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Case Study:

**Participatory Wildlife and Natural Resource Assessment
with Herder Communities in Eastern Mongolia**



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with Herder Communities in Eastern Mongolia**

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Maps by L. Ochirkhuyag

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Facilitated by the:
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Acronyms

EMCCA	Eastern Mongolian Community Conservation Association
EPL	Environmental Protection Law
ESBP	Eastern Steppe Biodiversity Project, UNDP
HC	Herder Community (all formal and informal communities)
km	Kilometer
MNET	Ministry of Nature, Environment and Tourism
WCS	Wildlife Conservation Society

Definitions

<i>bag</i>	District
<i>soum</i>	County
<i>aimag</i>	Province
<i>nokhorlol</i>	Community Partnership (formal or approved community)

Executive Summary

The Wildlife Conservation Society (WCS) strives to support the sustainable management of natural resources and conserve wildlife by further developing natural resource stewardship in community-managed areas on the grasslands of Mongolia's Eastern Steppe. To achieve this goal, the WCS Mongolia Program and the Eastern Mongolian Community Conservation Association (EMCCA) facilitated workshops at 10 different locations with participants from 11 herder communities from July 17th to August 15th, 2008, in Khentii, Dornod and Sukhbaatar *aimags*. Community leaders, volunteer rangers and community members participated in the workshops. The goal of these field visits was to more clearly understand Eastern Steppe livestock herders' perceptions of wildlife abundance, wildlife use and natural resource management capacity.

The 1.5 day workshops included: participatory exercises aimed at capturing community perspectives on the condition and use of wildlife populations and other natural resources in their management areas; mapping habitats; demarcating community area boundaries; and discussing threats to herder community livelihoods and their management areas. A total of 125 adults (73 male, 52 female) participated in the workshops, with an additional 21 children in attendance.

Wildlife species identified by members as most important to their community livelihoods included Mongolian gazelle, Siberian marmots, gray wolves, and red and Corsac foxes. Participants indicated that these species have declined by an average of 68% between 1985 and 2008. Community members' perceptions that marmot abundance has declined in their areas by 78% over the past 23 years is consistent with population estimates by international experts indicating a decline of over 88% in the past 15 years. Data from group exercises show that all five of these species are harvested in community-managed areas, with the majority of use (66%) by people from *soum* centers or other outsiders. These species are mainly valued for trade, supplemental meat sources and traditional medicine. Seasonal wildlife use exercises revealed that many game species are being hunted out of season and that, in some cases, use of species has increased more than two-fold over the past two decades. The general decline in numbers of valued wildlife present in community-managed areas, and the

region as a whole, emphasizes the need for improved management, monitoring and protection of these species at the local and regional scales.

Besides the wildlife mentioned above, the most commonly used natural resources in these areas include pasture or hay, wild onion, water and medicinal plants. Community members indicated that their areas are predominantly occupied by Rocky Mountain Steppe and Flat Steppe habitat types (44% and 22%, respectively). Overall, populations of Tolai hares, Mongolian gazelle, gray wolves and Corsac foxes inhabit the greatest percentage of land in community-managed areas.

In total, the 11 herder community-managed areas in Mongolia's Eastern Steppe encompass almost 200,000 hectares (2,000 km²) of steppe habitat. In addition to the over-hunting of wildlife populations, the main threats to these areas include pasture degradation, over-grazing, fire, water pollution and desiccation.

Recommendations

- Conduct a follow-up study focused on the economic valuation of wildlife and natural resources important to herder community livelihoods.
- Implement sound management of wildlife resources in community areas, including monitoring of valued wildlife populations.
- Provide training, equipment and resources to wildlife protection officers for effective wildlife protection.
- Ensure that all volunteer rangers have ID cards and/or uniforms for improved authority.
- Strengthen enforcement of hunting laws and regulations in and around community areas.
- Improve the *nokhorlol* (community partnership) proposal approval process.
- Encourage all herder families residing in and near community-managed areas to join the local *nokhorlol*.
- Engage all members in the development of meaningful community action plans.
- Ensure exclusive rights of all natural resources in community-managed areas to *nokhorlol* members.
- Mitigate outsider use of wildlife and natural resources in community-managed areas.
- Provide training and clear direction to herder communities regarding pasture, fire, water and wildlife management.
- Encourage better collaboration between communities and local governments for more effective community area management.
- Provide short-term benefits to herder communities in exchange for their protection of resident wildlife.
- Facilitate exchange among herder communities at the regional, national and international levels.

The Eastern Steppe: Landscape, Natural Resources and Human Context

Mongolia's Eastern Steppe, the largest remaining intact temperate grassland in the world, hosts many wildlife species, including more than one million Mongolian gazelle – one of the last large populations of migrating ungulates. At 250,000 square kilometers (km), the area is roughly the size of the state of Oregon and is bordered by Russia to the north and China to the east and south. Treeless flat plains, rolling hills and a significant number of important wetlands characterize the Eastern Steppe, all influenced by a temperate climate with scarce precipitation and marginal resources. Human populations on the steppe have historically been sparsely distributed and engaged in traditional nomadic livestock production, an adaptation to the natural conditions; to this day, this landscape is home to nomadic livestock herders whose unique culture and livelihoods depend on the grassland and its wildlife. Approximately 200,000 people, and the 4 million head of livestock that they herd, presently live on the steppe. The low human population density, combined with relatively low impact, extensive livestock agriculture and a traditional respect for nature, has meant that much of the landscape has remained untouched. Wildlife here have had the intact habitat and space that they need to survive and flourish, making Mongolia, and the Eastern Steppe in particular, one of Central Asia's last wildlife refuges.

However, this historic pattern of sustainable use of the steppe's resources is changing, in part as a consequence of Mongolia's transition from a centrally controlled command economy to a free market system which has opened trade borders with China and other Asian countries. Siberian marmots have traditionally been used locally as a supplemental meat source and for traditional medicine, but are now valued for the international fur trade. Gray wolf and red and Corsac fox populations in Mongolia are experiencing similar pressure. The demand for wildlife and wildlife products such as marmot, wolf and fox furs and parts has fueled a commercial trade in wildlife across Mongolia, resulting in major declines in the numbers of wildlife on the Eastern Steppe (Wingard and Zahler, 2006). Furthermore, driven by the country's economic needs, the Mongolian government has developed plans for the region which include the intensification of livestock production, large-scale crop-based agriculture and oil, coal, gas and mineral exploitation. This proposed development threatens to disrupt the fragile balance of life for both nomadic pastoralists and wildlife on the grassland steppe, and to fragment the grassland with the infrastructure that these industries will require.

Private land ownership is rare on the Eastern Steppe; the vast majority of land is government-owned pasture utilized by nomadic pastoralists for livestock production. Wildlife management and habitat conservation within nationally protected areas falls under the jurisdiction of the Protected Area Authority of the Mongolian Ministry of Nature and Environment. Outside of the protected areas, policy for wildlife management and habitat conservation is set by the provincial Environmental Protection Agencies (who ultimately report to the Minister of Nature and Environment); wildlife and environmental laws are enforced by the Environmental Department of the State Specialized Inspection Agency (SSIA), which reports to the Office of the President.

Typically, laws and regulations are generally drafted by the central government and handed down to provincial-level governments for implementation. The laws and regulations governing wildlife and natural resource use are often not enforced due to a combination of factors including limited inter-agency coordination, a lack of resources for patrol activities and limited information flow. However, there has been a relatively recent move on the part of the Mongolian government, on the Eastern Steppe and

across Mongolia, to devolve the authority over natural resources, and wildlife in particular, to local communities of livestock herders. Legislative changes and new regulations have outlined a process by which groups of livestock herders can apply for natural resource use rights, secured for a five-year period, which make them responsible for the management and protection of those resources.

The conservation of the grasslands of the Eastern Steppe and the wildlife that they support clearly requires interventions and management well beyond the borders of protected areas. One classic example of a large and mobile species that requires very large areas of habitat for its survival is the Mongolian gazelle, the most abundant wild large mammal on the steppe. Studies have shown that there is tremendous spatiotemporal variability in the food available to the gazelles, which necessitates their long-distance and irregular movement across the landscape in search of high-quality forage. Although today there are few roads, fences or other barriers hindering the gazelles' movement across the steppe, maintaining the intact and functional grassland ecosystem necessary to support the Eastern Steppe migration of Mongolian gazelle into the future is one of the greatest wildlife conservation challenges in the region (*Olson et al. 2009*).

The WCS Eastern Steppe Living Landscapes project (which received USAID support through its Global Conservation Program) aims to sustain wildlife and traditional livelihoods in the arid grasslands of Mongolia. One conservation intervention undertaken as part of this project involves WCS's collaboration with a local NGO, the Eastern Mongolian Community Conservation Association (EMCCA). WCS is working with EMCCA to establish community partnerships and to assist these partnerships with the effective management and protection of the wildlife in their community-managed areas. Currently, WCS is working with 11 herder communities (HC; see Figure 1) who have a particular interest in conserving the wildlife populations and natural resources in their areas, focusing on building the capacity of volunteer rangers to protect and monitor wildlife.

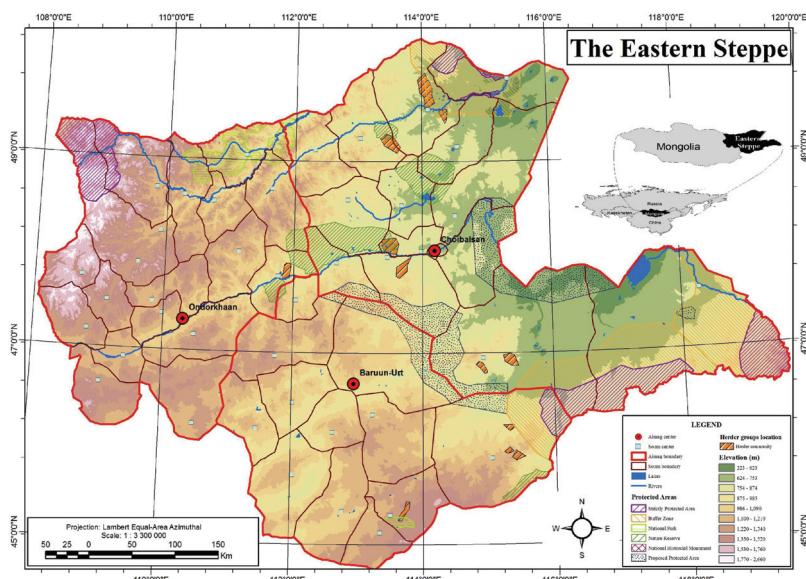


Figure 1. Map of Mongolia's Eastern Steppe, including Dornod, Sukhbaatar and Khentii aimags. Locations of 11 herder community-managed areas that WCS Mongolia currently engages in wildlife conservation activities are shown in orange (Map produced by L. Ochirkhuyag, WCS Mongolia Program).

Community Partnerships in the Eastern Steppe

Forming Official Partnerships and Associated Challenges

Livestock herders live in the countryside, are (semi-)nomadic and have a traditional lifestyle. They are motivated to conserve the wildlife and natural resources on which they depend for their livelihoods, such as: native grasses for hay; water for drinking, cooking and other household uses; wildlife to be used as a supplemental food source; and wood for fuel. Additions to Mongolia's Environmental Protection Law made in 2005 and 2006 allow herder families to join together and form community partnerships to protect the environment (The Asia Foundation 2009). Under contracts with the local government, community partnerships can protect and 'own' their local wildlife, and have the right to manage, use and own particular natural resources in areas of 10,000 hectares or less. These areas are effectively community protected areas with appointed volunteer rangers who monitor wildlife and natural resource use, and report violations to local inspectors who are responsible for enforcing environmental laws and regulations. Community partnerships are also charged with reporting their activities to the *bag* (county) and *soum* (district) governments.

In the past there was no private land in Mongolia – both historically and under socialism – and the issue of privatizing land has been very controversial. Community partnerships consisting of multiple herder families are a step towards collective management of natural resource use. They are an attempt to reverse the over-exploitation that occurs when resource use is not restricted and users can move on to 'greener pastures' when local areas have been over-harvested (i.e. the 'Tragedy of the Commons').

For a group of herders to form an official '*nokhorlol*',¹ or community partnership, they must first submit a proposal to the *bag* governor. After being approved at the *bag* level, the proposal is forwarded to the *soum* governor for final approval, for which a decision should be given within 14 days of submission. However, some *bag* and *soum* governors have not been informed about the new additions to the Environmental Protection Law which allow communities to manage and protect an area for their use. Many herder communities have been awaiting a reply from their *bag* or *soum* governor for many months, but have not yet received a decision about their proposal.

Unfortunately, many herder communities do not fully understand the "Procedures for Creating Protection, Utilization and Possession of Certain Natural Resources by Herder Communities" under the Ministry of Environment's Order #114 (Banzragch 2006). For example, some communities are attempting to establish areas that are much larger than that allowed under the current legislation. Five herder communities have proposed, and, in some cases, actually established, partnership areas of almost double the legal limit of 10,000 hectares; although communities can make a special agreement with the *bag* and *soum* governor to establish larger areas. The law restricting the size of *nokhorlol* areas to 10,000 hectares is difficult to enforce for many reasons; not least among these is the fact that, in reality, a community of 10 herder families requires a much larger area than this if it is to include both winter and summer pastures for each family (a single family's winter and summer pastures can be 5,600 ha at a minimum).

¹ A *nokhorlol* is an official term for a registered community partnership. In this paper, the term 'herder community' is used to indicate both established (officially recognized) *nokhorlols* and unofficial communities (i.e. communities that have not yet received approval, but are basically functioning like an established *nokhorlol*).

Therefore, the area restrictions in the current legislation need to be reviewed, and *nokhorols* should be granted larger areas for collective management.

The current legislation does not give community partnerships exclusive rights to all natural resources in their areas. The additions made in 2005 to the Environmental Protection Law, Article 31, Section 1, state that “local citizens may organize partnerships...and shall legally enjoy the privileges of appropriate use and possession of particular types of natural resources so entrusted to them by contract”. However, under Section 6 of this same article, the law states that “natural resources entrusted to the partnership shall not include resources under the soil, lands of pastures and water basins...” (The Asia Foundation, Law on Environmental Protection 2009). This poses a difficult situation when herders join together to form community partnerships focused on collective pasture management and sustainable use of the natural resources in their management area, since community partnerships do not have exclusive rights to pasture in their community-managed areas. In other words, conflict can occur between community members and non-community herders in some areas, since livestock herders from outside the community can legally move into areas that the community has set aside for pasture improvement, seasonal grazing or as reserve pasture for wildlife and natural disasters. Similarly, without exclusive rights to the water sources in their area, communities cannot ensure the sustainable use of the water sources that they are protecting since outsiders can abuse this resource.

Community Interest and Dedication

Many community members do not understand the community partnership law or the advantages to forming community partnerships, which include better organization of pasture, wildlife and other natural resource use and management, sharing of labor and access to a community fund. Poor understanding of the legislation and members' responsibilities leads to dissent within communities and between communities and non-members. Therefore, it is important that a clear description of the legislation, and the privileges and responsibilities that it bestows, is available to communities. The Asia Foundation Mongolia Program has produced “Community Engagement Tools” and training that fulfill this need (The Asia Foundation 2009).

The degree of understanding and dedication regarding wildlife and natural resource management and use varies greatly among communities. Many members have not realized that under a community partnership contract each member is responsible for the sustainable use and management of wildlife and natural resources in their area. In addition, some communities are not meeting regularly as originally agreed upon when their partnership was formed, due to the large distances between herder households and the resultant transportation challenges.

Our observations indicated that many herders on the Eastern Steppe are moving to small population centers, provincial centers or the capital; a phenomenon which may pose more serious challenges to this work in the future. For example, one herder community (Delgermunkh) was in the process of disbanding when we visited their area; many members were moving to the county's town center, and the leader and volunteer ranger were planning to move to the provincial center, leaving just a few members in the actual community area.

Seven of the communities with which WCS Mongolia currently works have very good potential, interest and dedication: Khotont, Yuson Erdene, Bayan Ukhaa, Zegstei,

Daguuriin Shines, Chukh Eco-tur and Moilt. We observed that the remaining four communities require more encouragement and organizational assistance in order to become active in conservation activities.

Participatory Wildlife and Natural Resource Assessment

Since 2006, WCS Mongolia has been working with the Eastern Mongolian Community Conservation Association (EMCCA), a national NGO, to build the capacity of herder communities to protect and manage wildlife and natural resources in their community-managed areas. Various workshops were held to explain the community partnership law, and meetings have been organized to encourage closer collaboration between communities, law enforcement agencies and local governments. WCS has also carried out volunteer ranger trainings which focus on wildlife protection and simple wildlife monitoring methods, such as scan sampling for marmots and relative abundance surveys conducted via horseback. In addition, field visits to community-managed areas taught community members wildlife protection and monitoring methods on-the-ground, and engaged all HC members in action planning for their areas.

During the summer of 2008, these field visits were expanded upon when two WCS Mongolia program staff, EMCCA's manager, and a Master's student from the National University of Mongolia completed a 30-day field trip to visit community-managed areas. The team delivered 10 workshops (5 in July, 5 in August), to a total of 11 herder communities. All members from each community were invited, including HC leaders and volunteer rangers. The timing of these visits was discussed with HC leaders and volunteer rangers at a previous meeting, and leaders were informed via phone and word-of-mouth of the dates of the intended visits one month and two weeks prior to each workshop. When the field team arrived at a community's area, they visited herder camps to remind members of the workshop and motivate them to attend. A total of 125 adults (73 male, 52 female) participated in the workshops, with an additional 21 children in attendance.

