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Authors: Ykhanbai, Hijaba, Bulgan, Enkhbat, Beket, Ulipkan, Vernooy, Ronnie, and Graham, John

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Hijaba Ykhanbai
Enkhbat Bulgan
Ulipkan Beket
Ronnie Vernooy
John Graham

Reversing Grassland Degradation and Improving Herders' Livelihoods in the Altai Mountains of Mongolia

In Mongolia, grasslands and steppes are currently home to over 25 million head of livestock and 192,000 herding families. Nomadic livestock producers are the backbone of the economy. As in other areas in the region (eg western China), herders are facing very serious pasture degradation. Government officials and herders agree that many local carrying capacities are exceeded. These problems have been aggravated by 3 recent extremely severe winters. A multidisciplinary, multi-institutional research team, coordinated by the Mongolian Ministry for Nature and the Environment, is addressing this challenge through a combination of participatory, action-oriented field research activities in 3 of the country's major ecosystems—the dry steppe, forest steppe, and Altai mountains steppe. Efforts include direct involvement in national policy-making, encompassing the drafting of new laws. Two innovative action research activities are the formation of community herder groups and the establishment of pasture co-management teams involving herders, local government, and members of civil society. Together, these diversified, multilevel efforts are resulting in new thinking about natural resource management and new ways of doing research and formulating policies. They are opening up the necessary space for active and meaningful co-management roles for herders and government officials alike.

The challenge of pasture degradation

As with other grassland areas in the region (eg, western China), herders in most regions of Mongolia are facing very serious pasture degradation. This problem has been aggravated by 3 consecutive extremely severe winters (1999–2001) characterized by so-called white zhud (*dzud*)—heavy accumulations of snow or ice crusts covering pastures. These winters caused heavy losses. An estimated 10 million head of animals or 30% of the total livestock population died. 11,000 herding families were left with no animals and another 18,000 saw their herds reduced to fewer than 100 animals. Addressing these problems not only requires dealing with

