2010-2013 SYNTHESIS REPORT

Françyn Takh xamgaałах холбоо
Association pour le cheval de Przewalski: TAKH
ASSOCIATION POUR LE CHEVAL DE PRZEWALSKI: TAKH

Through the safeguard and study of the Przewalski’s horse as a flagship species, the Association TAKH leads an integrated conservation project which allies landscape restoration with biodiversity protection and the promotion of sustainable development.
EXECUTIVE SUMMARY

The Association Takh’s four year programme was organized into 4 objectives:

1° Provide conditions for an increasing Przewalski’s horse herd, avoiding hybridization and high inbreeding, partly through behavioural ecology and genetic research
2° Create and maintain favorable forage and safe conditions for sympatric wild and domestic ungulates through the study of pasture conditions
3° Increase herders’ livelihoods through better health care and added value income diversification of camel and sheep wool products, while maintaining sustainable pasture use conditions and raising conservation awareness.
4° Maintain a socially natural Przewalski’s horse herd at Le Villaret, France, while increasing conservation and wild horse ethology awareness.

Highlights of the last four years:

- A significant increase of the Przewalski’s horse herd, from 24 to 40 individuals. The population has experienced an exceptionally high adult survival rate, an average first year survival and fecundity rate. Delayed reversibility of the contraceptive PZP administered before transport to Mongolia in addition to infectious diseases transmitted by domestic horses slowed potential population growth rate. By maintaining a fence around the 14 000 ha release site, the habitat restoration programme benefits survival of Przewalski’s horses, an Ibex population and attracts Mongolian gazelles, as well as reducing contacts between Przewalski’s and domestic horses. Group cohesion between the horse families is effective against wolf predation. The daily horse ranger monitoring contributes to a 20 year database containing information on genetics, health and social behaviour of the Przewalski’s horse population.

- A synthesis of our 10 year studies on rangelands and their use by herders leading to an adaptive management framework. Not surprising, results indicate that the Przewalski’s horses’ future main competitors will be domestic horses. Furthermore, the results show that Khomyn Tal’s pastures were in good condition in 2013, three years after the high 2010 winter mortality. Another breakthrough concerns the active participation of local herders in the surveillance of the EuropeAid financed vegetation exclosures and the vegetation monitoring.

- EuropeAid financed import and migration of 76 camels to Khomyn Tal. Contracts were signed with individual herders, the aim being to encourage this domestic endangered species whose impact is less detrimental to pastures. Khomyn Tal herders made a substantial benefit from this programme and not only has the herd increased to 92 individuals, other herders follow. We are now well placed to provide logistical and programmatic capacity building to herders, and to propose a conservation agreement for pasture and domestic horse management. The felt handicraft sales and subsequent income for members of the ‘Women Community Council’, a local NGO, doubled over the four years.

- Significant increase of outside MAVA funding thanks to the European CAP and TAKH product sales. We maintained Le Villaret below its 40-horse carrying capacity by exporting 3 stallions to Spain in 2012. When possible, we prefer this approach to the use of a contraceptive, as it will contribute to potential ‘conservation introductions’. In terms of awareness-raising, horse professionals followed an ethology course through Rennes University as usual. Our summer Information Centre welcomed around 4000 visitors per year, who contribute to Takh’s and the ‘Khomyn Tal Women Community Council’s’ income through product sales.
**Objective 1. Provide conditions for an increasing Przewalski’s horse herd in Seer, avoiding hybridisation and high inbreeding.**

**Objective:**
The Seer Przewalski’s horse population shows a positive growth rate, no hybrids and low inbreeding.

**Projected outputs and evidence:**
An efficient protection is in place so that mortality and inbreeding are kept to low levels (average yearly adult mortality <10%, average inbreeding coefficient <0.200), fecundity problems are solved (average >30%) and no hybridisation occurs.

The Przewalski’s horse population in Seer steadily increased from 24 to 40 individuals between 2010 and 2013. The increase was positive regardless of the import of 4 horses in 2011, when Prague Zoo kindly offered us one stallion and three mares, including their transport to Khovd. The first third generation foal was born in 2012, followed by two more in 2013.
An exceptional 16 (73%) out of the 22 imported horses from Le Villaret in 2004/05 survived to the present time for 8 and 9 years, respectively. The yearly average adult mortality (horses aged 2 years or more) was a mere 3% (range 0-2). Survival to 3 months for all of the 35 foals born in Seer between 2006 and 2013 amounted to 63%, to 60% for foals born between 2010 and 2013. 71% of all first year deaths were neonatal (<= than 2 days). As a rule, first year survival in most wild equid populations studied was found to be around 50%, therefore slightly lower than the 60% in the Seer herd.

