

# Commission on Nomadic Peoples

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grasslands ecosystem”

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# Changes in the nomadic pattern and its impact on the Inner Mongolian steppe grasslands ecosystem

*Ou Li & Rong Ma & James R. Simpson*

A case study is presented of one village in Inner Mongolia which was transformed over the past 40 years from a nomadic system to a semi-nomadic one. An explanation of the transformation process and impact on the ecosystem is provided along with the historical cultural setting and discussion about likely future changes.

## Introduction

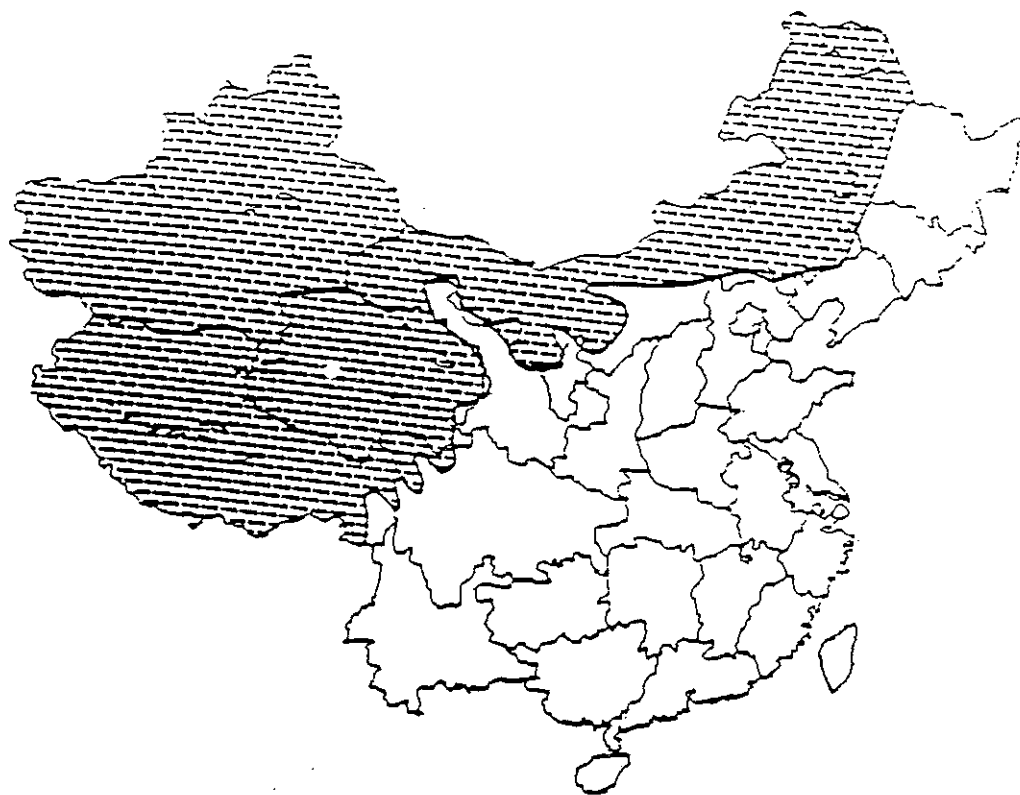
About half of China's land area is delineated as the pastoral and grassland area. The other half is called the agricultural zone (Map 1). Both areas have mountains, and much of the pastoral area is desert or semi-desert as well. The grasslands are vast, accounting for about 30 percent of the nation's total area. Historically, the major production system of the grasslands has been nomadic, with a small proportion being semi-nomadic. Over time, and especially since China was opened to the outside world in 1978, there has been a major emphasis on settlement of herders into villages or into houses, i.e. an increasingly semi-nomadic lifestyle in which livestock owners live in houses part of the year. Curiously, while the villagisation planners had envisioned living in houses during winter months and then following their animals the rest of the year, in a substantial number of pastoral areas producers have adopted a very different pattern. They live in yurts during the winter months and return to the houses in March, i.e. the beginning of spring. This is the calving and lambing season, and thus the critical time for good nutrition, shelter and care of young stock. Additionally, this

system meets their watering requirements. Finally, they return to the yurts from September through November, following their herds on the remainder of the summer pasture. Statistics are not available, but it appears that the majority of livestock are now herded in the semi-nomadic system.

A critical factor for analysis of grassland production, and pastoral systems in particular, is that they are diverse—and for very good reasons (Simpson, Xu and Miyazaki 1994). There is no one solution to the so-called 'pastoral problem' of relatively low off-take rates per hectare, but there are a number of viable, logical interventions which could result in considerable improvement in productivity.