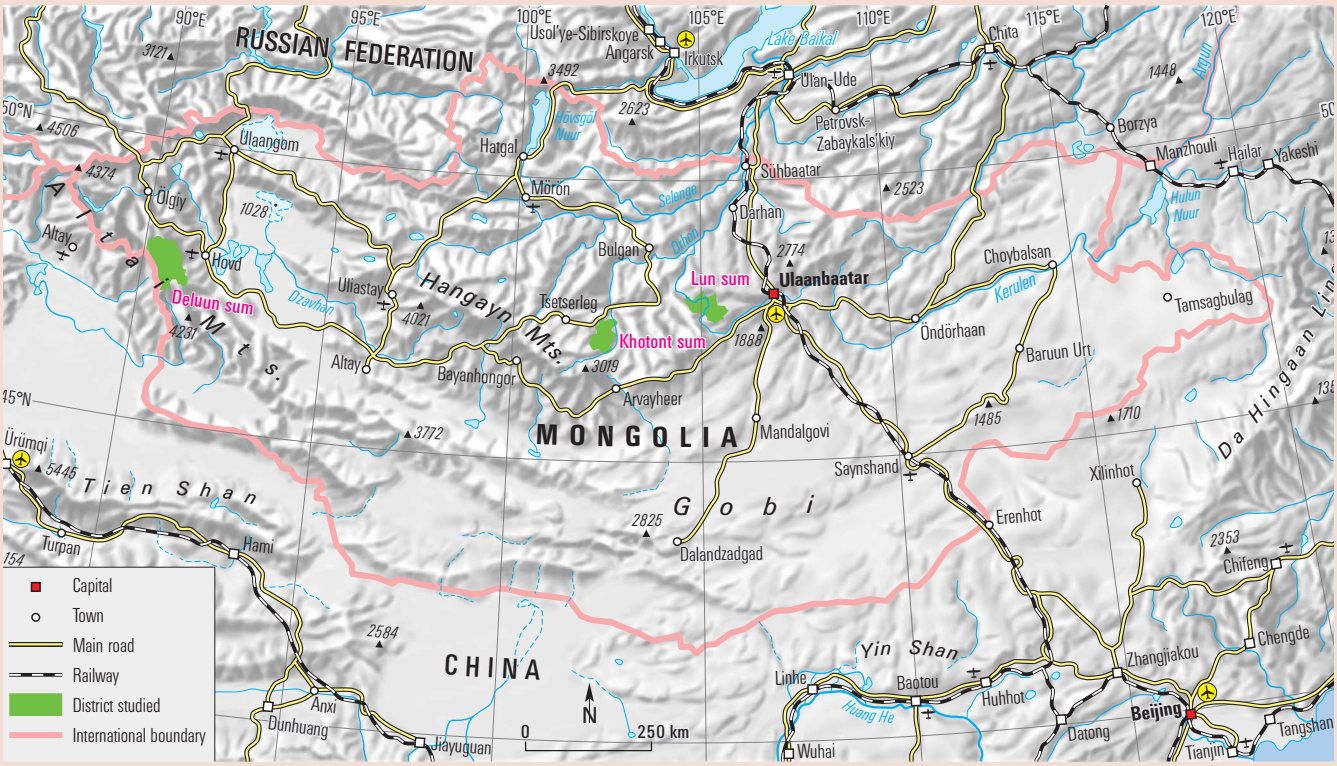

FIGURE 1 Map of Mongolia and the location of the 3 research sites. (Map by Andreas Brodbeck)

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both the biophysical and social dynamics of natural resource management, but, in the Mongolian context, also unlearning "Soviet-style rule" and responding to "the economic and political opening up" that the government has been promoting since 1992.

Multidisciplinary action-oriented research

With support from the International Development Research Centre (IDRC) of Canada, a multidisciplinary, multi-institutional research team, coordinated by the Ministry for Nature and the Environment, is addressing this challenge through a combination of participatory, action-oriented field research activities in 3 of Mongolia's major ecosystems—the dry steppe, forest steppe, and Altai mountains steppe (Figure 1).

The Altai mountains setting

The present article reviews a number of the major research activities underway in one of the 3 ecosystems: the Altai mountains. In 2003, field visits to the Deluun *sum* (district), the selected research site in the Altai mountains, took place in June and September. Deluun is part of the Bayan-Ölgiy *aimag* (province), located 1850 km west of Ulaanbaatar, the capital of Mongolia. During these visits we interacted with women and men herders, community leaders, *aimag*, *sum,* and *bag* (community) government officials, and provincial level staff of the Ministry of Agriculture and the Ministry for Nature and the Environment. The June visit took place just prior to the summer trek. The middle of June is an important period for herder communities in the Western Altai mountains as they prepare for the annual move to summer pastures (Figure 2).

The weather in the Deluun *sum* is harsh, with little rain and snow. Soil coverage is thin, with an average plant-growing period of only 90–120 days per annum. The total land area of the *sum* is 549,000 ha; 90% is used as pastureland for approximately 200,000 livestock throughout the year. The total population of the *sum* is 8000 persons, comprising 1200 households. Many of the inhabitants are Kazakhs. The *sum* is rich in biodiversity of species including marmots, snowcocks, wild mountain sheep (*argali*), wild goats (ibex), as well as medicinal and edible plants. The water supply for the livestock is sufficient throughout summer and autumn; however, lakes and rivers are frozen in winter. The major problems found in this study site include: overgrazing, desertification of arid steppe land, degradation of pasture and hay lands, and loss of biodiversity.

Pasture co-management

In Mongolia, most herders move 4 times according to the major seasons; some herders move more frequently, up to 15 times a year. This kind of mobility in herding families is the most effective way of using and managing the arid and fragile ecosystems in the country. The winter and spring seasons are the most critical: the survival of animals and herders depends on the provision of shelter and accessible forage through these difficult periods. Rights to winter grazing in particular are carefully guarded. It is not uncommon that disputes erupt over access to, and use of winter grasslands. Of particular importance are the so-called *otor* or "animal fattening" pastures. These are grasslands held in reserve, often at considerable distance from the normally used seasonal grasslands.

With an average herd size of 130 head per herding family, nomadic livestock producers are the backbone of the Mongolian economy. Agriculture—read livestock production—accounted for over a third of the Gross Domestic Product (GDP) in 2000 and employed almost half of the country's labor force. More than these numbers can indicate, herding is a* way of life *rooted in the country's long history.