Workshop activities included an assessment of community perspectives about the wildlife populations in their areas, producing a map of habitats, promoting discussion of natural resource use monitoring efforts, drafting action plans, community area boundary demarcation (using GPS coordinates) and introducing wildlife monitoring methods to volunteer rangers. Booklets containing data sheets for natural resource use monitoring, wildlife monitoring and wildlife/natural resource violation reporting were distributed to volunteer rangers and active community members. Information collected during the workshops was summarized and presented in poster format for each community. These posters were later placed on exhibit at an event to which all governors from *soums* containing herder communities were invited. At this meeting, community leaders, volunteer rangers and *soum* governors had an opportunity to exchange ideas and foster closer cooperation and collaboration.

The goal of the field visits and workshops with herder communities was to understand more clearly the Eastern Steppe livestock herders' perceptions of wildlife abundance, wildlife use and natural resource management capacity, in an effort to support the sustainable management of natural resources and conserve wildlife by further developing natural resource stewardship in community-managed areas. To accomplish this goal, five main objectives were identified; various activities were arranged during

the workshops to facilitate the accomplishment of these objectives (for the workshop agenda, see Appendix I²):

Objectives

- 1) Conduct a Participatory Wildlife and Natural Resource Assessment with each herder community; in order to develop the following 3 outputs:
 - a. A list of wildlife species and their relative (perceived) abundance, an annual wildlife use calendar (a depiction of seasonal hunting patterns) and a description of hunting pressure, over time, from 1985 to 2008.
 - b. A characterization of habitat types and a (coverage) map of the locations of various habitats for each community-managed area.
 - c. Identification of those natural resources that communities use, a description of what each is used for, and a natural resource use calendar for each community-managed area.
- 2) Implement natural resource use monitoring by active members in communities.
- 3) Map community-managed area borders and reference points (using GPS coordinates for reference points such as summer camps).
- 4) List threats to herder communities and introduce steps to action (management) planning. The outputs would include a list of threats to wildlife and natural resources from each community, and, in some cases, a draft action plan.

Assessment Methods

Questionnaires – Members, Leaders and Volunteer Rangers

Questionnaires were developed to encourage herder community members, leaders and volunteer rangers to provide detailed information about community demographics, natural resource use, nomadic patterns, condition of wildlife populations, status of community proposals, frequency of community meetings, status of volunteer ranger credentials, utility of monitoring/reporting forms, collaboration with local inspectors and the predicted future activity level of leaders and volunteer rangers (Appendix II). This information was compiled into table format, summarized according to topic, and compared with the data collected during group exercises.

Relative Abundance of Wildlife Populations Over Time

Different exercises were used to capture data on community members' perspectives on the condition of wildlife populations in their areas. First, we explained the importance of knowing the current status of wildlife populations and natural resources in community areas and how this information may be used to implement informed management. Then, participants were asked to compile a ***list of wildlife species*** found in their area and then to rank these species according to their ***importance*** to the community.

From this list, participants chose 4 to 7 species which they thought were most important to their community. Then, participants ordered (or ranked) picture cards of these

² Methods and procedures for workshops with herder communities (Appendix I) were developed using the advice of several experts including J. Jargal from the Steppe Forward Program, and David Wilkie and Carter Ingram from the Wildlife Conservation Society. Each workshop began with introductions from all participants and facilitators followed by exercises aimed at recording useful data about the condition of wildlife populations and natural resources in community-managed areas.

species according to their abundance, in relation to the other species, for each of five 5-year intervals: 1985-1990; 1990-1995; 1995-2000; 2000-2005; and 2005-2008. For analysis, each species was given a numerical rank (1 most abundant to 15 least abundant). Then, all ranks were standardized to 15 species total by calculating the ratio of each rank to the rank total for a particular time period, and multiplying this by 120 (i.e. sum of 1 to 15). The average rank for each species was calculated for all 10 communities who participated in this exercise and then graphed.

Using their list of important species, each community's participants were asked to distribute 125 beans on 5 sections of paper according to what they thought was the **relative abundance** of each particular wildlife species for each of the 5-year intervals. The number of beans allocated to each time interval was recorded for each of the community's 4 to 7 most important species. The average count was later calculated for all 10 communities that participated in this exercise.



Using participatory bean sorts to assess changes in wildlife abundance over time

Relative Wildlife Use Over Time

To assess the relative **amount of wildlife use** in a community-managed area, especially **use over time**, an exercise similar to the previous one was employed. First, participants identified which species were used (i.e. hunted or trapped) by both members and outsiders, in their community's area. Then, participants again used beans to indicate the **relative hunting pressure over time** (i.e. any human use) on a particular wildlife species for each of 5 sections of paper representing the same 5-year intervals as above. To finish this exercise, participants marked a calendar table with

which months each of these species were hunted or trapped, indicating with number of "X"s the degree of hunting pressure: little (1), some (2), much (3), very much (4) (if a particular species was not used, its hunting pressure 'score' was recorded as 0). **Annual use** was recorded for both outsiders and community members who hunted wildlife in community-managed areas. This information was summarized in table format for each community, and then averaged, by month, for each species.



Completing a wildlife use calendar with community members

Marmot Questionnaire

A questionnaire about the status of marmot populations in each community-managed area was completed by participants from each community (see the "Marmot Questionnaire" in Appendix I for the complete list of questions posed). Participants answered questions about: the status of the marmot population in their area (burrow activity and whether the population was increasing or decreasing), whether marmots were important to their livelihood, if decreasing, what they thought the explanation for the population decrease was, who was responsible for observed decreases, who hunts marmots in their area, and who is responsible for the species' management and enforcement.

Community-Managed Areas – Natural Resource Use, Habitat Characterization and Mapping

During the third participatory exercise with community members, participants were asked to identify types of natural resources, other than wildlife, present in their areas. Examples of natural resources that were listed included water, pasture and hay, willow

(fuel wood) and herbs used to season food. These were listed on a calendar table where participants then indicated during which months each of these natural resources are usually harvested or gathered, and the degree of use for each; none (0), little (1), some (2), much (3), very much (4). Participants understood that wildlife are also a natural resource, but this exercise concentrated on natural resources *other than* wildlife, since the same exercise had already been conducted for wildlife populations in community-managed areas.



Determining seasonal natural resource use patterns with herder community members

After documenting natural resource use in community-managed areas, participants created a map depicting different habitats, dominant plant species and the locations of certain wildlife species. Participants were asked to draw the shape of their community area on a large piece of paper. Then they listed dominant plant species, minerals, habitat types, wildlife species and landscapes found in the area. All of these features were marked on the map, and participants determined the percentage of area occupied by each habitat type and other features. Percentages were averaged for each habitat type, landscape, and plant and wildlife species.

To effectively map community-managed areas, coordinates demarcating each area's boundaries were recorded by driving to certain landmarks and recording the coordinates with a GPS unit. Descriptive names were assigned to each point and the size of community partnership areas designated under the community partnership legislation was discussed with community leaders and volunteer rangers.



Mapping habitat distribution within community managed areas

Community Roles and Legal Responsibilities

The workshops offered an opportunity to educate community members about the legislation allowing for the formation of community partnerships and the roles, rights and responsibilities of those partnerships. Participants attended a brief presentation on the Ministry of Environment's Order #114 which outlines the *Procedures for Creating, Protection, Utilization and Possession of Certain Natural Resources by Herder Communities* and discussed a diagram depicting the relationship between volunteer rangers, the community partnership conservation plan, and other law enforcement officers (Appendix III).

Listing Threats to Herder Communities

To begin the action (management) planning process with each community, we asked community members to list threats to their livelihoods and overall threats to community areas. Participants listed threats on large paper and then had an opportunity to discuss those threats.

During past meetings, herder community leaders and volunteer rangers had learned the steps to writing management/action plans for their community partnership activities. The workshops were an opportunity to present the management/action steps to members, discuss their current action plans, if available, and make plans for drafting or revising their action plans in the future (Appendix IV).



Community members harvesting hay

Results Summary

Questionnaires – Members, Leaders and Volunteer Rangers

A total of 30 people completed the questionnaires: 8 community leaders, 6 volunteer rangers, and a total of 16 other community members (from three different communities). According to the questionnaire respondents, the average herder community consists of 26 adult members (14 male, 12 female) from 11 different households. The average number of people in a community household, by age group, is 5 members between 0 and 16 years old, 13 members aged 16 to 40 years, and 7 members older than 40 years of age.

Most of the communities that participated hold member meetings once per season. Three of the communities' proposals had been approved by the *bag* and/or *soum* governors, whereas the remaining communities' proposals had not yet been submitted and/or approved. One community's proposal had been submitted to the *soum* government in June 2007, but had still not been approved as of August 2008. Only two communities have completed their community action plan. All eight participating community leaders indicated that they, and their communities, planned to remain active (i.e. continue community livelihood and wildlife protection activities) in the future.

Two volunteer rangers have received ID cards, and another one has submitted his ID information but has not yet received approval. These ID cards are important because they give the rangers the authority to report natural resource use violations and implement environmental laws and regulations. Five of the volunteer rangers indicated that they plan to be active (i.e. carry out VR activities such as wildlife monitoring, meeting with members and reporting to *soum* inspectors) in the future. A majority of the participating rangers (5) found the map of their community-managed area useful; however, one volunteer ranger (from Moilt) indicated that he could use a map and compass to record locations. Four volunteer rangers said that they understand how to use the natural resource use violation reporting forms, and five indicated that they monitor wildlife in their area via horseback using the forms provided to them. Three volunteer rangers said that they work closely with their *soum* inspector, and five said that they have an action plan for their work.

In general, members said that they would like to learn more about environmental and community legislation and research work being carried out on nature and the environment. They would also like to learn how to plant and grow willows and other trees and how to protect marmots. Members would like to visit other communities, in neighboring counties, *aimags* or abroad, to observe their methods, activities and successful work.

Status of Wildlife

Twenty-six respondents completed the questionnaire. When asked to list which species are important to their livelihoods, most respondents listed gazelle (listed 14 times out of 26 total entries), while marmots (7), foxes (3) and wolves (2) were also thought to be important. The majority of respondents (7) thought that marmot numbers were increasing in their area, while only 5 thought they were decreasing. Similarly, while 6 respondents thought that gazelle were increasing, 5 thought they were decreasing. In contrast, most respondents believed foxes and wolves to be decreasing in their areas. Only 4 respondents indicated that the number of foxes was increasing in their areas, while 9 thought that they were decreasing; 4 respondents thought that wolf numbers were increasing, while 7 thought that they were decreasing.

Importance of Wildlife Species to Herder Communities

Workshop participants listed a total of 31 wildlife species which reside in their community-managed areas (see Table 1).

Table 1. Wildlife species found in community-managed areas as listed by herder community participants.

	Common English Name	Latin Name
1	Mongolian gazelle	<i>Procapra gutturosa</i>
2	Siberian marmot	<i>Marmota sibirica</i>
3	gray wolf	<i>Canis lupus</i>
4	red fox	<i>Vulpes vulpes</i>
5	Corsac fox	<i>Vulpes corsac</i>
6	roe deer	<i>Capreolus pygargus</i>
7	Eurasian badger	<i>Meles meles</i>
8	Tolai hare	<i>Lepus tolai</i>
9	red deer	<i>Cervus elaphus</i>
10	Eurasian lynx	<i>Lynx lynx</i>
11	Pallas' cat	<i>Otocolobus manul</i>
12	raccoon dog	<i>Nyctereutes procyonoides</i>
13	steppe polecat	<i>Mustela eversmanni</i>
14	mountain weasel	<i>Mustela altaica</i>
15	Daurian souslik	<i>Citellus dauricus</i>
16	jerboa	<i>Allactaga sibirica</i>
17	Daurian hedgehog	<i>Mesechinus dauuricus</i>
18	Pallas' pika	<i>Ochotona pallasi</i>
19	Brandt's vole	<i>Microtus brandtii</i>
20	cinereous vulture	<i>Aegypius monachus</i>
21	upland buzzard	<i>Buteo hemilasius</i>
22	falcon sp.	<i>Falco sp.</i>
23	whooper swan	<i>Cygnus cygnus</i>
24	swan goose	<i>Anser cygnoides</i>
25	great bustard	<i>Otis tarda</i>
26	Demoiselle crane	<i>Anthropoides vigo</i>
27	ruddy shelduck	<i>Tadorna ferruginea</i>
28	Daurian partridge	<i>Perdix dauurica</i>
29	frog sp.	<i>Rana sp.</i>
30	snake sp.	
31	lizard sp.	<i>Eremias sp.</i>

During the 10 workshops (conducted with 11 total herder communities), participants developed a list of those wildlife species that were considered the most important to their community's livelihood, and then ranked them according to importance (1 = most important, 7 = least important; see Table 2). Mongolian gazelle and Siberian marmots received the highest average rankings, likely because they are valuable food sources; for example, marmot meat is considered a delicacy which is eaten during holidays and festivals, and the oil from marmot fat is used to treat ailments. Gray wolves are valued more than other furbearing carnivores because, unlike red and Corsac foxes which are used primarily as a commodity in the fur trade, wolves' body parts are used in traditional medicine, giving them value beyond that of the furs that are sold in trade. Roe deer, Eurasian badgers and Tolai hares are important species for household use in traditional

medicine and, in the case of roe deer, as a food source as well. Some community participants also said that they value red deer and whooper swans for their aesthetic beauty and for religious reasons. For purposes of economy, throughout the rest of this paper we will discuss the results obtained for the top 5 ranked species: Mongolian gazelle, Siberian marmot, gray wolf, red fox and Corsac fox.

Table 2. Wildlife species that were listed as important to livestock herder communities in the Eastern Steppe. The value rank, 1 = most important, to 7 = least important, was averaged for each species.

Wildlife Species	No of Times Listed by Communities	Average Rank	Importance to Community
Mongolian gazelle	11	1.5	Food source
Siberian marmot	10	2.1	Trade/Food source
Gray wolf	11	3.5	Trade/Traditional medicine
Red fox	10	3.8	Trade
Corsac fox	11	4.6	Trade
Roe deer	4	5.2	Traditional medicine/Food source
Eurasian badger	5	5.6	Traditional medicine
Tolai hare	5	6.2	Traditional medicine
Red Deer	1	N/A	Aesthetic/Religious value
Whooper Swan	1	N/A	Aesthetic/Religious value

Relative Abundance of Wildlife Populations over Time

Ten of the herder communities completed this part of the Participatory Wildlife Population Assessment (one community, Khotont, chose not to complete this exercise because they had recently completed a similar exercise with a different organization). Of the species discussed in this exercise, the most commonly mentioned species were the Mongolian gazelle, gray wolf and Corsac fox (each mentioned by all 10 of the participating communities), and the red fox and Siberian marmot, which were each mentioned by 9 communities.

During the ranking portion of this exercise, community participants ranked Mongolian gazelle as the most abundant species, with a slight decrease in abundance ranking between 1995 and 2005. Siberian marmots were ranked as one of the most abundant species in the past, but respondents noted a marked decrease in abundance relative to other species between 1990 and 2008. Similarly, communities ranked red deer as much less abundant after 1995. Tolai hares were ranked with a medium abundance from 1985 to 2000, but were thought to be more abundant, in comparison to other species, from 1995 to 2008. Both red and Corsac foxes were thought to have maintained a medium to lower abundance compared to the other species over the 23-year time period. Most communities ranked roe deer and Eurasian badgers as the least abundant species over the entire time period. (For a comparison of all results, see Figure 2.) For purposes of economy, throughout the rest of this paper we will only discuss the results for the Mongolian gazelle, Siberian marmot, gray wolf, red fox and Corsac fox.