In this article we provide a case study of one village in Inner Mongolia which was transformed over the past 40 years from a nomadic system to a semi-nomadic one. Our purpose is to provide an explanation of the transformation process and impact on the ecosystem. Additionally, this article will serve as a historical/cultural base for promoting greater productivity, long term sustainability of the ecosystem, and increased incomes to producers.

Map 1. Pastoral and agricultural areas of China, 1990



### The case site and the methodology of study

Hurqige *gaca* (village), a former production brigade during the commune time between 1958 and 1982, is one of four *gaca* of Shamai *sumu* (township), also a former commune, Dong Ujimqin banner (county), Xilinguole league (prefecture), Inner Mongolia Autonomous Region (Map 2). This *gaca* is on the border between China and the Republic of Mongolia. In 1993 the total area of the *gaca* was 869 km<sup>2</sup> (97,363 ha). This area is a part of the Balongmagelong Hill-Wave plateau, an area of chestnut and dark chestnut soils. The average annual rainfall recorded at the capital of the banner, 60 km south of the *gaca*, was 256.6 mm during 1956–90. The vegetation is typical steppe grassland.

By the end of 1992, there were 91 households and 516 people officially registered in this *gaca*. But, among them, 20 households and 109 people did not live in the

*gaca* nor worked in pastoral production. They are either Mongolian or Han migrants who moved into Hurqige in the 1950s and 1960s and left the *gaca* after animal redistribution took place in 1983. Because they had fewer animals than natives, life was difficult. During the reform period they were provided with employment in town. Most of them now live in the capital town of the banner (Uliyastai) and engage in other economic activities. All residents living in the *gaca* in 1993 were native Mongolian herdsmen.

The methodologies used in the study reported on in this article are sociology and Farming Systems Research (FSR). Interviews and Participatory Rural Appraisal (PRA) were the main tools for the survey. Forty two households were interviewed, including 39 herdsmen still living in the *gaca*. The remainder were Han immigrants. The methods selected from the PRA tool box include individual/key informants/

group interviews, wealth ranking, mapping of the seasonal nomadic movement, historical profiles on the change of land use patterns, trend analysis for grassland condition, daily routines and activity profiles, especially for women. The results from the surveys, carried out in the summers of 1992 and 1993, constitute the rest of this article.

