**Acknowledgments:** Research was conducted in collaboration with the Tibet Academy of Social Sciences, Lhasa and supported by grants from the Committee on Research and Exploration, of the National Geographic Society, to Dr Melvyn Goldstein and Dr Cynthia Beall, Case Western Reserve University, Cleveland, Ohio, USA. Penjor and Dawa Tsering assisted with fieldwork.

#### References

- Cai L. & Weiner G. (1995) *The Yak*. FAO, Bangkok.
- Coughenour M. (1991) Spatial components of plant-herbivore interactions in pastoral, ranching and native ungulate ecosystems. *J. Range Management* 44(6), 530-542.
- Goldstein M. (1996) Social evaluation study. Unpublished report. EEC Qinghai Livestock Development Project. Xining, Qinghai, China.
- & Beall C. (1990) *Nomads of Western Tibet: Survival of a Way of Life*. Odyssey, Hong Kong.
- Guo S. & Chen W. (1997) The situation of yaks in China. *Conservation and Management of Yak Genetic Diversity* (Eds D. Miller, S. Craig & G. Rana), pp.25-28. Proceedings of a Workshop 29-31 October 1996, Kathmandu, Nepal. ICIMOD and FAO, Kathmandu.
- Miller D. (1998) *Fields of Grass: Portraits of the Pastoral Landscape and Nomads of the Tibetan Plateau and Himalayas*. ICIMOD, Kathmandu.
- Sneath D. (1998) State policy and pasture degradation in Inner Asia. *Science* 28, 1147-1148.
- Williams D. (1996) Grassland enclosures: catalyst of land degradation in Inner Mongolia. *Human Organization* 55(3), 307-312.
- Wu N. (1997) Tibetan pastoral dynamics and nomads' adaptation to modernization in northwestern Sichuan, China. Unpublished research report. Committee on Research and Exploration, National Geographic Society, Washington, DC.