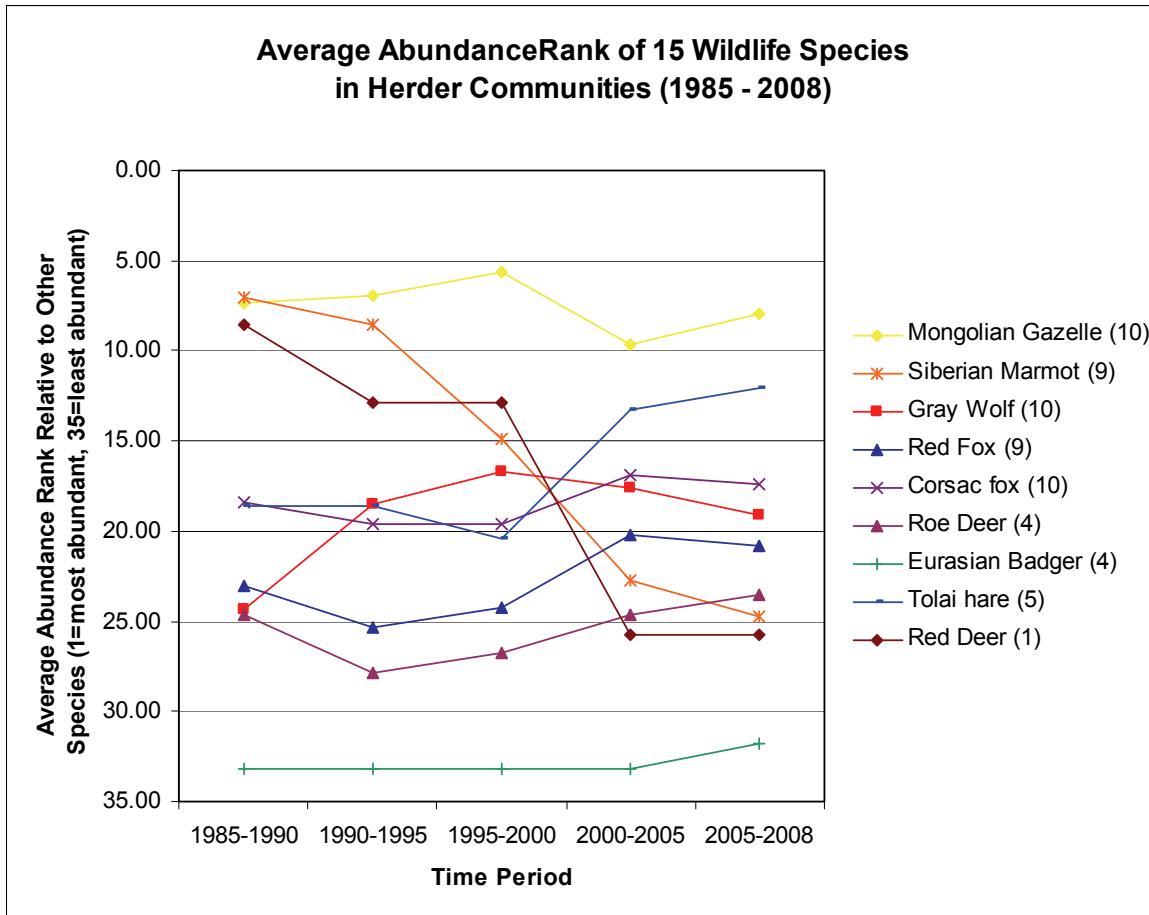


Figure 2. Average ranks of the 9 wildlife species ranked by herder communities for each of 5 time periods ranging from 1985 to 2008. The number of ranks averaged is variable (see n in brackets next to species name in the key). Ranks were originally standardized across 15 species, but for purposes of clarity, data from only 9 species are included here.

Data from the bean count exercise indicate an average decline of 68% in the relative abundance of the 5 wildlife species from 1985 to 2008 in community areas (Figure 3). From 1985 to 1990, participants thought that Siberian marmots and Corsac foxes were relatively abundant compared to later years ($x = 48$ and 42 , respectively). Participants indicated that, on average, the abundance of these species declined greatly over the next 18 years ($x = 10$ and 13 , respectively, in 2005-2008). Mongolian gazelle, red fox and gray wolf abundance was also thought to have declined considerably over the entire time period.

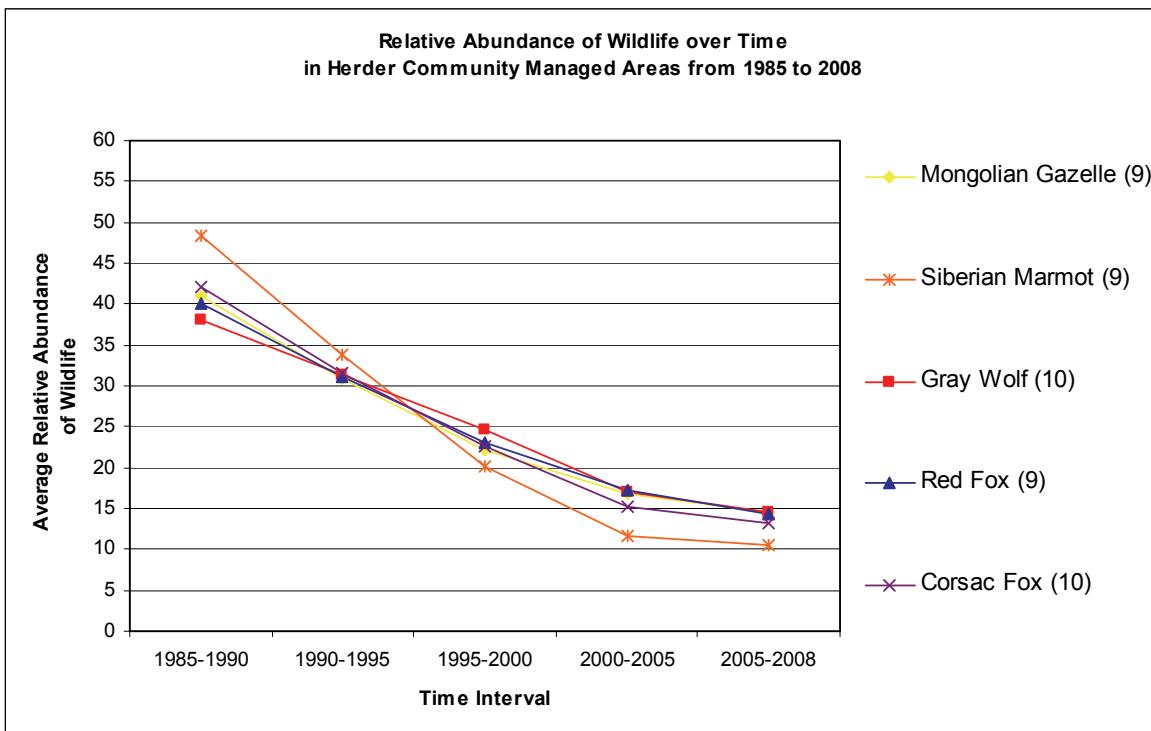


Figure 3. Average relative abundance numbers for 5 wildlife species. Data were collected using bean counts allocated to each of five 5-year time intervals during participatory exercises with community members. The number of abundance figures averaged was variable depending on number of communities who participated in the exercise (see 'n' in brackets next to the species name in the key). **This graph illustrates the perceived decline in individual species over time and is not meant for comparison of abundance among species for particular time periods.

Individual community data support the overall decreasing trend in wildlife abundance in community-managed areas, which is likely representative of the situation across the Eastern Steppe. Communities indicated a 15% decline or greater for every species listed (the highest decrease reported was 94%, for Siberian marmots in the Bayan Burd HC area). Most communities perceived that the abundance of Mongolian gazelle had decreased from 1985 to 2008, declining 64% on average (Figure 4a); however, Ganga HC indicated that Mongolian gazelle in their area had been fairly stable, even increasing slightly during recent years. All 10 herder communities had observed a considerable decline (of approximately 78%) in Siberian marmot numbers in their areas between 1990 and 2008 (Figure 4b). Similarly, most communities reported that gray wolf abundance in their areas had decreased about 62% since 1985 (Figure 4c). Most communities indicated that both red and Corsac fox populations had decreased in their areas (64% and 69%, respectively; Figures 4d and 4e); with the exception of one HC (Bayan Ukhaa) who believed that these fox populations had remained stable over the 18 years. Interestingly, although Ganga HC had observed a decline in fox numbers from 1985 to 2005, in more recent years these populations have actually been perceived to be increasing.

Through recent protection and management efforts, three communities – Chukh Eco-tur, Daguuriin Shines and Ganga – have begun recovery efforts focused on marmot, gray wolf and fox populations in their areas. Since implementing these programs, over the past eight years Siberian marmot, gray wolf and Corsac fox abundance have all increased in Chukh Eco-tur's area, the abundance of Siberian marmots is thought to

have increased in Daguuriin Shines HC area, and Ganga HC has experienced increased abundance of all 5 species (Mongolian gazelle, Siberian marmots, gray wolves, and red and Corsac foxes). Ganga HC's perceived considerable increase in marmot numbers is most likely due to intensive protection efforts by the Dariganga National Park rangers who regularly patrol the nearby national park.

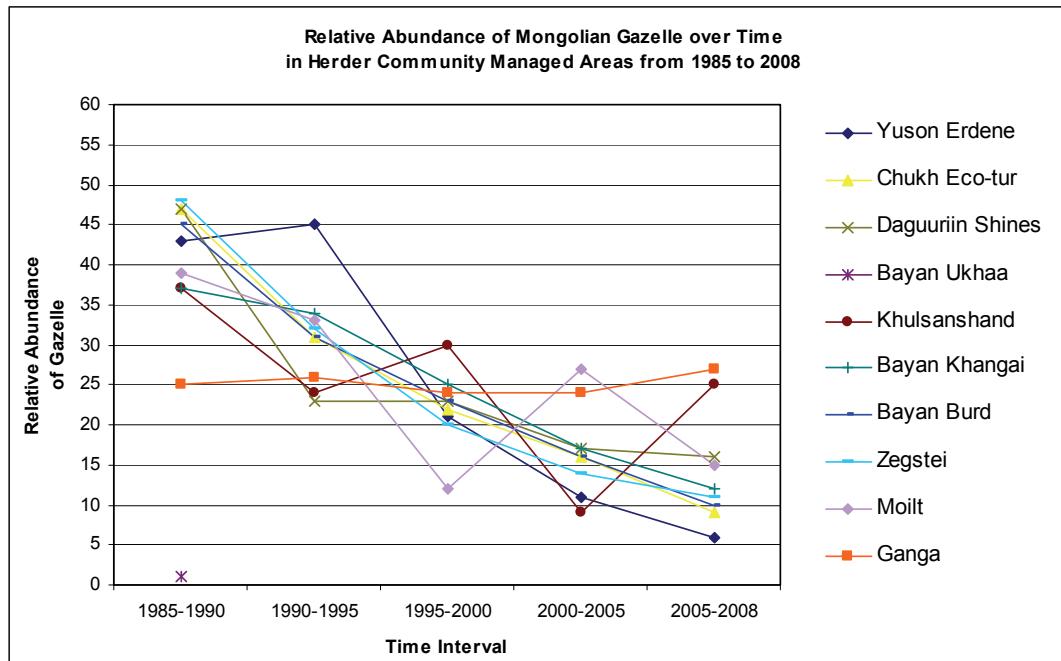


Figure 4a. Relative abundance of Mongolian gazelle in 9 herder community areas as depicted by bean counts allocated to each of five 5-year time intervals during participatory exercises with community members.

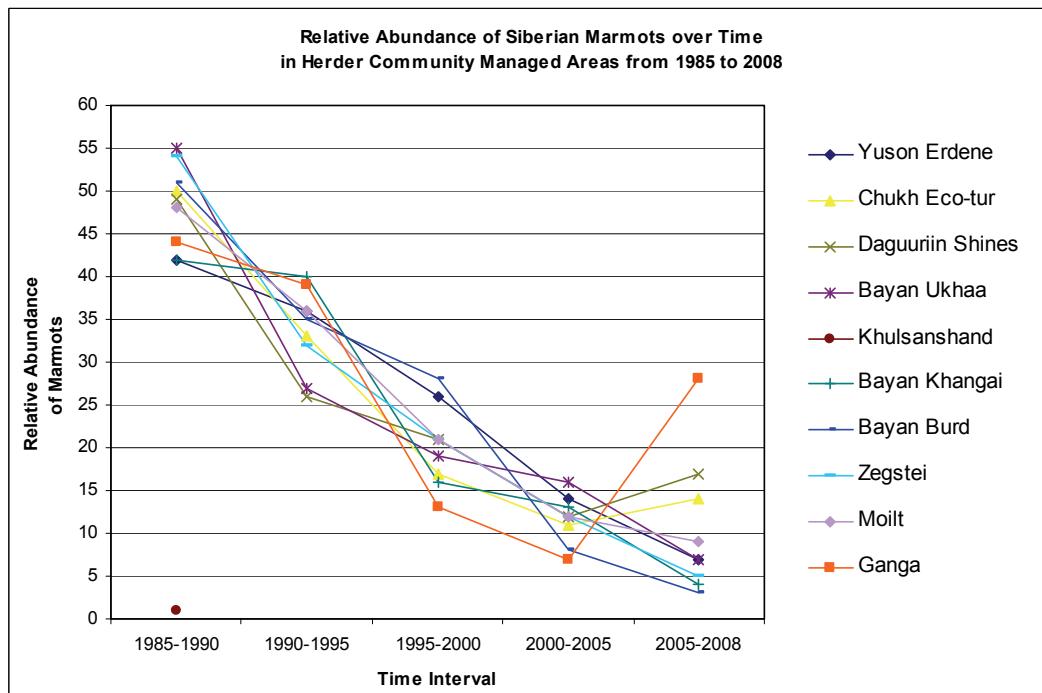


Figure 4b. Relative abundance of Siberian marmots in 9 herder community areas as depicted by bean counts allocated to each of five 5-year time intervals during participatory exercises with community members.

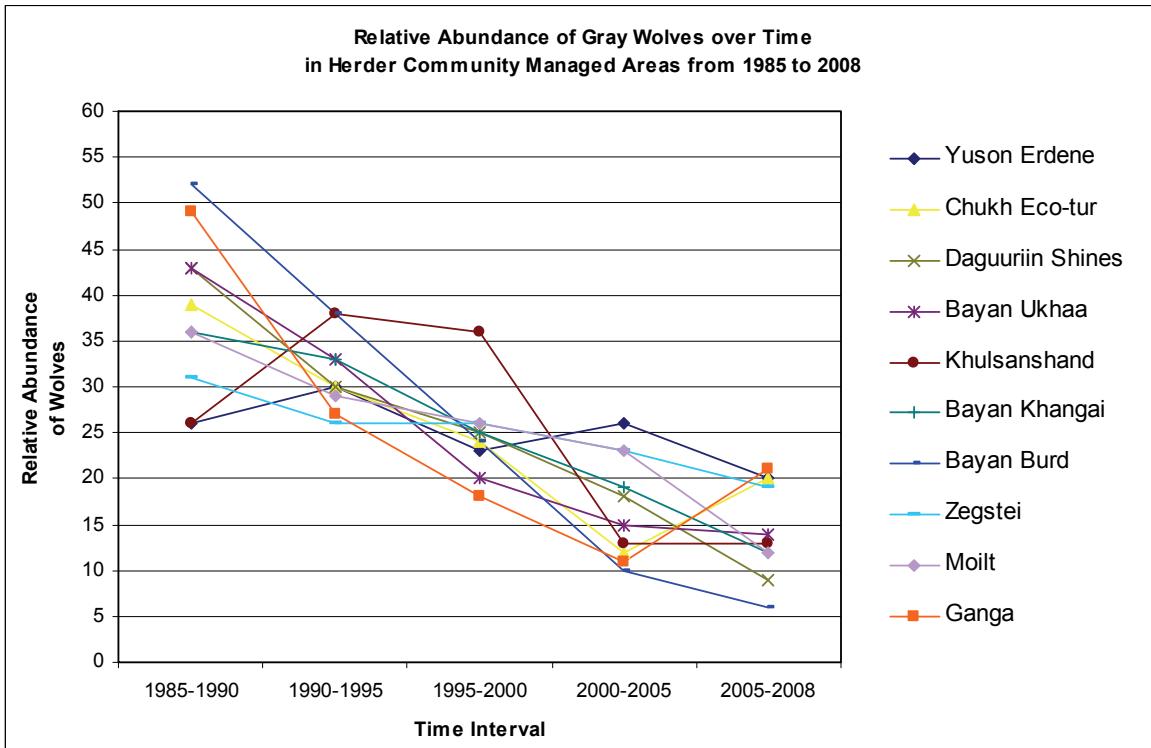


Figure 4c. Relative abundance of gray wolves in 10 herder community areas as depicted by bean counts allocated to each of five 5-year time intervals during participatory exercises with community members.

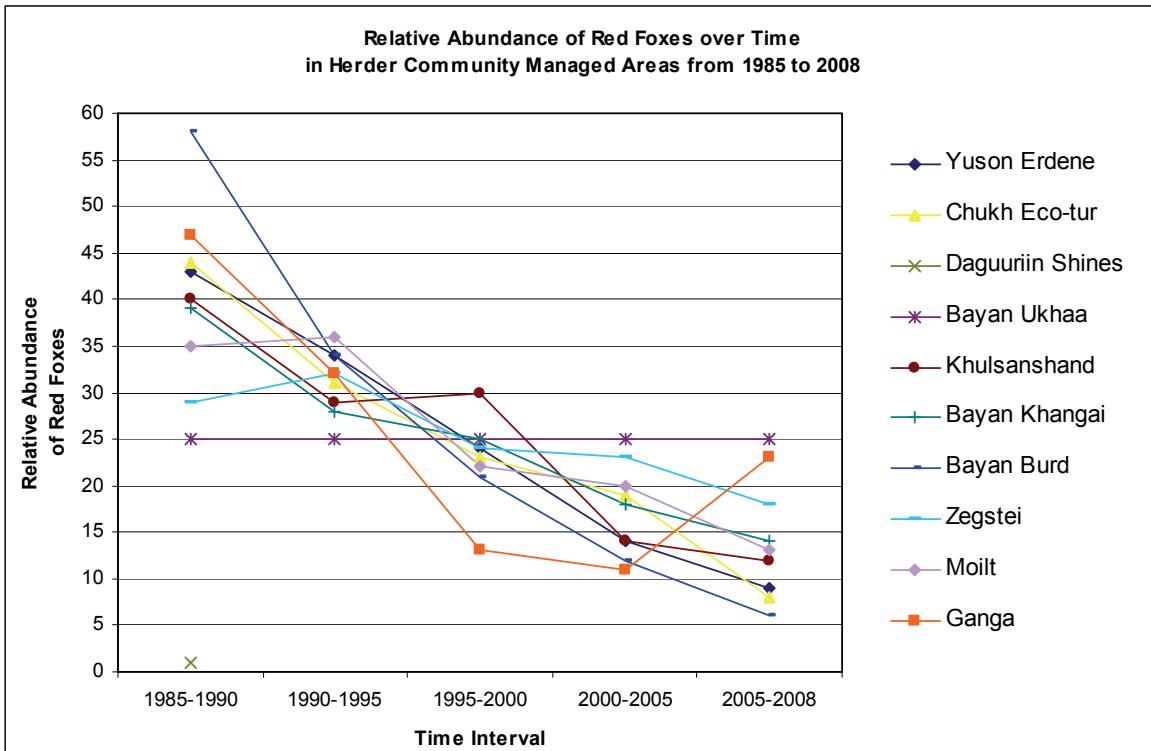


Figure 4d. Relative abundance of red foxes in 9 herder community areas as depicted by bean counts allocated to each of five 5-year time intervals during participatory exercises with community members.