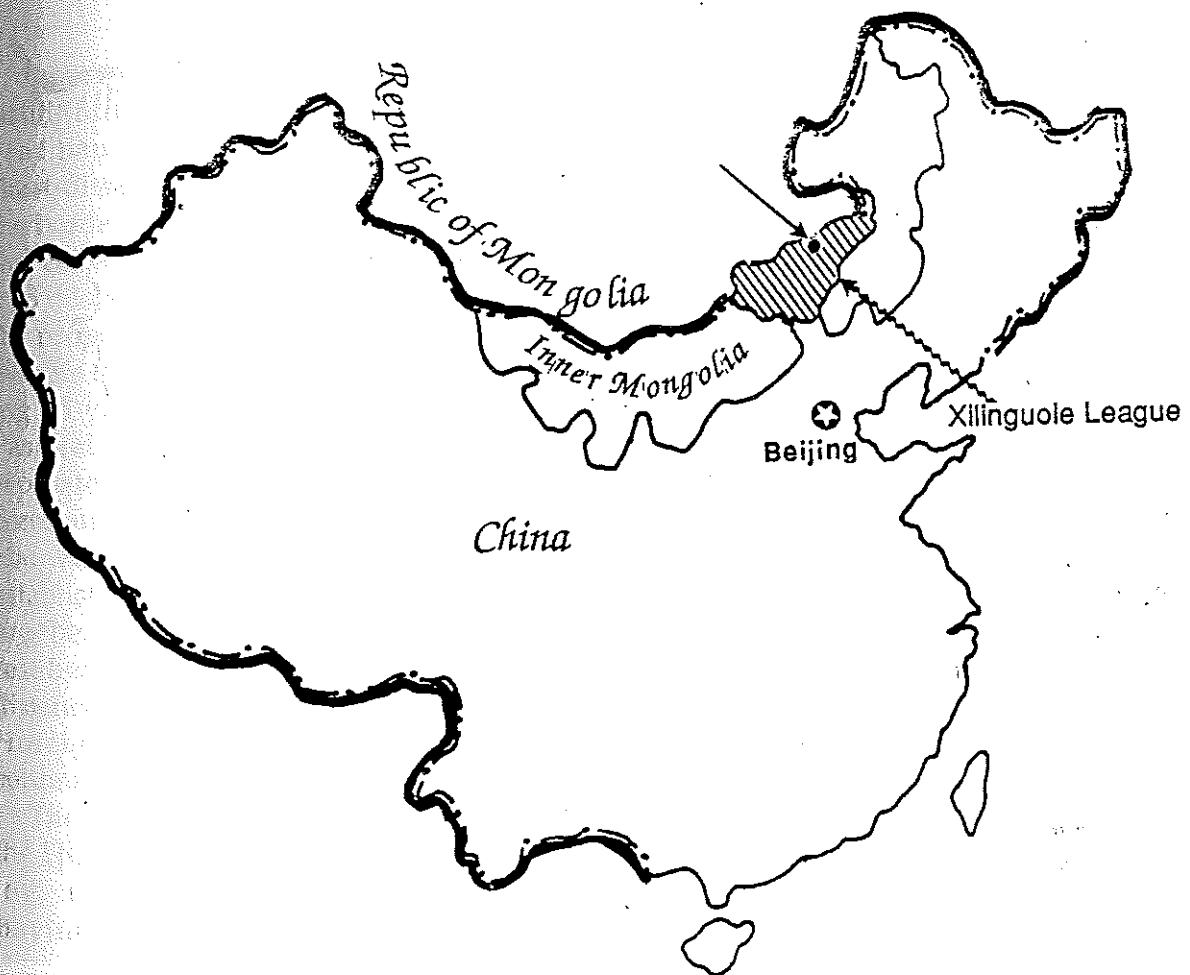
### The evolution of nomadic pattern

The native Mongolian herdsmen in Hurqige *gaca* had been following a traditional long-distance nomadic movement pattern as late as 1956 when the *gaca* (called *bage* at that time) was formed and its boundaries fixed. They continued a short-distance seasonal movement within its boundary until 1985, at which time they changed into a semi-nomadic pattern. Accompanying the evolution of the movement pattern were

changes in institutions of administration and production.

According to the recollection of senior herdsmen, the pastoralists had no movement limitations prior to 1956. The native (Mongolian) herding households of current Hurqige *gaca* used to spend spring (from the middle of March to the end of May) along the Hurqige river valley for calving and lambing. Then, they moved 20–30 km south-eastwards to Bayintala-Bayinaobao Basin to spend the summer, clip their sheep and collect mohair from their goats, and autumn for the breeding season. Before winter (about in November) they moved westward about 150–250 km to the area of today's Alatanhili *sumu*, located on the western part of Dong Ujimqin banner, or even the area of current Abag or Somid Zuo banners where the snowfall was much lighter than in Hurqige and thus much easier for their animals to survive the se-

Map 2. Location of the research site



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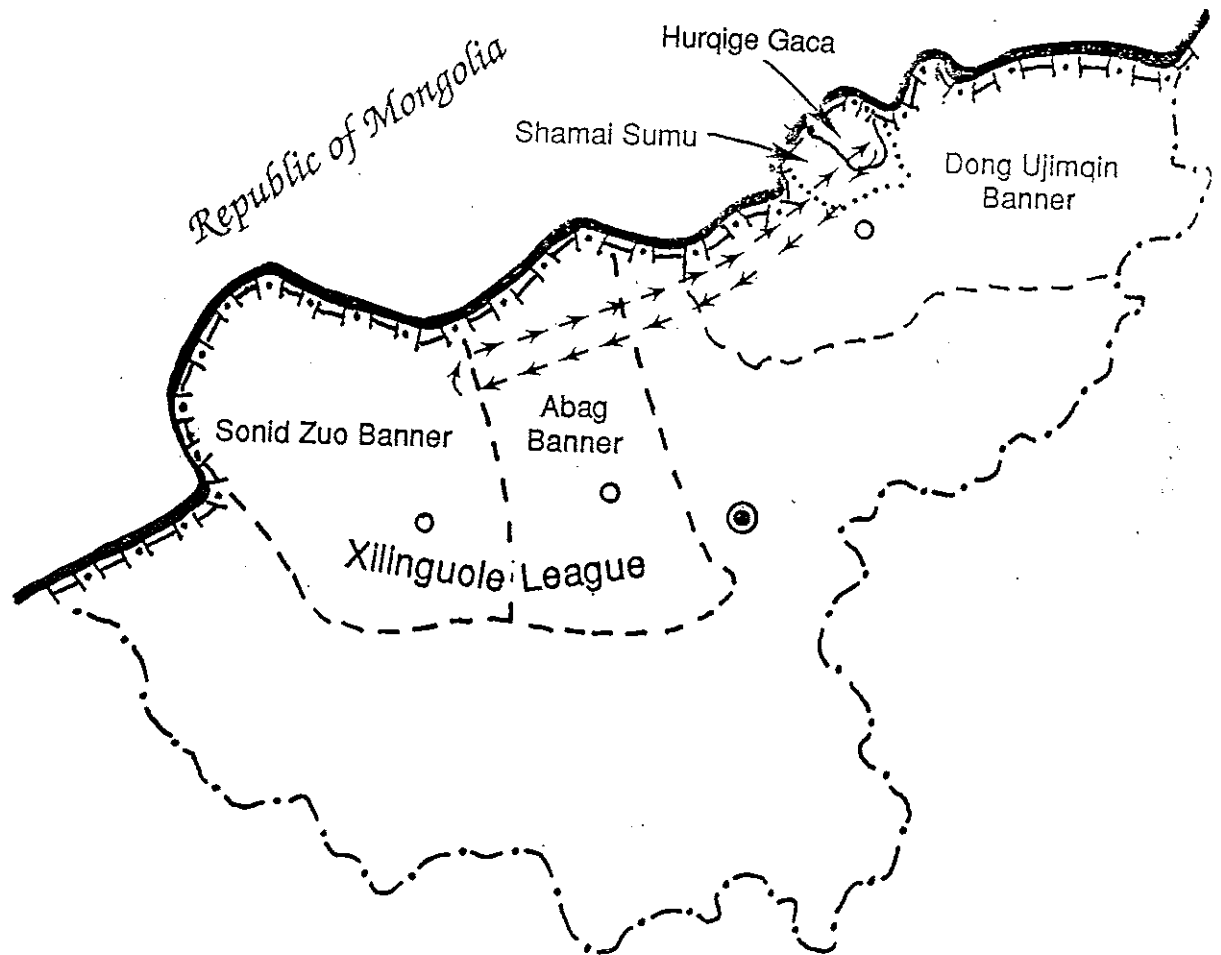
vere winters. The time of return to Hurqige area varied and depended on the situation of snow melting in both the winter pasture and in Hurqige. In years of late springs, herdsman would have trouble receiving and loading the lambs and calves in the steer-draft carts along the path of return to their spring pastures (Map 3).