FIGURE 2 Families wrapping and packing their belongings, checking and double-checking the means of transportation, and getting their animals in good shape for the sometimes lengthy voyage. Everybody is waiting anxiously for the right moment to "move house." (Photo by H. Ykhanbai)

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In order to understand the ecosystem components and interactions, and the various ways in which herding families and herder groups use/manage their grasslands, it is imperative to analyze the year-round dynamics. These analyses are based on both "traditional" biophysical research and participatory rural appraisals.

The need for monitoring

Collection and analysis of this kind of information is useful and necessary for a basic understanding of the complexity and fragility of the systems. One question to consider is what the minimum required effort would be to monitor these site dynamics. One tool that could be used is the photographic time series of specific sites (obtaining photo series from season to season), something herders (eg interested teenagers) could do themselves if provided with cameras. With respect to future use/management directions, a useful tool is the ortho-photographic map. Actual and alternative resource use scenarios could be designed on these large-size photographic maps; this can be done *in situ*. Looking to the future, a "small-grants student fieldwork" system could be set up to continue selected resource monitoring work of both biophysical and socioeconomic/political interactions.

Measures

There is now a need to share the results of the ecosystems/pasture use and management research with all stakeholders and compare, combine and cross-validate the various data (both biophysical and socioeconomic). Field research and insights gained from conversations with government officials and herders alike make it quite clear that pasture degradation is very serious and widespread: local carrying capacities—which differ significantly across mountain ranges and valleys—have been exceeded. Most herder groups graze too many animals/animal units per hectare. This problem needs to be seen in context: in Mongolia the pastures are still used in common, there are no fences, and, as previously mentioned, most herders move 4 times per year. They are also dependent on the government, given that the State owns the land. There is only one way out of this conundrum: collective reflection and action with the involvement of all stakeholders.

The project team has made some inroads to bring these findings to the table. It is also trying out a series of actions/experiments to counteract grassland degradation. Among these are:

- The formation of genuine *bag* level herder (interest) groups, based on kinship or neighborhood relations as the basic units of social organization;
- The formation of groups by women to find alternatives that respond to some of their interests, particularly to increase income;
- The formation of *sum* level co-management teams, involving the *sum* governor, *bag* governors, and other community leaders;
- Animal breeding (to improve resilience and productivity);
- Joint hay-making, pasture improvement, and pasture rotation practices.

Small community funds are made available to support these experiments. This set of actions is bringing together herders and government officials to experiment together and to make a start on defining locally appropriate, new common rules and regulations. Encouragingly, more and more herders are showing interest in joining the 3 existing groups, or in forming new groups. However, legal

FIGURE 3 A herder in Karatau, Deluun *sum*, monitoring experimental production of potatoes. (Photo by H. Ykhanbai)

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issues remain a question, as described below.

The team is considering further strengthening this work, expanding the number of experiments, and ensuring good participatory monitoring of the efforts. This will require that a start be made on training a team of local facilitators and researchers who could respond to the growing interest of herders to connect with the process. A meeting with the *aimag* governor in Ölgiy stressed the need to try to dedicate more time to liaising with the *aimag* level government. This would provide the team with more opportunities to inform this level of government about what is happening at the lower levels. It would also offer an avenue for synergies.

Livelihoods improvement

A second key research issue focuses on economic diversification and the improvement of livelihoods. The team is carrying out a number of experiments, in particular the growing of potatoes and vegetables (not commonly cultivated in the mountains; Figure 3). Also, the team dedicates time and resources to improving the processing quality, diversity, and marketing of animal-derived products, particularly felt, wool, cashmere, furs, and leather, eg for tapestry, clothing, slippers, hats, gloves, socks, home decorations, and boots.

The livelihoods research directed the discussion to gender issues, equity, and women's participation in decision-making. Gender/equity issues are a new topic in the country, and the project team is trying to give meaning to them through analysis and action: gender analysis of the division of labor, increasing women's involvement in co-management processes, making co-management agreements more women friendly, supporting the formation of women's groups, reducing women's workloads, and increasing women's skills (eg promoting and marketing of local products).