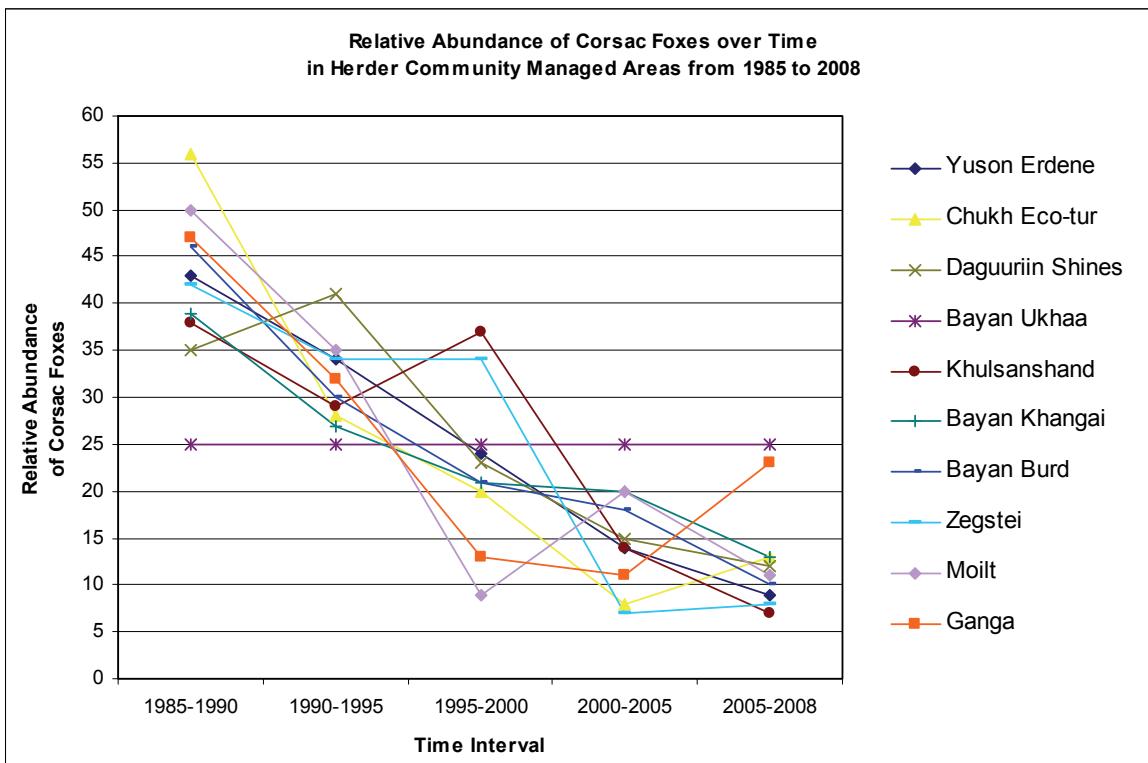


Figure 4e. Relative abundance of Corsac foxes in 10 herder community areas as depicted by bean counts allocated to each of five 5-year time intervals during participatory exercises with community members.

Relative Wildlife Use Over Time

During this exercise, we collected more detailed information about the importance of certain wildlife species to herder communities. When asked which species they use in their households, herder communities listed 12 different wildlife species. These species are hunted for use as a supplementary food source or traditional medicine, or for the sale of meat and hides in local markets to supplement income (see Table 2). All 11 communities indicated that they harvest Mongolian gazelle, gray wolves and Corsac foxes; and 10 communities also trap or hunt Siberian marmots and red foxes. Other wildlife species hunted in community-managed areas include Roe deer (utilized in 5 of the 11 community-managed areas), red deer (4/11), Eurasian badger (2/11), Tolai hare (1/11), Daurian hedgehog (1/11), Daurian partridge (1/11) and Steppe polecat (1/11).

In general, average wildlife use by members in their community-managed areas was very low (< 0.2 on a scale of 0 to 4) when averaged over a 12-month period (Figure 5). According to participants, people from the *soum* center and other outsiders are responsible for more than half (66%) of the wildlife taken within community-managed areas during a given year. Throughout the year, the species which are perceived to be hunted the most include Mongolian gazelle ($x = 1.192$), gray wolves ($x = 0.793$), red foxes ($x = 0.699$), Corsac foxes ($x = 0.680$) and Siberian marmots ($x = 0.599$).

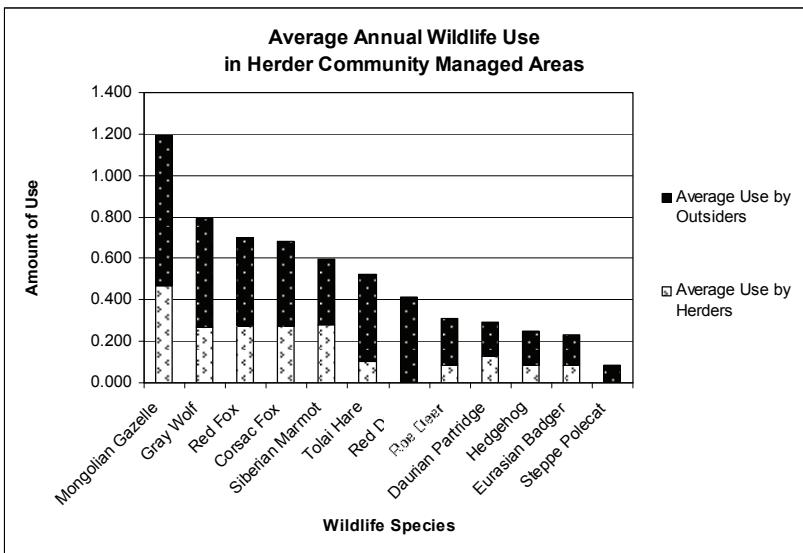


Figure 5. Wildlife use in herder community areas averaged over 12 months for each of 12 species. Participants rated wildlife use by both herder community members and by *soum* residents or other outsiders according to the following scale; 0 = no use, 1 = little use, 2 = some use, 3 = much use, 4 = very much use.

Using bean counts, participants also determined the relative use of the 5 most commonly harvested wildlife species in community areas since 1985. This information was collected for all human use, both by community members and outsiders. Species use patterns over past years were specific to community areas, so averages for these data do not correctly summarize overall trends. One evident exception is Siberian marmots: there is a general consensus among all participating communities that marmot hunting and trapping increased between 1985 and 2000 by an average of 133%; however, as the graph shows, the data revealed considerable variability of marmot use across community managed areas during this time period (Figure 6) and, in more recent years, marmot use has declined.

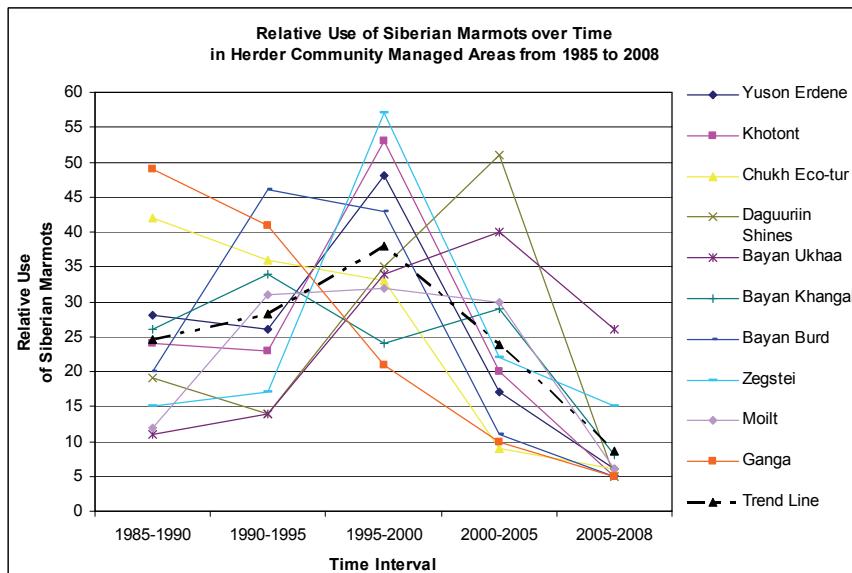


Figure 6. Relative use of Siberian marmots in 10 community-managed areas from 1985 to 2008. Data were collected using bean counts allocated to each of five 5-year time intervals during participatory exercises with community members, and then averaged across communities to produce a trend line.

When comparing wildlife use data across communities, some patterns emerge. For example, while hunting of gray wolves decreased considerably (69%) in four community areas during the 1995-2008 time-period, six other communities indicated that gray wolf hunting had actually increased in their areas more than two-fold (235%) during the same time-period (Figure 7). Five of the community areas experienced an increase of over 286% in Corsac and red fox hunting over the entire 23 year time-period (Figure 8), although it is also evident that protection efforts have impacted use of fox populations in Ganga HC over the past eight years.

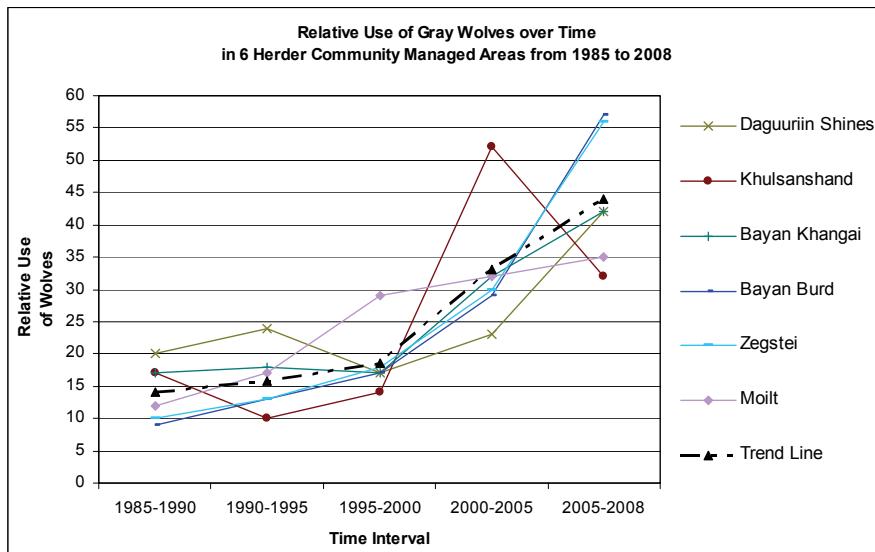


Figure 7. Relative use of gray wolves in 6 community-managed areas from 1985 to 2008. Data were collected using bean counts allocated to each of five 5-year time intervals during participatory exercises with community members, and then averaged across communities to produce a trend line.

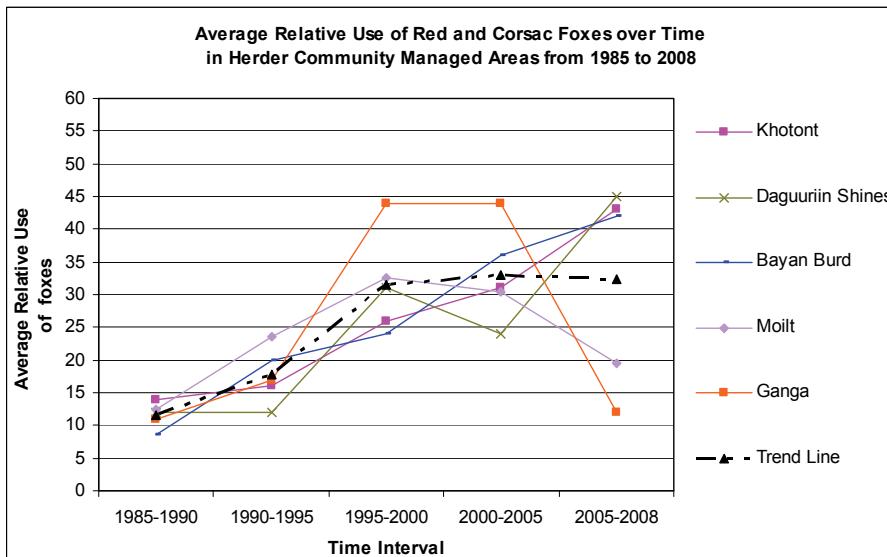
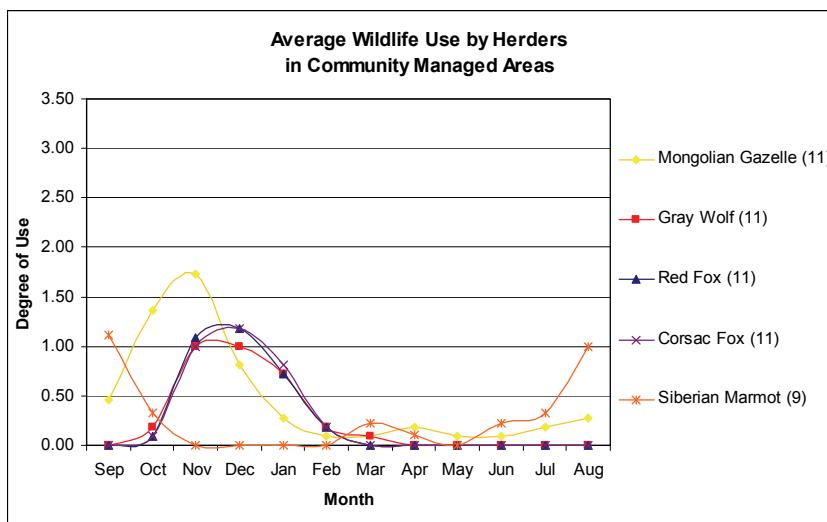


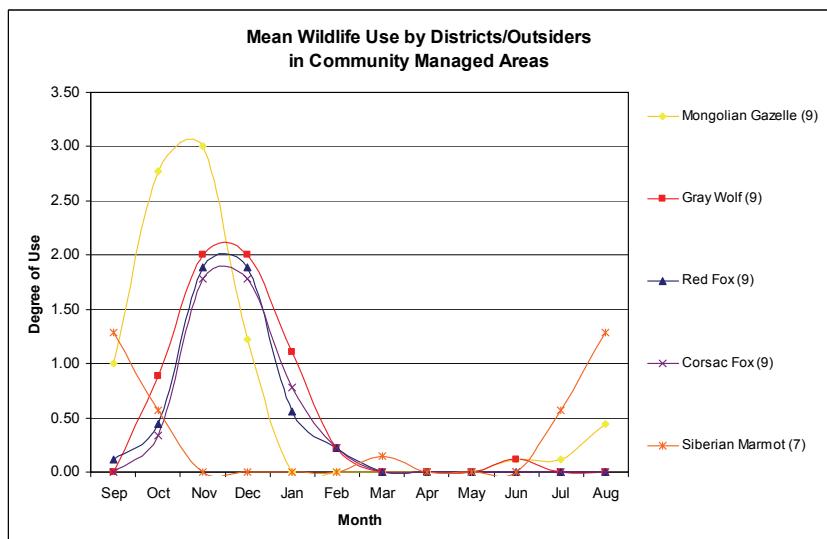
Figure 8. Relative use of foxes, averaged for both species, in 6 community-managed areas from 1985 to 2008. Data were collected using bean counts allocated to each of five 5-year time intervals during participatory exercises with community members, and then averaged across communities to produce a trend line.

According to the wildlife use calendar exercise, wildlife use in community-managed areas varied depending on the month or season, with participants indicating that most wildlife use occurs during the fall and winter months (from September through January, see Figures 9a and b). The data suggest that Mongolian gazelle are the most-used species, with harvests peaking in November by herder community members ($x = 1.73$) and outsiders ($x = 3.00$). Siberian marmots are the chief wildlife species harvested in August and September, with slightly more use by outsiders than herders ($x = 1.29$ and 1.06 , respectively). Gray wolves, red foxes and Corsac foxes are also harvested in community-managed areas, with the majority of use occurring November through January ($x = 1.31$, 1.22 , 1.22 , respectively for each species). Community participants thought that outsiders (including people from the *soum* centers) harvest twice as much wildlife as the herder families who reside within community-managed areas do ($x = 0.34$ and 0.17 , respectively).

a.



b.



Figures 9a and b. Wildlife use by a) community members/locals and b) *soum* residents and/or outsiders in community-managed areas averaged by month, beginning with September (start of hunting season), for 5 different wildlife species. Degree of use was indicated as 0 = no use, 1 = little use, 2 = some use, 3 = much use or 4 = very much use, then averaged for each month. The number of use ratings averaged was variable depending on number of communities who participated in the exercise (see 'n' in brackets next to the species name in the key).

Marmot Questionnaire Responses

The questionnaire about the status of marmot populations in community-managed areas was completed by 39 participants. Since not all of the 39 respondents provided a response to all questions, the information below is provided as percentages of those responding to that question. Participants thought that a median number of 15 burrows were located in their areas, but most could not indicate whether these burrows were active or inactive. The number of burrows that participants reported for community areas was highly variable, as expected, since some community areas contain marmot habitat whereas others contain no habitat or have a very restricted area with appropriate habitat.