Prior to 1947, in which year the Inner Mongolia Autonomous Region was established, there was a hierarchic system in pastoral areas. The area of today's Dong Ujimqin banner was under the rule of Mongolian Prince Demuchukedonglupe, which was an inherited title. Under him there were *jalan* (officers) in a banner who administered 500 households each, and *jianggai* (also officers) who administered 200 households each. Virtually everyone practised Lamaism which had a deep impact on the life of every household. However, the administration was quite loose at the grass-roots

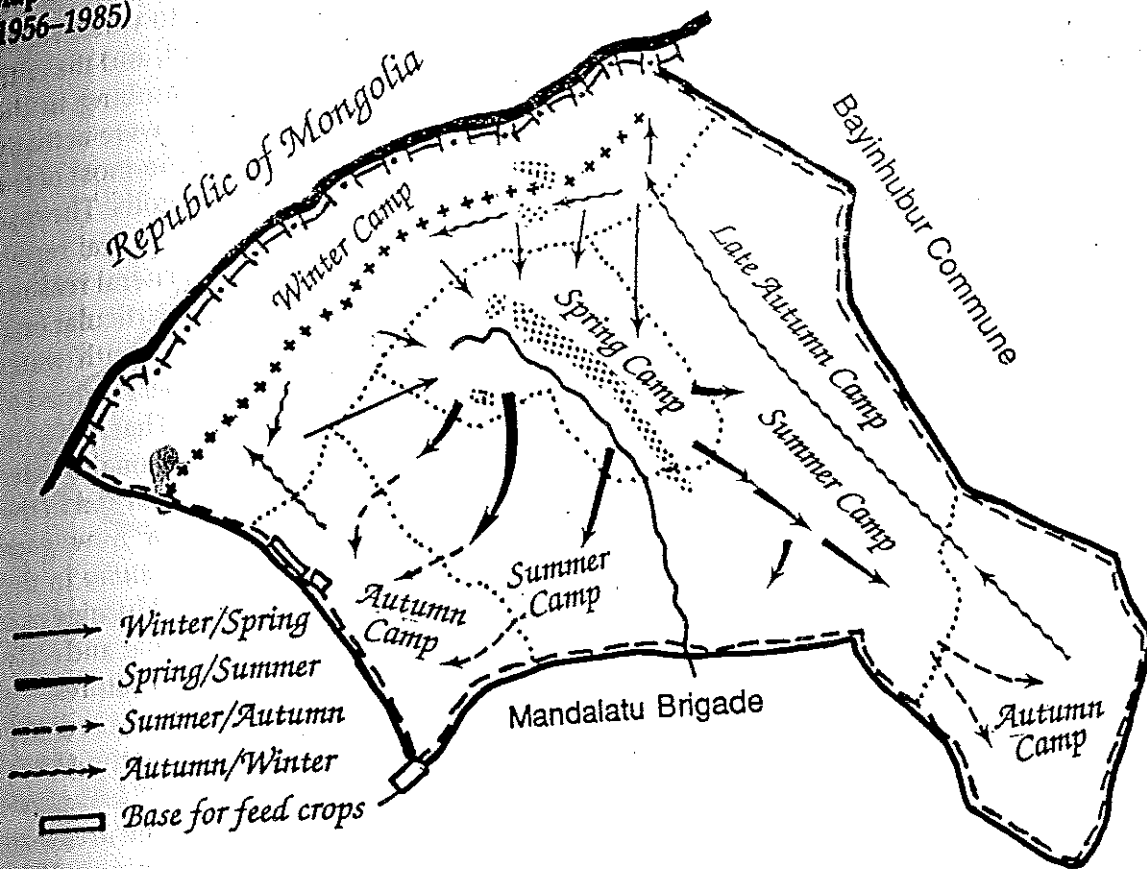
level. The herding households were located close together and they moved together. These groups consisted of relatives as well as large animal owners (lords), and peasants who had few or even no animals of their own, mainly looking after the lord's livestock. In return, the peasants could milk 40-50 sheep for 1-2 months and get the wool in summer, and would be given a sheep for slaughter each month or every two months and fur robes and trousers in winter.