Livelihoods research is easier said than done. This is a component that the team needs to improve upon and expand, especially with and for women. Learning by doing is a useful approach; successes do not come easily. One idea is to explore, during the 3rd year of the project, exchanges with other projects that have livelihoods improvement high on their agenda, such as a German government (GTZ)-funded project in the Gobi desert with a strong focus on herder group formation. Another avenue to explore is additional capacity building in social analysis, action research, and rural development studies.

Policy/legal changes

Several national policies and laws impact on herders' lives and livelihoods, most notably the new Rural Development strategy and the (new) Land Law. The Land Law was approved in 2002, and has been in effect since 1 January 2003. Other laws are currently being drafted, such as the Pasture Use Fee Law, and the Water Law. Team members have been and continue to be actively involved in policies and the law-drafting process. They qualify the new Land Law as "an improvement, but not yet perfect." The law introduces long-term pasture lease by the State to herder

FIGURE 4 Herders of Karatau community and researchers discussing co-management options inside a traditional *ger*. (Photo by H. Ykhanbai)

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groups, and the research team has made a start in translating this principle into a specific pasture lease contract. Some team members would like to see pastureland ownership by herders. They consider leasing as not going far enough. Others question this idea in terms of compatibility with the principle and practice of co-management. This clearly important debate will require more time.

A weakness in the law identified by the team is the unclear legal status of herder groups as units of social organization, which hinders, for example, the opening of a group bank account and the provision of services, eg for credit and extension services. Without the (re)building of a solid social organizational fabric it is unlikely that changes brought about in the two domains discussed above (grassland management and livelihoods diversification) will be sustainable.

There is another important policy challenge: the effective, decentralized, and local implementation of the new policies and laws at the *bag* and *sum* levels. Implementation capacities—from promulgation to monitoring to enforcement—are still very weak. Top-down bureaucratic practices are very slow to evolve to more horizontal and bottom-up practices. This means that although policies and laws are becoming better on paper, there is a risk that *de facto* improvements remain elusive.

Conclusions

Reflecting on these findings, it seems to us that Mongolians, and the herders in particular, are faced with a triple challenge: how to continue "unlearning" a centrally planned society, how to handle the "economic and political opening up," and how to develop a pasture management system that is sustainable in the long run and across the country, taking into account the interests of all stakeholders—herders, government at various levels, and Mongolian society at large. This is not an easy task and will require patience, persistence, and a strong, sustained effort supported by all "sides."

The research team is operating in this complex and challenging sociopolitical context. In the course of 2 years the team has made some progress through the introduction of both new ideas *and* practices. Through project interventions, (new) bridges are built between the local and the supralocal (Figure 4). Herders are taking the lead role in reshaping their use and management of the natural resource base. Government representatives are working closely with the herders, learning from and with them, and providing the required support to allow experimentation and the search for sustainable alternatives. At the national level, space is opening up to adjust policies and laws. Many challenges remain, but a good start has been made.

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AUTHORS

Hijaba Ykhanbai, Enkhbat Bulgan, and Ulipkan Beket
"Sustainable Management of Common Natural Resources" project, Room # 501, Ministry for Nature and the Environment of Mongolia, Government Building # 3, Baga Toiruu–44, Ulaanbaatar–11, Mongolia.
ykhanbai@magicnet.mn

Hijaba Ykhanbai is specialized in economics and management of natural resources and the environment. He is the director of the Strategic Management and Planning Department of the Mongolian Ministry for Nature and the Environment.

Enkhbat Bulgan is an English and Mongolian language translator and works as the project assistant.

Ulipkan Beket is a botanist and researcher specializing in pasture and grassland types, and pasture management. He is based in the Bayan-Ölgiy province of Mongolia.

Ronnie Vernooy
Senior Program Specialist, International Development Research Centre (IDRC), 250 Albert Street, PO Box 8500, Ottawa, Canada, KIG 3H9.
rvernooy@idrc.ca

Ronnie Vernooy is a rural development sociologist. His interests include natural resource management, farmers' and herders' experimentation and organization, and participatory action research. He is based in Ottawa.

John Graham
Program Officer, IDRC Regional Office for Southeast and East Asia, RELC Building #07–01, 30 Orange Grove Road, Tanglin PO Box 101, Singapore 912404.
JGRAHAM@idrc.org.sg

John Graham is an agricultural economist. He is based in Singapore and works under IDRC's Community-Based Natural Resource Management program.

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