All of the participants who completed this questionnaire perceived declining marmot numbers in their areas, and recognized the importance of this wildlife species to their livelihoods. Respondents attributed the decline in numbers mainly to the fur trade; 30 respondents believed that increased fur and meat prices drove this decline, while other factors listed included drought (4), household consumption (2), poaching and lack of law enforcement (2), poverty (2) and fire (1). The majority of respondents thought that all people, including themselves, were responsible for this situation (12/30; 40%) or that the responsibility lay with decision makers and law enforcers (37%), whereas only 23% of respondents thought that the responsibility lay with local people in general. Eight respondents thought that park rangers were responsible for managing marmot populations in community areas in the past, and 26 believed that communities were presently responsible for managing the marmot populations in their areas themselves. Nearly all respondents indicated that they do not hunt marmots in their area (29); but also noted that no one really enforces hunting regulations in their area (34).

Community-Managed Areas – Natural Resource Use, Habitat Characterization and Mapping

All ten communities said that they have “some” pasture or hay use (average annual use = 2.02) and little to no wild onion (*Allium* sp.) use (average annual use = 0.35) in their areas. Water was recognized as a resource which used “some” to “much” in nine of the communities (average annual use = 2.43; see Figure 10); herder families regularly collect and haul water back to their camps for use in cooking and making tea – the primary beverage consumed in herder households. They also use water at wells and in rivers to water their livestock. Participants indicated that overall natural resource use peaked during the summer months (mean use in August = 1.73); soil/sand use was highest in June (“some” use = 2.00), water use was highest in July (used “much” to “very much” = 3.50), and fuel wood (e.g. willow) and wild onion use peaked in July (mean use = 1.50) and August (mean use = 1.39), respectively. Participants also indicated that medicinal and perfume plants were harvested at low levels ($x = 1.00$), and only in August and September.

The use of pastures for harvesting hay was heaviest in September (mean use = 3.43), according to participants. Members from the Chukh Eco-tur community said that dung is one of their most used resources, with “very much” use (4) in October, November and December. Two communities indicated that they harvest “much” salt (2.63) from November through February.

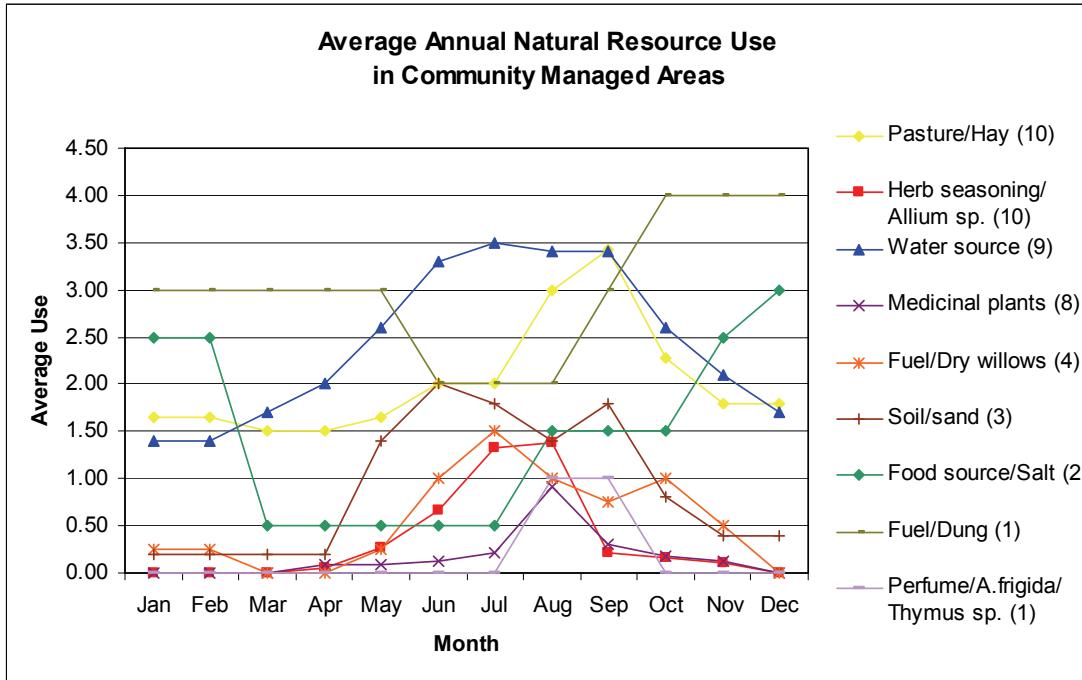


Figure 10. Natural resource use by members in community-managed areas averaged by month for 9 different natural resources types. Degree of use was indicated as 0 = no use, 1 = little use, 2 = some use, 3 = much use or 4 = very much use. The number of use ratings averaged was variable depending on community response (the 'n' in brackets next to the species name in the key refers to the number of communities that reported use of that resource).

Participants produced useful sketches of the habitat types, plants and wildlife that occupy their community-managed areas (see Figure 11). These maps will later be used to create more detailed representations of natural resources in community-managed areas, utilizing GIS software.

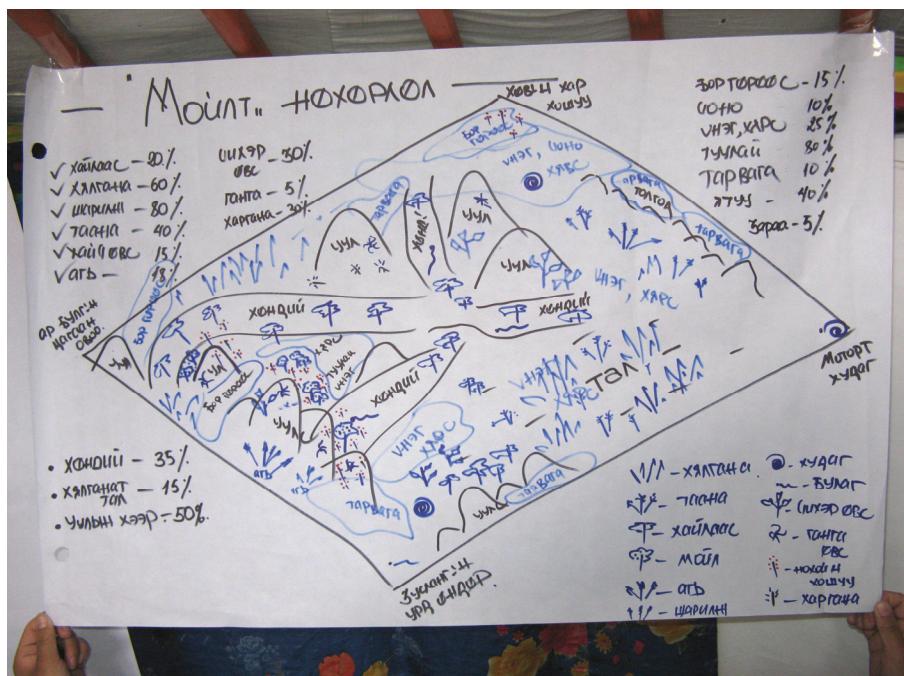


Figure 11. A map depicting the percentage of Moilt HC's community-managed area that is occupied by certain habitats, plants and wildlife species in Sukhbaatar aimag.

Participants indicated that rocky mountain steppe (43.6%) is the most prevalent habitat type, followed by flat steppe (21.8%) and spring-fed willow riparian (11.3%) habitats (see Figure 12). Herder community members indicated that the landscape in their areas is dominated mostly by steppe (39%), mountains (29%), and some hills (18%; Figure 13). The dominant plant species in community-managed areas include *Stipa* sp. (66%), *Artemisia frigida* (22%) and other *Artemisia* sp. (42%; see Table 3). Of the regions where herder communities have been established, Tolai hare populations are noted to occupy the largest percentage (41%), followed by Mongolian gazelle (39%), and gray wolf and Corsac foxes (31% each; see Table 3).

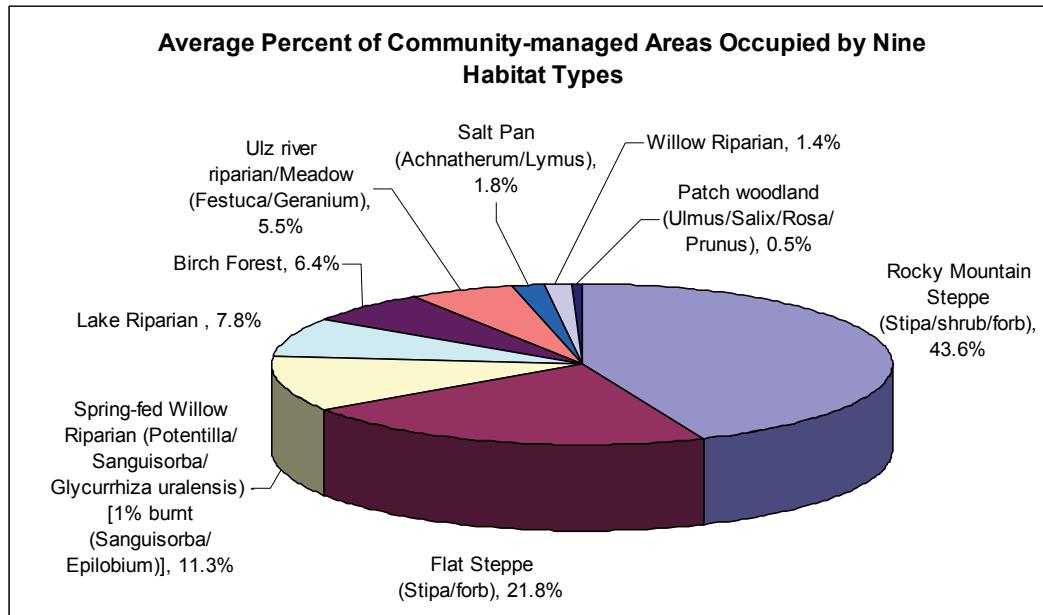


Figure 12. Average percent of the total area occupied by certain habitat types in herder community-managed areas in Dornod, Sukhbaatar and Khentii aimgas. Mean percentages were standardized to a total of 11 community areas.

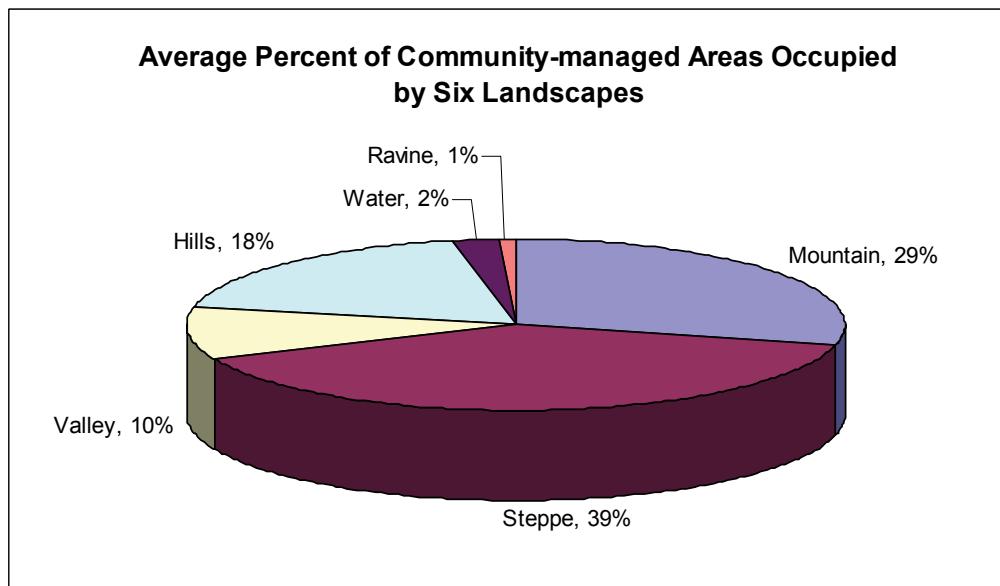


Figure 13. Average percent of the total area occupied by certain landscapes in herder community-managed areas in Dornod, Sukhbaatar and Khentii aimgas. Mean percentages were standardized to a total 6 community areas.

Table 3. Average percent of the total land area occupied by certain plant and wildlife species in herder community-managed areas in Dornod, Sukhbaatar and Khentii aimags. Mean percentages were standardized to an n=5 community responses for plants and n=9 community responses for wildlife. (Because different plant and animal species can overlap and occupy the same area, totals in the table can exceed 100%).

Plants (n=5)	% of Total Area	Wildlife (n=9)	% of Total Area
Stipa sp.	66%	Tolai Hare	41%
Artemesia sp.	24%	Mongolian Gazelle	39%
Artemesia frigida	22%	Gray Wolf	31%
Allium sp.	14%	Corsac Fox	31%
Caragana sp.	13%	Red Fox	21%
Weeds	8%	Daurian Partridge	13%
Pasture plants	8%	Eurasian Badger	12%
Sage shrubs	6%	Steppe Polecat	11%
Achnatherum splendens	5%	Daurian ground squirrel	11%
Willow	5%	Manul cat	9%
Elm sp.	4%	Siberian Marmot	4%
Iris sp.	3%	Roe Deer	1%
Birch/Aspen	2%	Hedgehog	1%
Ephedra sp.	2%		

Boundary coordinates for 9 of the herder community areas were recorded during field visits. These coordinates were used to update maps of each community-managed area, resulting in maps for a total of 11 communities since border point coordinates had been collected for some community areas during a previous field visit (see Figure 14 for one example map). In addition, each community-managed area's total size was calculated; Eastern Steppe community-managed areas cover a total of 199,537 hectares – approximately 2000 km² (Table 4).

Table 4. Area (ha) of the 11 herder community-managed areas in the Eastern Steppe. There were 7 areas measured in Dornod aimag, 3 in Sukhbaatar aimag and 1 in Khentii aimag.

Community Name	Area Size (hectares)
Yuson Erdene	13,350
Khotont	29,556
Chukh Eco-tur	10,339
Daguuriin Shines	44,121
Bayan Ukhaa	27,621
Khulsanshand	18,975
Bayan Khangai	8,509
Bayan Burd	17,070
Zegstei (Areas 1 + 2)	9,314
Moilt	8,966
Ganga	11,716
TOTAL	199,537

Daguuriin Shines Herder Group

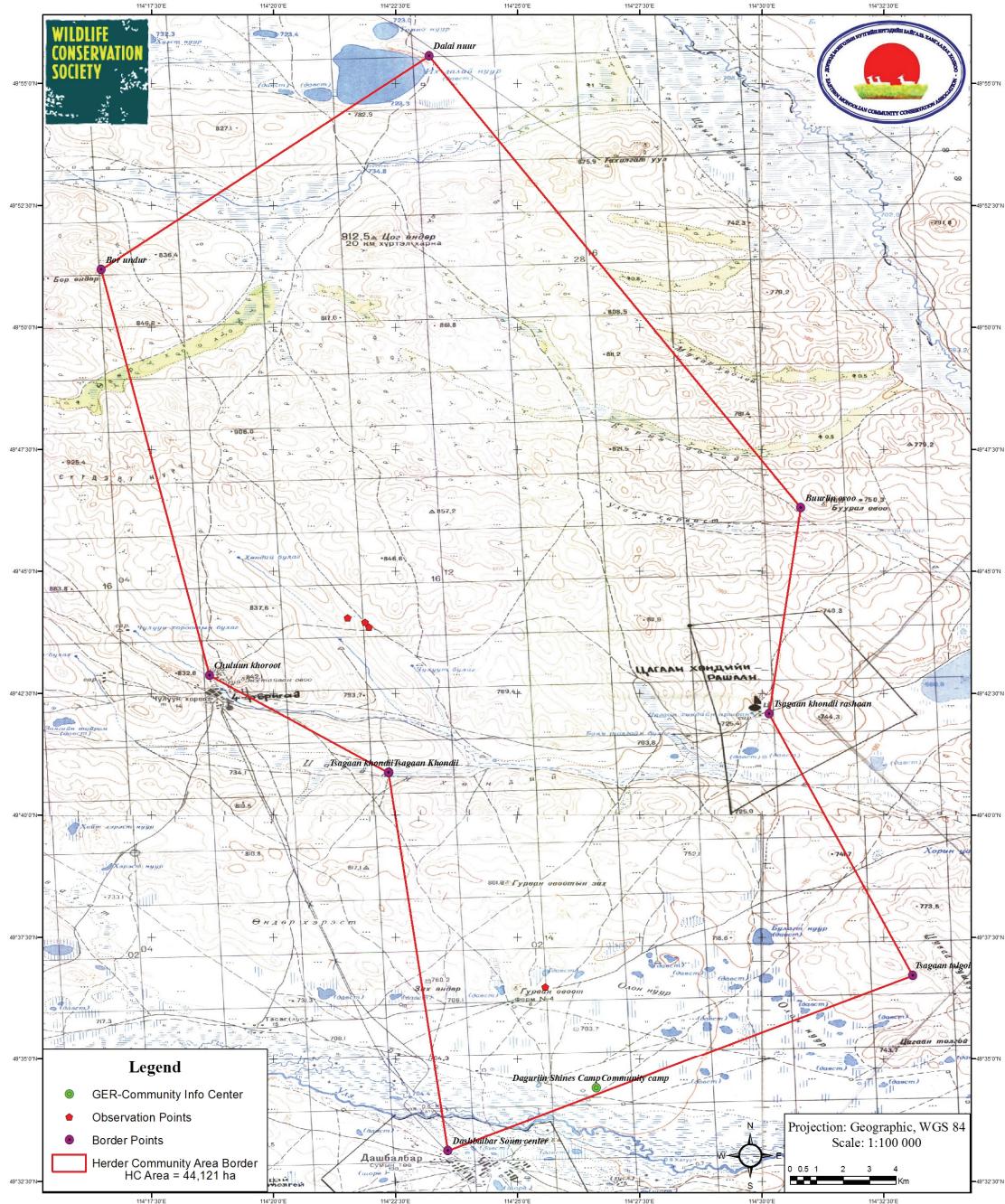


Figure 14. A map of Daguuriin Shines HC's area in Dornod aimag, produced using border point coordinates collected during a field trip to visit herder communities in the Eastern Steppe.