In 1952, a work team was sent by the banner government to the Hurqige area to teach herdsman to read and write, and to establish the *bage* (the synonym of *gaca* in Mongolian). The so-called Seventh *bage* (there were 11 *bage* in Dong Ujimqin banner at that time) was formed in 1954-55, which included today's Hurqige and neighbouring Mandelatu *gaca*. In total there were about 40 households and less than 10,000 animals in that *bage*. In 1956, six mutual aid

Map 3. The long-distance nomadic movement route of Hurqige herdsman before 1956



Map 4. Location of seasonal camps and movement route during the commune period (1956-1985)



groups were set up in the *bage*, each consisting of 8 households. In the winter of that year boundaries were established, and short-distance nomadic movement within the border replaced the long one. In 1957, the 'collective movement' was introduced into this area. By 1958, all animals became the property of collectives which paid the owners for the animals during the following 25 years. In 1959, the nearby Sunite Pastoral Farm joined the Seventh *bage*, but separated from it in 1960. In 1961, Shamai commune, consisting of three brigades—Hanwula, Hurqige and Mandalatu—was established. The southern part of Seventh *bage* became Mandalatu brigade while the rest became Hurqige brigade. The short-distance seasonal movement pattern within Hurqige's boundary was then formed and continued until 1985.

The herdsmen still spent spring along the Hurqige Valley for calving and lambing, then moved south-eastward to Bayintala Basin or south-westward to

Shamai Valley for the summer and early autumn. Before the end of October they moved back to the pasture with no water resources (the animals subsisted on snow) for animal mating, where the grasses and herbs provided adequate nutrition. By the end of December the herdsmen moved to the winter pastures along the China-Mongolian border, where there was much lighter snowfall in 6-8 years out of 10, thus making it easier for animals to survive the winter (Map 4).

During the commune period, the brigade was responsible for production and financial management as well as development planning. The brigade leaders made arrangements for seasonal use of grazing land, allocation of labour and money for production, selling products and distributing incomes among the accumulation fund (for investment), public welfare fund and the households. The households got their income based on work-points earned mainly from looking after the animals day

and night. Under the brigade there were seven *duoguailun* (groups) with 7–10 households each, which were responsible for organizing the production activities within the group such as clipping the sheep and collecting mohair from the goats, castrating animals, washing the animals with medicine or vaccinating animals, carrying out artificial insemination (AI), etc. It also functioned as a sub-organisation to record work-points or household consumption of animals and to sell products. Within a group there were 1–2 herds of cattle which were always taken care of by one household each, and 2–4 flocks of sheep and goats each of which was looked after by a *gaote*, a social organisation which consisted of two households arranged by brigade. They were not necessarily relatives and shared day and night care of animals. The *gaote* were always 1–3 km away from each other in every seasonal pasture. The cattle herds and sheep flocks stayed in different pastures in the cool season because the grass would be grazed too short and snow trampled too hard by sheep, which would prevent cattle from grazing. There were 2–3 herds of horses for the whole brigade. The brigade arranged direct labour rather than households to look after the herds.