Threats to Herder Communities

Members from 5 communities listed threats to their livelihoods and to the natural resources in their management areas (Table 5). Most communities who participated in the threats identification exercise thought that pasture degradation and grazing pressure were significant threats to their livelihoods and community area (4/5, 80%). Fire (3/5, 60%), water pollution (2/5, 20%) and decreasing wildlife populations (20%) were also identified as threats. Participants also believed that activities such as non-member families moving into community areas, mining activity, and poverty negatively impact their livelihoods.

Table 5. Threats to herder communities that workshop participants identified for 5 different community-managed areas in Dornod, Khentii and Sukhbaatar aimags.

Threats to Herder Communities	Number of communities (out of 5 responding) who listed this threat
Pasture degradation / grazing pressure	4
Fire - burning in from outside / neighboring countries	3
Water / Lake pollution (by horses and livestock)	2
Decreasing marmot / gazelle populations	2
Non-member herder families living in community areas	2
Over-hunting (Siberian marmots and Mongolian gazelle)	1
Illegal hunting	1
Lakes drying up in the area	1
Decrease in Lake water levels	1
Large algae blooms in lakes	1
Global climate change and fire badly influence pasture, willows and bushes, wildlife habitat, and have fragmented the human universe	1
Drought	1
Mining activity	1
Poverty	1
Unemployment	1
Poor social services	1
Rising market prices	1
Lack of education of local people	1
Local people do not understand the community partnership legislation	1
Lack of community partnership law implementation	1
Fees for pasture use go to the <i>aimag</i> budget instead of the <i>soum</i> budget	1
Lack of herder compliance to pasture management plans	1

Discussion

Workshop Logistics and Procedures – Challenges and Lessons Learned

Interest in the workshops varied greatly between communities. Some community members were very interested in activities during the workshops and virtually facilitated the activities and discussions themselves, while other community members were very quiet and seemingly uninterested in the materials and often left during activities. Our role was that of facilitators and not necessarily as educators because we realized that the herders have a great deal of knowledge about the wildlife and natural resources in their areas.

Participatory exercises were the best method for collecting accurate information because all participants actively discussed answers and numbers before giving a final response. Members often engaged in lively discussion before coming to a consensus on a certain topic. This required all participants to think critically about what they thought was the correct information regarding a certain topic. In general, male participants were more interested in the activities surrounding wildlife use (hunting) and female participants were most interested in offering information about their community's use of non-wildlife natural resources. We attempted to record all of the information that they offered, as well as their ideas and concerns. Most communities readily shared information about their wildlife and natural resource use, but a few groups were wary about sharing this information. We assured them that this information would be used primarily as baseline data for their community-managed areas and for their own use in wildlife and natural resource management.

Questionnaires – Community Demographics and Wildlife Status

Questionnaires offered a more individualized, private means for participants to express their ideas and concerns without voicing them in a group setting. This method offered an interesting contrast to the participatory methods of data collection where all participants from one community worked together to provide information by reaching consensus.

Most herder communities are comprised of relatively few families (11), with a small number of total members (26). This can be both an advantage and a disadvantage. While small groups are more likely to reach consensus on certain issues or management actions for their areas, having fewer members also means that there is more work for each member, and smaller groups will tend to have less influence when dealing with local governments. Often not all of the herder families present in a community-managed area are members of the local *nokhorlol* (the officially registered and practicing community partnership), which can lead to conflicts over natural resource use rights. It would be very advantageous to encourage all families in a community-managed area to join the local *nokhorlol*. *Nokhorlol* participation can be encouraged through a combination of education about the advantages of becoming a *nokhorlol* member and social events where members and non-members have a chance to exchange ideas.

Exchange between established *nokhorlols* would also be advantageous. On the member, leader and volunteer ranger questionnaires, respondents mentioned that they would like to visit other *nokhorlols* to learn about their successful activities and general experiences. Such exchange would greatly benefit the Eastern Steppe herder

communities, and is a logical next step in engaging these communities in wildlife and natural resource conservation.

The Status of Wildlife in Community Areas – Questionnaires versus Participatory Exercises

A direct comparison of the questionnaire responses to the data collected during group exercises is impossibly skewed, since members from one community (Khotont) did not complete the “relative abundance over time” exercise, but completed the majority of the questionnaires (6/16) handed in.

In general, however, questionnaire responses supported the group data collected about which wildlife species are most important to herder communities. For example, both questionnaire responses and group exercises indicated that gazelle are the most important species to herder livelihoods, while marmots, foxes and wolves were also frequently listed as important species by community members. In addition, both questionnaire responses and group exercise results indicate that pasture and water are important natural resources used by herder communities. Overall, questionnaire respondents indicated that wildlife, water and pasture are the most-used natural resources in their areas. Information about the importance of wildlife was collected separately during group natural resource use exercises, so a comparison such as that seen in questionnaire responses between wildlife, water and pasture use is not possible. However, all communities listed pasture as an important resource, and 9/10 listed water as an important resource during the group exercises, so it is clear, and logical in general, that these resources are most important to herder livelihoods; although the responses also clearly demonstrate how highly herder communities value wildlife.

A more systematic economic valuation of important wildlife species, pasture, water and the other natural resources that herder communities rely on for their livelihoods would be a useful complement to this work. Such a study would help direct management efforts and gain the attention of local governments and local and national environmental protection agencies.

Participatory Wildlife and Natural Resource Assessment

Useful Comparisons – Ranking versus Bean Counts

When ranking the abundance of various wildlife species in relation to each other over time (and when determining the number of species to rank), variations between communities were clear. Figure 2 is an attempt at averaging ranks for each species from all 10 herder communities. Ranking was very specific to each community, making it difficult to summarize the results; therefore, it is best to look at ranks for each individual community.

A useful comparison of the perceived abundance of wildlife populations over time is between the bean counts that communities allocated for each species for each of 5 time periods. Since these data were collected for each species, and not in relation to the abundance of other species, we can calculate the mean bean count for each species given the counts for all participating communities and compare their relative abundance among the 5 time intervals.

The Decline of Wildlife Populations Important to Herder Communities

Mongolian gazelle, Siberian marmots, gray wolves, and red and Corsac foxes were listed as important wildlife species by most communities because of their use in trade (all species except gazelle), as a source of food (gazelle and marmots) and in traditional medicine (gray wolves and marmots). These wildlife populations are among those which community members thought had declined the most from 1985 to 2008 (average = 68%). Participants indicated that marmots had declined by 78% during this time period, Corsac fox populations by 69%, Mongolian gazelle and red fox populations by 64% and gray wolf populations by 62%.

Biologists and natural resource managers recognize that many wildlife populations have greatly declined over the past 15 years in Mongolia (Lhagvasuren and Milner-Gulland 1997, Adiya 2000, Batbold 2002, Clark *et al.* 2006), and studies conducted by international experts have further documented this decline (e.g., Reading *et al.* 1998, Wingard and Zahler 2006). In particular, Townsend and Zahler (2006), using density data collected on active burrow clusters, documented a possible decline of over 88% in marmot numbers in Dornod and Sukhbaatar *aimags* over the past 15 years (Townsend 2006). Data collected during our workshops with herder communities support these findings, with participants indicating an average decline of 78% in marmot abundance in their areas between 1985 and 2008. Results from the marmot questionnaire further support a decline in marmot numbers and even indicate total extirpation in some areas. All respondents thought that this species was important to their livelihoods, and readily divulged that they use marmots as a supplemental meat source. However, during the threats listing exercise two different communities indicated that overhunting and illegal hunting are threats to herder community livelihoods, so at least some herders recognize overuse as a cause of wildlife declines in their areas.

Wildlife Use in Community-Managed Areas

All participating herder communities indicated that they hunt Mongolian gazelle, gray wolves and Corsac foxes in their areas, with most communities also harvesting Siberian marmots and red foxes in their areas. Although, these wildlife species are among those hunted most throughout the year in community-managed areas, many herders believe that outsiders are harvesting much of the wildlife in their areas. As reported in the previous section, communities value these populations for the income that they generate through wildlife trade, as well as supplemental meat sources and for traditional medicine. This use is consistent with studies that document a trade in gazelle and marmot carcasses for meat and gray wolves, marmots and fox species for the fur trade (Wingard and Zahler 2006).

The perception that fewer Siberian marmots were harvested from 1985 to 2008 could be a result of different phenomena. First, it is clear that many populations of game species have declined significantly in recent years, especially Siberian marmots (and red deer) (Wingard and Zahler 2006, Townsend and Zahler 2007), leaving fewer individuals to be harvested. Other wildlife populations may follow this trend if hunting pressure continues at current levels. Second, declining harvests of some species most certainly may be the result of hunting bans, which have been in place for Siberian marmots since 2005 (and for gray wolves since 2007).

According to herder community members, even given the decreasing abundance of many species, hunting levels have remained, on average, relatively steady or have

even increased for certain species over the past 23 years. Wingard and Reading (2006) found that harvest levels are similar or greater than those in Mongolia in the 1970s. Some communities indicated a two-fold increase in wolf and red and Corsac fox harvests in their areas over the past two decades. For these species, the decrease in relative abundance corresponded with this increased use (see Figures 2, 6 and 7). The increase in hunting is disturbing given numerous indicators that wildlife populations are experiencing a drastic decline in Mongolia (Wingard and Zahler 2006, Townsend and Zahler 2007), and the current bans on hunting of certain species.

Temporal data from the wildlife use exercise show that some wildlife species are being harvested out of season. For example, participants indicated that gazelle hunting occurs year-round (at some level), even though the legal hunting season for this species is only from August 1st through December 1st (The Asia Foundation, Law on Hunting 2006). Although harvest levels peak in October or November, and it is evident that gazelle are hunted mostly during the legal season, community members (i.e. herders) continue to hunt them at a low level throughout the year, most likely as a supplemental source of meat. Participants indicated that while outsiders also hunt gazelle outside of the legal season, they tend to do so only in July and January. The low grade, persistent use by local herders is most likely having greater negative effects on the gazelle population than they themselves perceive, because gazelle are being harvested during times of the year when they are more vulnerable, such as after the rutting season, in the early spring and during calving season.

Wolf hunters have never been required to purchase permits, nor been subject to certain seasons in which to harvest wolves. In fact, during socialist times there was a bounty on wolves, and hunters were paid for wolf pelts. The unbridled use of the past has led to a precipitous decline in wolf numbers. In response, the MNET instituted a ban on wolf hunting in September 2007, targeting the Eastern Steppe region of Dornod, Sukhbaatar and Khentii *aimags*. For red and Corsac foxes, the legal season for trapping and hunting is from October 21st until February 16th. Wildlife use data collected during the workshops show that both herders and outsiders are predominantly harvesting fox species during the legal season, with minimal out-of-season use.

The legal season for Siberian marmots, when there is not a total ban on hunting, is from August 10th to October 16th; however, marmot are being harvested out-of-season by both local herders and outsiders, especially during June and July. This out-of-season use is most likely fueled by the Naadam sports festival, a popular holiday that occurs in early July each year when people often enjoy marmot barbecue which is considered a delicacy. Because of the ban on marmot hunting, which has been in effect since 2005, it was difficult to obtain accurate information about current marmot harvests since community members did not want to implicate themselves. However, a common perception by herders is that it is the fur trade that has led to the observed marmot decline; leading to a general belief that trapping a few marmots for household use is not detrimental to the marmot population.

This ‘it’s not me’ attitude toward the marmot population decline (and the declines of other wildlife species), is a continuing challenge to wildlife conservation efforts in Mongolia. If management efforts are to be effective in recuperating wildlife populations, all protection laws and regulations must be followed by *all* users, including herder community members. Even though household use may have less of an overall impact than that of commercial hunting for wildlife trade, this use will continue to impact

populations that have been made fragile by past overuse, and recovery will occur only with strict protection of the remaining vulnerable populations.

Causes for Declines in Wildlife Abundance

The overharvesting of wildlife has been well documented in the Eastern Steppe, and it is evident that herders are contributing to this overuse. A hunting study conducted in 2001 and 2002 revealed that over half of herding households hunt wildlife, with most trapping marmots as a supplemental meat source (Scharf and Enkhbold 2002). Out of these hunters, only about 15.7% purchase hunting licenses, and most herder-hunters interviewed admitted that they often hunt during the off-season. In addition, all hunters interviewed admitted that they harvest more animals than their permit allows; up to two or three times more than the permitted amount. Even though herder communities believe the impact of their use to be minimal, it is clear that illegal hunting of wildlife by these communities is prevalent and unsustainable.

Forty percent of herder community members believe that all people, including themselves, are responsible for the drastic decline in marmot numbers, whereas another 37% believe that decision makers and law enforcers are to blame (see the Results section, “Marmot Questionnaire Responses”). Although herders are most certainly contributing to the overuse of wildlife, the impact from outsiders and urban hunters may be even greater. For example, it is the perception of workshop participants that, on average, 66% of the annual wildlife use in their areas was by people from the *soum* center or other outsiders, including hunters from *aimag* centers and the capital city. These findings are supported by those of Scharf and Enkhbold (2002) who found that border guards and hunters from Ulaanbaatar take 90% more gazelle per hunting incident than *soum* residents. This is important to understand, since the greatest impact on a herder community’s wildlife population may indeed be from outsiders who hunt in their areas, and not from member use. Nonetheless, it seems likely that those who practice low-level, illegal use in secret, and are therefore at least partially responsible for local overuse of wildlife, will continue finger pointing unless they are somehow made accountable for the impacts of their own use.

The cause of the decline in wildlife populations may be attributed to overhunting or illegal hunting in general, but the factors that drive this overuse are species-specific. It is generally recognized that the lucrative Chinese trade in marmot skins has contributed the most to the rapid decline of this species in past years (Scharf and Enkhbold 2002, Wingard and Zahler 2006). In contrast, the decrease in Mongolian gazelle seems to be a result of several factors, including overhunting, subsistence hunting, exploitation by Mongolian and Chinese border guards, natural disasters and disease (Reading *et al.* 1998). The decline in gray wolf abundance can most likely be attributed to a long history of bounty hunting and general persecution because of livestock depredation and, more recently, to the lucrative international fur and traditional medicine trades of wolf parts (Parkinson *et al.* 2008). It is also apparent that populations of the major prey species of gray wolves (namely Siberian marmots, Mongolian gazelle and roe deer) have declined drastically over the past 15 years (Wingard and Zahler 2006). Declines in Corsac and red foxes are also most likely due to their use in the fur trade (Reading *et al.* 1998). Current bans on trophy and subsistence hunting of red deer (2000 – present), all marmot hunting and trapping (2005 – present), and wolf hunting (2007 – present) are an attempt to curb further declines of these valued wildlife populations.

It is difficult to collect accurate data about what is causing wildlife declines in community-managed areas without direct observation. Poor management (and resultant overhunting), illegal hunting, wildlife trade, livestock competition, habitat loss and climate change are all contributing to the loss of wildlife in the Eastern Steppe. At present, hunting quotas tend to be based on financial need or requests from *soum* governments rather than on wildlife monitoring data (Scharf and Enkbold 2002). Rangers and *soum* inspectors often do not have the capacity (e.g., training, equipment and fuel money) to conduct patrols or follow-up on reported wildlife use violations. A lack of sound pasture management is leading to over-stocking and overgrazing of grassland areas that are important to both livestock and wildlife. Water sources have dried up in many areas of the Eastern Steppe, further limiting the range of herder movements. All of these factors accentuate the need for immediate action to change the current trends in decreasing wildlife numbers.

Improving Wildlife Management and Protection

The decline in numbers of valued wildlife species in community-managed areas, and in the region as a whole, emphasizes the need for improved management, monitoring and protection of these species at the local and regional scales. In order to encourage continued sustainable use, local managers must be given the authority and resources to carry out necessary management activities, while communities and local residents must benefit directly from the protection efforts that they implement.

Management

Sound wildlife management must include monitoring which determines both what wildlife resources currently exist and the amount of off-take that is occurring through hunting and trapping in community-managed areas. Basic wildlife monitoring data, including a population census and/or abundance measurement, and measures of distribution, sex ratios, fecundity and mortality, should be collected regularly for wildlife populations, especially those which are actively harvested (i.e. game species). Only after determining the condition of current wildlife populations through monitoring will natural resource managers be able to implement sound management practices such as quotas based on population dynamics (e.g., sex ratio-based quotas designed to ensure the maximum productivity of populations).

Managers must also understand the basic ecology of wildlife populations and set hunting seasons to reflect times of year when those populations can best tolerate off-take. For example, wolf hunting is currently unregulated and wolves are hunted throughout the year. In order to maintain a healthy wolf population, a hunting season should be implemented. In addition, the number of animals harvested during each season should be limited through a permit system.

Protection

Consistent enforcement of hunting regulations continues to be a challenge in Mongolia. *Soum* inspectors and rangers are hard pressed to conduct patrols and follow up on reports of illegal wildlife use when they lack basic materials and skills for enforcement. At present, bans on harvesting Siberian marmots, gray wolves, red deer and Taimen (*Hucho taimen*) are in place; however, without strict enforcement and prosecution of all violators, this legislation will not benefit these valuable wildlife populations. Therefore,

wildlife protection officers need the proper training, equipment and resources to effectively carry out wildlife protection enforcement efforts.

In addition, the permit system and wildlife hunting seasons should be strictly enforced. At present, low-grade, illegal household use, especially of gazelle and marmots, is often overlooked; however, management efforts will only be successful when hunting quotas and seasons are strictly enforced. The WCS Mongolia program has partnered with RARE, a conservation NGO with a proven model for changing awareness, attitudes and behaviors toward conservation at the local level, to improve access to, and enforcement of, the hunting permit system in the Eastern Steppe. In 2002, a wildlife tagging system was implemented under the Minister of Environment's Order #159 in Mongolia (Banzragch 2006), but it has rarely been enforced. This type of regulation would help wildlife protection officers to better combat illegal hunting and trade; if, for example, all furbearer (e.g., wolf and fox) pelts were prohibited from sale unless properly tagged.

Under the Minister of Environment's order #114, community partnerships have management and ownership rights to the wildlife in their areas, especially to any improvements to the wildlife populations in their areas (Banzragch 2006). Data collected from Ganga HC shows that, over the past eight years, decreasing use of Siberian marmots, gray wolves and red and Corsac foxes has corresponded with an increase in the perceived relative abundance of these same species. Similarly, protection efforts in two other community-managed areas have resulted in increased numbers of Siberian marmots. The recovery of these wildlife populations demonstrates how local protection efforts can indeed benefit wildlife populations. The impact of outsider use in community-managed areas should be discussed with local governors and wildlife protectors so that measures can be taken to protect community-owned wildlife. If community wildlife management efforts can be shown to benefit members directly, members' sustainable use of their resources will be further incentivized.

Community-Managed Areas – Natural Resource Use, Habitat Characterization and Mapping

The natural resource use data gathered in these workshops indicate that pasture/hay and water are the most important natural resources to herder communities. Since use of these resources is heavier during certain times of the year, it is important to work with communities to ensure sustainable management of such natural resources over the long term.

The exercise provided valuable information about the general habitat types, landscapes, plant species and wildlife populations that occupy herder community-managed areas in the Eastern Steppe. This information is intended to be used as baseline data for economic valuation studies, and during future management activities. It is logical that herder community areas would be located mostly in *Stipa* grass steppe areas, since these herding families rely upon pasture for their livelihoods. Because these types of steppe grassland areas are ideal habitats for species such as Mongolian gazelle, gray wolf and Corsac fox, it is reassuring that these species were thought to occupy between 31% and 41% of community-managed land areas. Although this was the first attempt at documenting the types and distribution of natural resources in these areas, the quality of data gathered was high since local herders are very knowledgeable about the habitats and wildlife populations in their areas. The data indicate that, presently, wildlife and nomadic herders co-exist in many areas; sustainable use of both pasture and wildlife should be encouraged to ensure the overall health of the steppe ecosystem.

In addition, the maps of community-managed areas that were constructed using the coordinates obtained during these field visits will be important tools for natural resource management (including the implementation of activities such as wildlife monitoring and protection), community planning, and reporting to local governments.

Threats to Herder Community Livelihoods and Wildlife

Pasture degradation and grazing pressure were the most frequently mentioned threats to natural resources and community members' livelihoods in these community-managed areas. Sustainable use of pasture, and co-management for both livestock and wildlife populations, remains a challenge on the Eastern Steppe. In addition, threats such as fire, water pollution and decreasing wildlife populations are also impacting herder communities by directly affecting herder livelihoods. It is apparent that herder communities will need training and clear direction in order to effectively manage the pasture, fire, water and wildlife in their management areas.

If communities are to address the major threats in their areas, they must first develop a sound plan of action with clear goals, objectives, time-frames and member responsibilities. Under the Ministry of Environment's Order #114, communities are responsible for producing a "cooperative work contract, rules, action plan regarding nature protection and natural resource reserve management plan, approved by all members." Organizations interested in forwarding the objective of effective community-managed lands must recognize that concentrated time will need to be spent with each community, engaging all members, in order to develop meaningful action plans that are 'owned' by the communities.

Since the community partnership legislation alone does not give exclusive rights to pasture and water, forming an official *nokhorlo* and writing an action plan are not enough (see "Forming official partnerships and associated challenges" at the beginning of this study"). Communities also need to work closely with their local government to secure grazing rights to pasture, and to all of the other natural resources present in their management areas. Once communities implement sound monitoring and management practices, and so long as they have exclusive and *enforceable* rights to their resources, they will begin to experience the benefits of their work. With sustainable stocking rates of livestock, consistent pasture rotation and the sustainable use of wildlife and other resources, there will be more natural wealth from which all community members can benefit.

Conclusions

It would be beneficial to carry out additional workshops and field visits to community-managed areas once every year or two, similar to those conducted under this study, to build upon the material that was presented in this case study. An economic valuation of the wildlife and other natural resources present in community-managed areas would be another useful next step. Information from such an economic valuation could be used to further leverage government and agency support for improved wildlife and natural resource management and protection in the Eastern Steppe.

Wildlife management and protection efforts do not culminate in tangible benefits until years after such efforts are implemented, so there is a great need to offer short-term

benefits (i.e. incentives) to herder communities in exchange for protecting their wildlife in the interim. Such incentives, that may be offered to communities in exchange for pledges to protect and manage wildlife, could take the form of identifying activities which could supplement household income (e.g., tourism, craft production, vegetable gardens), and then providing training and the start-up capital necessary to successfully implement these activities. In addition, exchanges of members between communities (at the provincial, national and international scales) may offer further motivation and develop community capacity and dedication.

It is clear that engaging herder communities in wildlife and natural resource conservation efforts will take time, continued contact, and collaboration. Yet it is hoped that the achievement of effective wildlife management would be the reward for investing this time into supporting a successful community management program; a few herder communities in the Eastern Steppe have already experienced recognition for actively protecting wildlife in their management areas, and most of the communities involved in this study continue to dedicate themselves to the various wildlife management and protection efforts in their areas. Additional work needs to be done in several areas, however. Herder communities require training and clear direction regarding their management of pasture, fire, water and wildlife; therefore, communities should be assisted with the implementation of sound wildlife management practices (e.g., monitoring valued wildlife populations). Wildlife protection officers should continue to be supported with the training, equipment and resources necessary for effective wildlife protection. The authority of volunteer rangers should be strengthened; one recommendation is to ensure that all rangers have ID cards and/or uniforms for improved authority. Existing hunting laws and regulations in and around community areas must be strengthened. The approval process for proposed *nokhorols* (community partnerships) should be improved and clarified, with all herder families residing in and near community-managed areas encouraged to join the local *nokhorol*. Better collaboration between communities and local governments would encourage more effective community area management, as would the granting of exclusive rights to all natural resources in community-managed areas to *nokhorol* members (and the associated mitigation of outsider use of wildlife and natural resources in these areas). Finally, all members should be encouraged to participate in and contribute to the development of meaningful community action plans that meet needs of livestock, livelihoods and the steppe wildlife in their area.



Herd of Mongolian Gazelle with stacks of hay in the background

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Appendix I. WORKSHOP METHODS & PROCEDURES

Day 1

- ❖ Introduction of Participants
 - Ask each participant to say their name, their profession, and which community they belong to (if applicable).
- ❖ Introduction to cooperative work and Landscape Species (WCS & communities)
 - Brief ppt presentation about WCS Mongolia, the Living Landscapes program, and the Community Based Nature Conservation Project
 - Convey that we are here to help them manage and sustainably use their wildlife and natural resources if they would like our help:
 - Training about ecology, wildlife monitoring and management, impacts/violations reporting, writing action plans
 - Facilitate meeting among HCP's and w/other communities – horizontal exchange
 - WCS wants to conserve wildlife in the Eastern Steppe – landscape species
- ❖ PRE TRAINING EVALUATION
- ❖ Introduction to **PARTICIPATORY WILDLIFE AND NATURAL RESOURCE ASSESSMENT**
 - Brief presentation about the importance of knowing the current situation in community areas (status of NR's, wildlife and current use) and how to implement informed management to better the situation – for wildlife and residents
- ❖ Exercises
 - **Wildlife species list; and their relative abundance since 1985**
 1. Ask all participants to brainstorm about which wildlife species they have seen in their community area
 2. List these on big paper at the front of the room
 3. Spread wildlife cards (pictures and names) out on table
 4. Ask the group to choose the 5 or 6 species which are most important to their community and record their reasons why
 5. Ask the whole group to sort the wildlife species according to their relative abundance now (record the sort)
 6. Ask the whole group to sort the wildlife species according to their relative abundance in 1985-90, 1990-1995, 1995-2000, 2000-2005, 2005-2008 (record the sort)
 7. Ask the whole group to allocate beans for each wildlife card according to their abundance in the community area for each 5 year interval; 1985-90, 1990-1995, 1995-2000, 2000-2005, 2005-2008 (5 piles for each species).
 8. Record the number of beans for each wildlife/year.
 9. Output: current relative abundance of wildlife species and relative abundance over time for each species.
 - **Wildlife Use Calendar; On big paper, have a calendar already prepared**
 1. Ask participants to list the wildlife species that are hunted in their area.
 2. List species names on the calendar. Mark a number of x's for each month according to the degree of use of each species; little (x), some (xx), much (xxx), very much (xx). Divide into outsiders' use and community members' use by using different colored markers.
 3. Output: Annual use patterns for each wildlife species.

- **Wildlife Hunting History since 1985**

1. List all hunted wildlife species on big paper and place wildlife picture cards next to names
2. Ask the whole group to allocate beans for each wildlife card according to the relative use (degree of hunting) for each 5 year interval: 1985-90, 1990-1995, 1995-2000, 2000-2005, 2005-2008 (5 piles for each species).
3. Record the number of beans for each wildlife hunted/interval.
4. Output: Relative hunting pressure for each species over time.

❖ **Marmot Questionnaire – Lunch**

1. How many active marmot burrows are there in your community area?
2. Has the marmot population decreased in your community area over the past 10 years?
3. Do you care about this?
4. Why has this happened?
5. Who or what is responsible for a decrease in marmots if it has occurred?
6. Who manages marmots in your community area?
 - a. In the past
 - b. Now
7. Is there an agreement about hunting among community members for your area?
8. How much can each family hunt (i.e. how many marmots)?
9. How is this enforced / who enforces the agreement, if there is one?
10. Why do you / or other people hunt wildlife in your area?

❖ **Icebreaker – Fun Time**

❖ **Introduction to HABITAT CHARACTERIZATION AND MAPPING**

Introduction (5min): Draw each community (nohorlol)'s location and area's special traits as a visual on paper; all of the community members should participate and try to describe the place as accurately as possible/after take some pictures

Material Needs: Markers-different color, big papers

Scientific vocabulary (2min): Habitat, Dominant species, penology

Habitat: Each task is 5 minutes

1. Ask communities about their area and what to map on the big paper
 - a. Area boundaries name of the specific-3min
2. Ask about dominant plants
 - a. Steppe
 - b. Lea and river riparian
 - c. Woodland areas-burnt or not burnt
 - d. Perennial plants and pastureland
3. Water sources
 - a. Name
 - b. Which kind of plants are dominant
 - c. Salt peter
 - d. Condition of drier –period time
 - e. Water component
4. Steppe Fire: When, dry season, time period, where do they occur?
5. Natural mineral sources
 - a. salt
 - b. Coal
 - c. Natural oil
 - d. Gold
 - e. Uranium

6. Ask people about habitats (what percentage of total area they occupy)
 - a. Rocky High Mountain
 - b. Stipa and steppe
 - c. Shrub and steppe
 - d. Perennial plants and pastureland
 - e. Lea and river riperian areas
 - f. Willow and river riperian areas
 - g. Lake and wetland areas
 - h. Woodland areas-burnt or not burnt
 - i. Seeds and agriculture areas

Wildlife

7. Ask people about wildlife species, and write their answers on the paper
8. Habitat requirements/needs for wildlife
 - a. Habitat types
9. Wildlife phenology
 - a. Period time of the spring and fall or winter
 - b. Migration
 - c. Local
 - d. Birth area, period time
 - e. Area of mate /period time

Human habitat types

10. Human needs
 - a. Which one habitat type is very important for your life? When, period time
 - b. Why are you selecting this habitat? What are your needs?
 - c. About other habitat; did you use before? When, period time
- ❖ Introduction, procedure and data sheets for **NATURAL RESOURCE USE MONITORING**
- Now we have a picture of what habitats (steppe grassland, rocky mountain steppe, riparian areas, hilly forest, etc.) are present in your community-managed area, and the natural resources (grass/fodder, timber/wood, willow, water, salt, berries, medicinal plants, roots, precious minerals, wildlife) within those habitats.
 - How do you know if you are sustainably using these natural resources? How do you know if you are hunting too many marmots and whether the population is healthy?
 - **On big paper, have a calendar already prepared. Annual activity calendar for:**
 - harvests – hay, onions, berries
 - firewood cutting
 - hunting – key species (gazelle, marmot, wolf, roe & red deer, etc.)
 - Other types of use

1. Ask the group as a whole during which months of the year they do these activities in their community area.
 2. Mark x's in under the months each natural resource is used according to degree of use; little (x), some(xx), much (xxx), very much (xxxx).
 - o You can monitor what natural resources you use as a community and keep track of what is used, then decide what the limits are for sustainable use.
 - Monitor activities such as: firewood gathering, hunting, hay making, medicinal plant use, etc.
 - o We have developed a form to help all community members keep track of what natural resources they use, and how much.
- ❖ Tea Break
 - ❖ Field exercise using forms
 - ❖ Discussion: NATURAL RESOURCE USE MONITORING; when to collect data, who to report to?
 - ❖ **Work with volunteer rangers:** A brief Introduction to WILDLIFE MONITORING: Important areas for wildlife, Scan sampling, Horseback surveys

Day 2

- ❖ Tasks for the day; Community Roles & Legal Responsibilities
- ❖ Introduction to drafting WORK/ACTION PLANS
 - o Activity on big paper
- ❖ Tea Break
- ❖ Post training Evaluation

Appendix II. Questionnaires for Herder Community Members, Leaders and Volunteer Rangers

Member Questionnaire – July/August 2008

Aimag..... *Soum*.....

Bag.....

Herder Community name.....

1. How many members are there in your family?

Hence: 0-16 years old.....

 16-40 years old.....

 More than 40 years old

Hence: Man..... Female.....

2. Approximately how many livestock did your family have in 2007?

Horses..... Cattle..... Sheep..... Goats.....

3. How well do you understand how to use and fill out the Natural Resource Use Monitoring form?

4. In your opinion, what kind of natural resources are used by local herders?

1..... 4.....

2..... 5.....

3..... 6.....

5. How many times does your family move each year?

When from where how long to where

When from where how long to where

When from where how long to where

When from where how long to where

6. What do you think about your community's water problems?

7. How many wells have your community reconstructed/created?

8. How do you manage your rubbish/waste/issues?

9. In your opinion, which wildlife populations have been decreasing/increasing in your area?

Increasing wildlife:

1..... 2..... 3.....

4.....

Decreasing wildlife:

1..... 2..... 3.....

4.....

10. Of the above species, which ones support your livelihood?

11. As a community member, what information would you like to obtain from a community information center?

Additional comments/information:

Leader Questionnaire – July/August 2008

Aimag..... *Soum*.....

Bag.....

Herder Community Name

Leader Name

- 1.** When did your herder community first meet with your *soum* and *bag* governors and give them information about forming your community partnership.

Bag:

2006 Month 2007 Month 2008 Month

Soum:

2006 Month 2007 Month 2008 Month

- 2.** If approved, when did the *bag* and *soum* governors approve your community partnership proposal?

Bag:

2006 Month 2007 Month 2008 Month

Soum:

2006 Month 2007 Month 2008 Month

- 3.** Under the community partnership law, community partnerships are responsible for sustainable use and management of their areas. In the future, for how long will your community actively do this?

- 4.** How dedicated are you to being the community leader, and for how long?

- 5.** How many households and community members belong to your herder community?
Households Members

- 6.** How did you select your volunteer ranger? Did just the leader select them, or the all community members as a whole?

- 7.** Did you receive a topographic map of your community area?

- 8.** Did you receive a compass?

- 9.** What do you think about writing an action plan for your area, or is it too difficult/ too much work? How is it useful to your community work?

- 10.** What is difficult about being a community leader? What parts of your work are difficult?

- 11.** When/How often do you meet with all your community members?

Note:

What would you like to learn more as a community leader?

Volunteer Ranger Questionnaire – July/August 2008

Aimag..... *Soum*.....

Bag.....

Herder Community Name

Volunteer Ranger Name

1. Have you received your Volunteer Ranger (VR) pin and badge?...../year,
month, day/

When did you submit an application for a VR ID card to *soum* governor?

2006..... Month 2007..... Month 2008..... Month.....

When did you receive your VR ID card?

2006..... Month 2007..... Month 2008..... Month.....