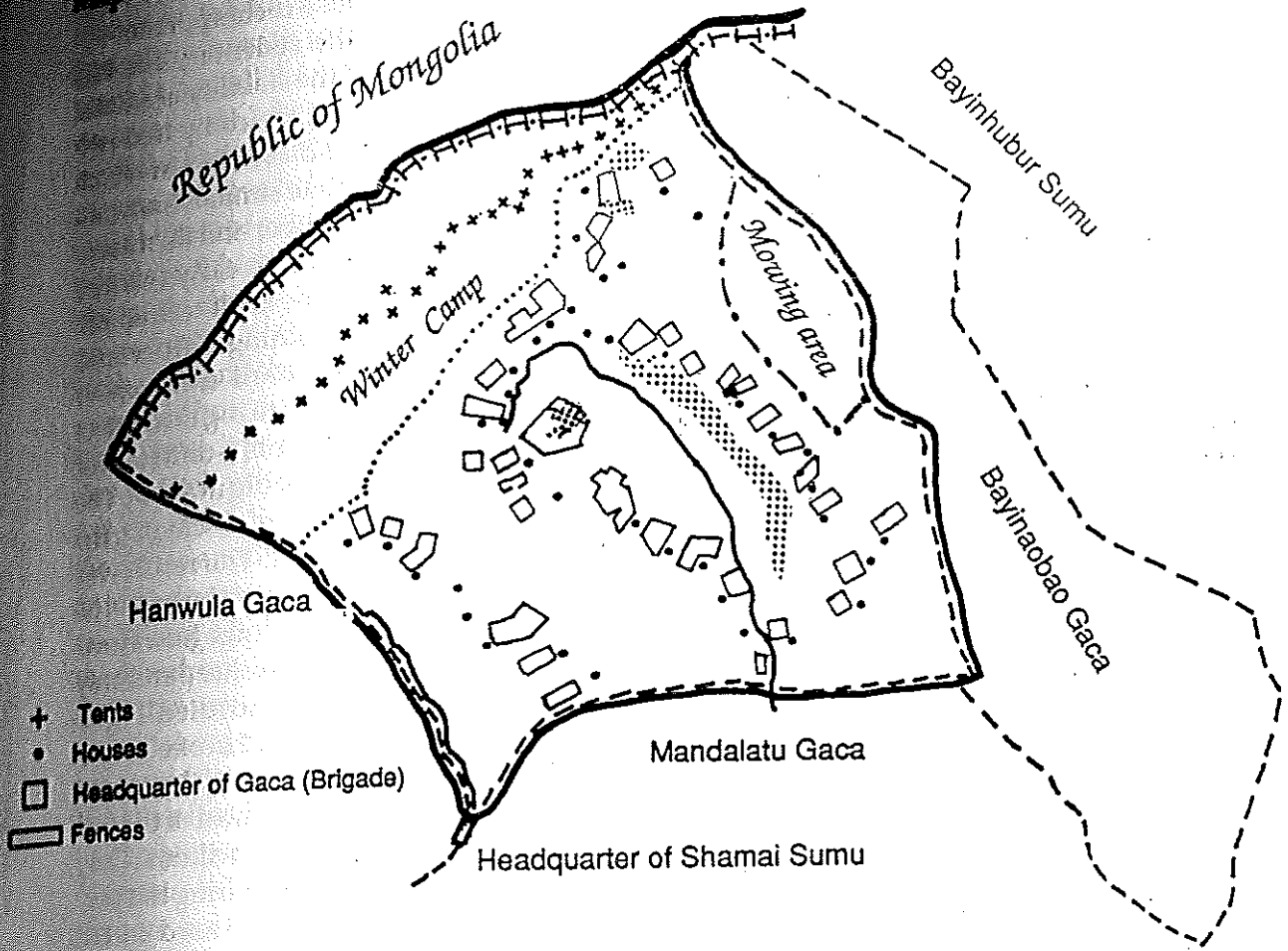
Nomadic movements were frequent in the 1960s. It means that there were also closer moves (about 2–4 km) within each seasonal pasture, a total of 6–8 times or more in each year. They stayed in one camp no longer than two months. But, due to egalitarianism in income distribution and loose management during the Cultural Revolution, the herdsmen moved less and less, down to 4–5 times every year during the 1970s.

Since 1985 the seasonal movement in Hurqige *gaca* has changed into a semi-nomadic pattern. Several reasons contributed to this. Intervention by regional and local governments can be traced back to the 1970s. The government considered nomadism as backward and something to be gotten rid of. Originally, they encouraged the herdsmen to build permanent houses and shelters in winter pastures and follow

a nomadic mode in the warm grass growing season. However, due to water shortages or limited grazing land, and the critical time for calving and lambing in the spring, houses and shelters were actually built in the spring pastures in most of the pastoral areas in Inner Mongolia. The case of Hurqige *gaca* provides a typical representation. Apart from the general reasons mentioned above there is a particular one, that former summer pasture with water resources (about 200 km<sup>2</sup>) was returned to Sunite Pastoral Farm in 1986. That farm was forced to move from the national border area in the early 1960s and returned in the early 1980s and became a new *gaca* (Bayinaobao *gaca*) of Shamai *sumu* in the mid-1980s. So the herdsmen of Hurqige *gaca* had to remain all spring, summer and early autumn in their former spring pastures.