- 2.** If you have received an ID card, you are an official VR, so, how long have you been working as a certified volunteer ranger?
- 3.** Can you use a map? How well can you use it?
- 4.** a. Can you use a compass? How well can you use it?
b. Can you use a map and compass together for navigation and to record locations from a map?
- 5.** Have you been working together with the *soum* inspector? How is it going?
- 6.** a. Have you been using the impacts reporting form? How is it going?
b. Have you been monitoring wildlife and recording information?
- 7.** Did you understand the material from the past trainings? If there was something that you didn't understand, what was it?
- 8.** What would you like to learn or study?
- 9.** Do you have a work plan for your VR work?
- 10.** How is your work plan connected to the community action plan?

Appendix III. Ministry of Environment's Order #114

Procedures for Creating, Protection, Utilization and Possession of Certain Natural Resources by Herder Communities

One. Provisions

1.1. The main purpose is to regulate relationship related to conservation, use and possession of certain natural resources by herder communities, create collective management approaches, through encouraging the local citizens' engagement in the activities to provide a proper use and restoration of natural resources /forest, flora, fauna and so on/.

1.5. The length of the cooperative management contract to be made with the herder community in charge of natural resource protection shall be five years and the length shall be extended by five years each time.

Two. Establishment of communities in charge of natural wealth conservation

2.1.1. Community members shall be united voluntarily and have a cooperative work contract, rules, action plan regarding nature protection and natural resource reserve management plan, approved by the all members' meeting.

2.1.2. The community rules shall contain its name, administrative and territorial division, address, location, the size and types of collective fund, as well as justifications and procedures on distribution and expenditure of the fund, enrollment and dismissal from the community, property and non-property liabilities, rights and obligations of the member, election of the community management, host of the meeting, rights and responsibilities regarding the community, directions and strategies of community activities and dismantle of the community.

2.1.3. The action program and management plan shall reflect activities regarding protection of forests, plants, animals and other secondary resources and provide their proper use, possession, raise and restoration, as well as biotechnical and nature conservation measures.

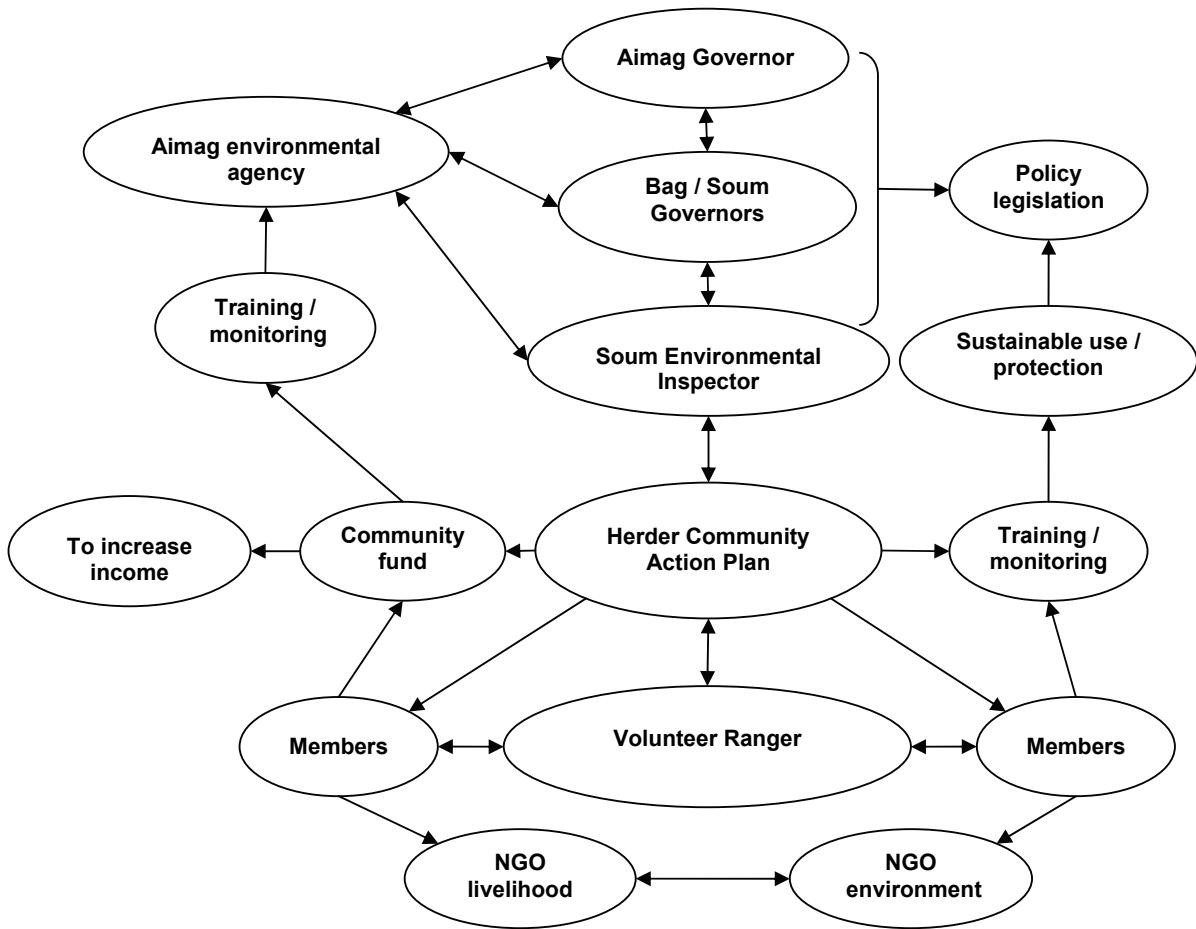
2.2. The community members' number in Khangai region shall be more than 30 people (15 families), Gobi and Steppe region more than 20 people (10 families), and they shall be the citizens permanently residing in those areas.

2.3. One community can provide its activity up to 6.000 hectare of land in Khangai region, and 10.000 hectare in Gobi and Steppe region, taking into consideration the map and region characteristics, described in 3.1 of this regulation. A community interested in protection of more than allotted amount, shall address to the Soum and Duureg Citizen Representatives Khural and then this Khural shall make a decision based on the proposal of the Aimag and City Environment Agency.

Three. Determine the natural resource reserve and create a contract with the Governor

3.3. Bag and Khoroo Governor shall have the community proposal on natural resource protection, discussed and concluded by the Citizens Local Khural of Bag and Khoroo, within 15 days, since the proposal is received.

- 3.5. The matter of protecting natural resources by contract shall be decided by the majority of votes of the present members. Within a week they will make the decision known to Soum and Duureg Citizen Representatives Khural representatives
- 3.6. Soum and Duureg Citizen Representatives Khural shall decide the issue within 14 days, since the proposal is received.
- 3.7.1. Community name, administrative and territorial subordination, temporary and permanent address, reference on natural resources to be protected.
- 3.7.2. The proposal supported by the Bag and Khoroo Citizens Local Meeting and the decision made by the Soum and Duureg Citizens Representative Khural.
- 3.7.3. The action plan regarding nature conservation and cooperative contract of the community members approved by the members' meeting of the community, in accordance with 2.1.2 of the regulation.
- 3.7.4. The contract on cooperation of the community administration and members
- 3.7.5. The location and distribution of natural resources and the volume of the area to be protected under contract.
- 3.7.6. The copies of the ID cards of the community members
- 3.7.7. The copy of the community codes.
- 3.8. Soum and Duureg Governor shall make a contract on natural resources to be protected, used and possessed by the community, in appropriate terms and periods, with the authorized representatives of the community, based on §17.1.5 of Nature Protection Law. The contract shall be made within 10 days, after the documents relevant to this regulation, Nature Protection Law and Civil Law, are received.



Appendix IV. Action Planning for Herder Communities

 <h3>Why is action planning important?</h3> <ul style="list-style-type: none"> • A plan for action and a common vision for all community members <ul style="list-style-type: none"> - So all members can read a document and agree on goals and activities for the community • To inform the local government and herders outside of your community group about your activities • To use when seeking outside funding for projects in your community area 	 <h3>ACTION PLANNING</h3> <ul style="list-style-type: none"> • Do you already have an action plan? • Do you want to develop an Action Plan for your area? <div style="background-color: #0070C0; color: white; padding: 5px; text-align: center;"> Let's complete some activities for drafting an action plan </div>
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 <h3>People</h3> <p>[large group discuss / big paper]</p> <ul style="list-style-type: none"> • Who will design the plan? <ul style="list-style-type: none"> - The community, together ➔ YOUR JOB • Who is responsible for ensuring the plan goes forward? • All members: <ul style="list-style-type: none"> - Are ultimately responsible - Design, implementation and documentation - Identify a "process leader" [who?] 	 <h3>Parts of an Action Plan</h3> <ol style="list-style-type: none"> Descriptive Title Introduction and Justification Background - Community (People) & Area Description Threats to the area Goals and Objectives Actions and Methods for achieving objectives Action Table / Schedule Value and Benefits of achieving goals
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 <h3>Critical Threats</h3> <ul style="list-style-type: none"> • Threat - something that may potentially harm a natural resource or something important to people in your area. <ul style="list-style-type: none"> - E.g. the cause/reason for the decrease in water sources - E.g. the cause/reason for the decrease in marmot numbers - E.g. the cause/reason for less grass for livestock to eat • Let's identify the critical threats in your area [write on big paper together; 10 minutes] 	 <h3>Conservation Targets</h3> <ul style="list-style-type: none"> • What threats do you want to alleviate in your area? ➔ Conservation Targets <ul style="list-style-type: none"> - Desired status of attributes = GOALS <table border="1"> <thead> <tr> <th>Target</th> <th>Key Attribute</th> <th>Indicator</th> <th>Indicator Ratings</th> <th>Current Status</th> <th>Current Rating</th> <th>Desired Rating</th> </tr> </thead> <tbody> <tr> <td>Marmots</td> <td>Population size</td> <td>No adults per year</td> <td>Fair = 10-15 Good = 16-24</td> <td>7</td> <td>Poor</td> <td>Good</td> </tr> <tr> <td>Pasture</td> <td>Grass available</td> <td>Biomass</td> <td>Fair = 2000kg/ha Good = 5000kg/ha</td> <td>2000 kg/ha</td> <td>Fair</td> <td>Good</td> </tr> </tbody> </table>	Target	Key Attribute	Indicator	Indicator Ratings	Current Status	Current Rating	Desired Rating	Marmots	Population size	No adults per year	Fair = 10-15 Good = 16-24	7	Poor	Good	Pasture	Grass available	Biomass	Fair = 2000kg/ha Good = 5000kg/ha	2000 kg/ha	Fair	Good
Target	Key Attribute	Indicator	Indicator Ratings	Current Status	Current Rating	Desired Rating																
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Pasture	Grass available	Biomass	Fair = 2000kg/ha Good = 5000kg/ha	2000 kg/ha	Fair	Good																

Goals and Objectives	Actions and Methods
<p>• List desired status of attributes for conservation targets → GOALS</p> <p>• Form objectives for achieving your goals S = specific M = measureable A = achievable R = relevant T = time-based</p>	<ul style="list-style-type: none"> • How will you achieve your objectives? <ul style="list-style-type: none"> - List activities • What methods will you use? <ul style="list-style-type: none"> - List methods

Action Table / Schedule	Value and Benefits																														
<table border="1"> <thead> <tr> <th>No</th> <th colspan="4">GOAL</th> </tr> </thead> <tbody> <tr> <td>1</td> <td colspan="4"><i>Target and Indicator (Objective #1)</i></td> </tr> <tr> <td>1.1</td> <td>Activity #1.1</td> <td>Desired Outcome</td> <td>Due Date</td> <td>Person Responsible</td> </tr> <tr> <td>1.2</td> <td>Activity #1.2</td> <td>"</td> <td>"</td> <td>"</td> </tr> <tr> <td>2</td> <td colspan="4"><i>Target and Indicator (Objective #2)</i></td> </tr> <tr> <td>2.1</td> <td>Activity #2.1</td> <td>"</td> <td>"</td> <td>"</td> </tr> </tbody> </table>	No	GOAL				1	<i>Target and Indicator (Objective #1)</i>				1.1	Activity #1.1	Desired Outcome	Due Date	Person Responsible	1.2	Activity #1.2	"	"	"	2	<i>Target and Indicator (Objective #2)</i>				2.1	Activity #2.1	"	"	"	<ul style="list-style-type: none"> • What is the benefit of achieving your community goals? <small>[list; 15 minutes]</small> • How is achieving these goals valuable to wildlife and natural resources in your area? <small>[list; 15 minutes]</small>
No	GOAL																														
1	<i>Target and Indicator (Objective #1)</i>																														
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1.2	Activity #1.2	"	"	"																											
2	<i>Target and Indicator (Objective #2)</i>																														
2.1	Activity #2.1	"	"	"																											

Background – Community (People) & Area Description	Introduction and Justification (Executive Summary)
<ul style="list-style-type: none"> • Map of community area - DONE • Write down the following: <ul style="list-style-type: none"> - # Community members - # Families - # Livestock for each family - Total size of community area (# ha's) - Major water sources (rivers, lakes, wells and their names) - List natural resources in the area (plants, wildlife, minerals, etc.) - Topography (mountains, hills, steppe grassland, etc.) and percentage of each in the area - Climate - general description for each season 	<ul style="list-style-type: none"> • Who is your community? <ul style="list-style-type: none"> - Where is your community? - What do people do there (professions)? • Overall aim <ul style="list-style-type: none"> - Defined geographic project area - Project scope - Project vision <ul style="list-style-type: none"> • Ultimate measures of success • What is the ultimate benefit?

Writing an Action Plan: Step-by-Step

Writing an action plan for your community-managed area is an important activity to complete with all members of your community group. Under the additions to the Environmental Protection Law, and Order #114, communities are required to submit an 'action plan' that has been approved during a members meeting (article 2.1.2). Writing this document is a good activity to facilitate a consensus among members about your community's goals and objectives for wildlife and natural resource management, protection and monitoring. This document can also be used to inform the soum

government and herders outside of your community group about your goals, objectives and planned activities within your area.

Before beginning to write your action plan, it is useful to remember what is needed to form effective goals and objectives. Let's re-visit the definitions of these two key components of an action plan:

Goal: The clearly stated, specific, measurable outcome(s) or change(s) that can be reasonably expected at the conclusion of a methodically selected intervention. Goals provide general purpose and direction. They are the end result of ultimate accomplishment toward which an effort is directed. They generally should reflect perceived present and future need. They must be capable of being effectively pursued. Goals should be measurable and have a time component.

Objectives: Specific and measurable means for accomplishing goals. Objectives state what is to be achieved and cover the range of desired outcomes to achieve a goal.

Parts of an Action Plan:

Descriptive Title – conveys the purpose of the Action Plan and community's name

Introduction and Justification – very short description (executive summary) of what the community wants to accomplish (threats to alleviate) and their goals and activities (1 page).

Background – Community & Area Description

People – Community name, when established, approved/not approved by local government and dates, number of community members, number of families, livestock present in area.

Area – Community managed area size and location, topography, climate, geology, water resources and quality, natural resources, flora and fauna, protected areas and human use.

Threats to the area – why there is a need for management and conservation in the area

Goals and Objectives for alleviating threats and improving the situation – clear, quantifiable, relevant and concisely stated

Actions & Methods for achieving objectives

Action Table / Schedule – with deadlines and persons responsible

Value and Benefits of achieving goals – the benefit to the community (people) and wildlife/natural resources

[Note: for your own purposes, you can add sections on: *Equipment or services* needed and a *Budget* – costs broken down by each goal]

Remember, you may already have written many parts of the management plan with your community. If you already have a list of tasks, activities, or goals and/or objectives written out, these will be a good starting point. Now, just make sure that they are measurable and have a time component. Then incorporate them into a written action/management plan for your HCG-managed area. Also, many communities have already written descriptions for their areas. This information can be used when writing the action/management plan (especially for part 3).

TRANSLINKS

TransLinks is a 5-year Leader with Associates cooperative agreement that has been funded by the United States Agency for International Development (USAID) to further the objective of increasing social, economic and environmental benefits through sustainable natural resource management. This new partnership of the Wildlife Conservation Society (lead organization), the Earth Institute of Columbia University, Enterprise Works/VITA, Forest Trends, the Land Tenure Center of the University of Wisconsin, and USAID is designed to support income growth of the rural poor through conservation and sustainable use of the natural resource base upon which their livelihoods depend.

The program is organized around four core activities that will be implemented in overlapping phases over the life of the program. These are:

1. Knowledge building including an initial review, synthesis and dissemination of current knowledge, and applied comparative research in a number of different field locations to help fill gaps in our knowledge;
2. Identification and development of diagnostic and decision support tools that will help us better understand the positive, negative or neutral relationships among natural resource conservation, natural resource governance and alleviation of rural poverty;
3. Cross-partner skill exchange to better enable planning, implementing and adaptively managing projects and programs in ways that maximize synergies among good governance, conservation and wealth creation; and
4. Global dissemination of knowledge, tools and best practices for promoting wealth creation of the rural poor, environmental governance and resource conservation.

Over the 5-year life of the program, TransLinks aims to develop a coherent, compelling and, most importantly, useful corpus of information about the value of, and approaches to, integrating Nature, Wealth and Power. To do this, TransLinks is structuring the work around two core issues – 1) payments for ecosystem services and 2) property rights and resource tenure.



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TRANSLINKS

A partnership of NGOs, Universities and USAID led by The Wildlife Conservation Society, dedicated to finding and sharing practical ways to generate benefits from conserving natural resources that are of global importance, and that serve as the supermarkets, bank accounts and insurance for many of the poorest people on earth.

For more information please visit our website at www.translinks.org or contact Dr. David Wilkie, the program director, at dwilkie@wcs.org.



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Land Tenure Center



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