In 1985, the herdsmen obtained use rights for the grassland after getting back ownership of the animals in 1983. The certificates of use-right clarified the area size as well as the boundaries. Beginning in 1987 the households started to build houses, shelters, pens and above-ground bunkers for hay storage. By the end of 1992 all the herding households had built the facilities and also had 35–200 ha of fenced pasture in their spring camps. More than 90 percent of them built houses, mainly of brick with tiled roofs. There is now 0.5–1.5 km between the permanent homes. The herdsmen remain sedentary from the middle of March to the end of August to carry out the activities of spring and summer. Then the men or young couples of the families drive the flocks of sheep and goats to the winter pastures for 10–20 days for fattening (*goater* in Mongolian<sup>1</sup>). The cattle remain at the permanent residences. After turning back they move out of the permanent homes 2–4 km but not more, otherwise it will be too far from the water resources. In late October when snow is available for water they move to the autumn pasture and stay there until the end of December when the snow cover becomes too thick for animals to graze. Then they move to the winter pastures (Map 5).

Map 5. Location of winter camps and permanent houses (1985-1993)



The new arrangements for animal ownership and grassland utilisation are the result of the reform policy. The commune system was dissolved in 1983 and replaced by the *sumu* for the commune, and the *gaca* for the brigade. The village committee took the place of the former brigade committee and plays a greater role in services than in administration. For example, the leaders look for marketing channels for the herdsman's animal products now that marketing has become decentralised and prices freed. They negotiate the price of hay for herdsmen with Han immigrants who come back to the *gaca* during the mowing season. The *duoguaijun* has been reorganised, based on the distribution of herdsmen's homes. Within the group, clipping, washing, AI, etc. are organized. The *gaote* plays a more important role than before. The two households are usually brothers, or father and son. They put their own animals together

to form one flock of sheep and goats, on herd of cattle and another of horses. In this way they can save labour and better utilise infrastructure.

### The impacts of the change in nomadic pattern

Regarding evaluation of the change, all herdsmen interviewed gave positive answers, for example that the sedentary lifestyle improved living and working conditions, strengthened production stability and provided greater resistance to natural disasters. But, on the other hand, the herdsmen were also aware of some negative impacts. In this section the impact of the change in the nomadic pattern on the grassland ecosystem is analysed in terms of vegetation, animals and human beings based on the perception of herdsmen.



### *On grassland vegetation*

Nine out of 12 herdsman interviewed considered that the grassland in Hurqige had deteriorated already, worse than in the 1950s, a condition that became worse through the 1970s. The criteria they used included the height, coverage and composition of the vegetation. They mentioned that the grass canopy used to be high enough to block the view of the sheep flocks in Alatala—the winter pasture. The vegetation coverage along the Hurqige valley was much more dense in the 1950s and 1960s. Now, the former sand dune belt along the two sides of the river has greatly extended. The density of preferred grasses and herbs has decreased. For example, Mongolian onion, a succulent herb important for sheep fattening in later summer, is seldom seen.

Eight out of the nine interviewees mentioned above attributed the reasons for deterioration to the high animal population and over-grazing. Change toward a drier climate than 1950s and 1960s ranked second. Animals graze the pasture in sedentary areas during the entire spring and summer (which totally covers the grass growing season). Herdsman said that the grasslands have become almost bare in May and June before the rainy season in most years.

### *On livestock*

The comments on the impact of the change on livestock itself were different among the interviewees. Some said that the performance of sheep had not obviously changed, perhaps due to the high off-take rate—30 percent of sheep marketed (culling included)—and careful selection of ram replacements. But more people considered that animal performance, especially resistance to bad natural conditions, had decreased. They mentioned that the sheep in Mandalatu *gaca*, where snowfall and cover are always heavier and thicker than in Hurqige, are more tolerant of severe winters. A quite experienced herdsman said if

the animals stay in one pasture too long, like now, they will lose their appetite.

But in general, the sedentary life has noticeably increased the stability of animal production. The herdsman compared two winters of 1977/78 and 1992/93 in which the situations were quite similar. Snowfall started early in late October and then accumulated continuously. The early warmer temperature made snow melt a little bit. But then it froze, becoming harder and harder. The thick and hard snow cover made it difficult for sheep to dig through to find grass. It was even more difficult for cattle because they cannot dig in snow. The situation was bad everywhere including the winter pasture and others. The result was that, in 1977/78, 30 percent of sheep and 50 percent of cattle died in Hurqige *gaca*. However, in 1992/93 many fewer sheep and only 1 percent of the cattle (36 head) died. Eighteen of these deaths happened in one household, due to bad management. The reason for reduced losses was that most of the cattle stayed in the permanent facilities. They were fed hay accumulated during the previous few years, and also grazed in the fenced pastures where the grass was tall and the snow was soft. They drank water every day or every other day. Another difference was the incentive. The animals belonged to the commune in 1970s while they are now privately owned.

### *On human beings*

The living and working conditions of herdsman are considered to have greatly improved due to the sedentary and other infrastructure improvement, especially for women. A typical summer day of a herdsman's wife in nomadic times was explained like this. She would get up at 4 in the morning, milk as many as 10 cows, spending up to 2 hours, then prepare morning tea for the whole family. The herdsman need to drink and eat enough milk tea along with a little boiled or fried grain, cheese, cream and boiled meat, because they remain with the sheep flocks and can only come back in the

evening. In the morning, the wife boiled a bucket of tea for the whole day's use or heated fresh milk to produce cream. She would also pull the yoghurt bucket up and down at least 1,500 times to produce butter. If she had a mother-in-law or daughter, they might have helped her. She needed to boil a big pot of yoghurt once a day or every two days which took her one hour. Then she made cheese. The boiled yoghurt was poured into a cloth bag, mixed with heated fresh milk, and then pressed in the bag with a wooden board and the help of a big stone. Every two days she would drive an oxen cart to fetch water from the river or a well 3-8 km away. Sometimes she would drive the cart to another seasonal camp to collect animal droppings for fuel, which would take about a half day. She would also turn the cow droppings drying outside the yurt.

If the woman had time, she perhaps tanned sheepskins for winter use. Another tea at midday was not so time-consuming. But she often had guests dropping in, and had to prepare tea for each guest or group of guests. When it became dark she would prepare a delicious and abundant tea for her husband and then cook, always boiling meat with bones or noodles. The family often had dinner between 8 and 9 p.m. after which they went to sleep. The wife would go out from time to time in the night to look after the flock of sheep. Mosquitos always caused big trouble for a month or more in the summer during which time sheep and goats moved up wind to alleviate the problem. On these nights the wife had to spend most of her time keeping the animals in the camp until early morning, otherwise wolves made trouble.

Things are now much easier for women. Most households have tractors which the men drive to fetch water and animal droppings. Wives do not milk cows as much as before because the cows are on their own and the cross-bred calves need more milk. In the evening, sheep are enclosed in the pens which prevents access by wolves. Thus, wives can now sleep peacefully with their families.

Another important impact on attitude and behaviour of herdsmen is not directly caused by the nomadic pattern change, but rather by the land tenure system. The herdsmen have confidence in utilisation rights for grassland, and consider that it is impossible for new families to get other land from the *gaca*. So, they want to maintain their assigned pasture in good condition for the next generations. In the last five years they have spent 15-25 percent of their total expenditures on fencing, building shelters and houses, and developing wells. The rapid increase in animal product price and income in recent years has also helped. The result is that total *gaca* expenditures increased four fold from 1985 through 1992. Nevertheless, there is still an urgent need to introduce and adopt appropriate technologies in the current semi-nomadic pattern to stop grassland deterioration, and to keep the ecosystem and pastoral development sustainable.

## Discussion

Rapid and dramatic changes have taken place on China's grasslands in the past several decades as a very isolated, traditional lifestyle has been transformed to one heavily oriented toward a market economy. The case study presented in this article is representative of the changes which have taken place. There are, of course, differences between regions in terms of integration with the market economy and in the degree to which the production system has been transformed from nomadic to semi-nomadic. Nevertheless, the picture given here does accurately portray the sweeping changes that have taken place.

China's economy is developing rapidly, and it is expected that this hectic pace will continue well into the next century. Nationally, massive investments are being made in roads, the rail system and in communication services. It is not unrealistic to expect that within a decade a substantial number of former nomadic pastoralists will have telephones, television sets and indoor

plumbing. As the country mechanises, the number of draught animals will decrease. Price relationships will develop so that the grasslands will slowly, but surely, be transformed from a production system in which cattle and sheep are raised to slaughter weight on grass, to one primarily oriented to a breeding system in which calves and excess lambs are shipped to farming areas for fattening.

The transformation which has taken place, and will continue to take place, is nothing short of revolutionary. Furthermore, as national infrastructure is developed there will be increased use of the whole plethora of viable production and marketing technologies now available which can easily be adopted to the herdsmen's needs. We do lament the passing of an era, the demise of an entire subculture that spawned the great Genghis Khan and led to the Yuan Dynasty which ruled China for 97 years, from 1271 to 1368. The trade-off is increased income, more leisure time and greater economic security for herdsmen on China's grasslands. Careful review of the women's narratives which evolved during the fieldwork, part of which is documented in this article, indicate that few of them would return to those earlier days.

## Note

<sup>1</sup> *Otor* is the term used in Mongolia. The transcription here follows Inner Mongolian pronunciation.

## Reference

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