The exceptionally high survival rate in our re-introduction project is likely due to three factors:

1. The fence around the 14,000 hectare release site, and its regular maintenance, allows for habitat protection and restoration and reduces encounters with domestic horses. For example, during the harsh Mongolian winter ‘dzud’ of 2009/10, all our horses survived without supplementary feeding despite high snow cover and temperature records of -45°C, thanks to excellent pasture conditions including the presence of *Psammochloa villosa*.

   ![Pzrewalski horses eating the high Psammochloa grass](image1)

This long grass was identified as potentially essential for the survival of the horses during winters with high snow while choosing the re-introduction site. As a by-product of habitat restoration, we observe more and more Mongolian gazelles *Procapra gutturosa* inside Seer, including newborns, and the local Ibex population *Capra sibirica* has doubled over the last four years.

![A group of Mongolian gazelles in Seer](image2)
2. Group cohesion between horse families is efficient against predators. Based on long-term experience with equid social relationships and ensuing preparations at Le Villaret, we hoped that the 4 naturally pre-formed family groups would gather together in one herd as they had done before. The result was positive despite the fact that the individual groups had been separated for one year due to the two transports in 2004 and 2005, respectively. Ever since the arrival of the horses, the four or five family groups stayed in one herd, except for the new group formed in 2013 led by the stallion imported from Prague. Wolves or signs of their presence are regularly sighted in Seer, where we can deduce their attacks on the herd through track interpretation in the sandy soil. Herd cohesion very likely contributes to a successful anti-predator defence.

3. The year round twice a day ranger monitoring that allows for detailed observations and rare interventions when absolutely necessary, although no horse survived due to human intervention.

The low fecundity following the first years after re-introduction was due to: the delayed reversibility of the contraceptive PZP administered before transport in order to avoid sending pregnant mares to Mongolia; infectious diseases (equine metritis, EHV1), and possibly mineral deficiencies in the horses’ diet. Over the last 4 years, average yearly fecundity of mares 3 years or older was 54% (73% when excluding the mares rendered sterile by PZP), which is similar or higher compared with other wild equid populations.

The average inbreeding coefficient (F) of foals surviving to 3 months was 0.21, keeping in mind that the average inbreeding coefficient of offspring from all potential reproductive partners in the herd was an equal 0.21 (range 0.14 – 0.42). The dead foals’ inbreeding coefficient, confirmed by DNA analyses, was slightly lower (0.20) than that of live foals, so relative inbreeding had no effect on foal survival. These results need to be confirmed by DNA analyses of live foals. We calculated inbreeding coefficients of live foals based on comparative data from the Villaret herd, where only one foal out of 99 was born to a stallion not associated with the mare during the period of conception. Thanks to the ranger and volunteer monitoring, we have knowledge on group composition twice a day, so we deduced paternity from stallion-mare association during conception. As a rule, studies on Przewalski’s horses in captivity and a few populations of wild mammals showed that inbreeding coefficients above 0.25 can reduce survival and fertility, although consensus is not reached due to the scarcity of data. The average inbreeding coefficient in the Seer population is therefore still below this threshold. We obviously have no control on the inbreeding coefficient of foals born, as the horses chose their own reproductive partners.

Although we have no 100% certainty due to the lack of genetic paternity analyses of live foals, we are confident that no hybrids with domestic horses occurred in the Seer herd, thanks to the high observation pressure. Sub-adult Przewalski’s mares that strayed beyond their 14 000 ha enclosure and sometimes joined domestic horses were brought back by rangers and herder neighbours, and no foals were born subsequent to their escape. The family stallions of the herd strongly defend their mares against intruders, making it highly unlikely that a hybrid foal was born to one of the adult Przewalski’s mares. The quality fence and its maintenance further guarantees separation between Przewalski’s and domestic horses, despite rare transgressions from both sides.
Objective 2. Identify Behavioural ecology factors affecting population growth rate and genetic composition of the herd

Objective:
Behavioural factors affecting demography and the genetic composition of the reintroduced herd are identified.

Projected outputs and evidence:
1) Results of analyses on causes and consequences of mate choice and social bonding on demography and genetic herd composition are made available through publications.
2) Conventions with universities are signed, students enrolled, trained and conducting research for university degrees. Outside funding and partners allow for studies on interactions between Przewalski’s and domestic horses with regard to hybridisation and the effect of social stress on demography.

1) Close to 2500 hours of observations were made by the Mongolian rangers and the French volunteers over the 4 years, the herd being checked twice a day, year round. The behavioural monitoring keeps the observers’ attention on the individual horses while simultaneously looking out for health problems, which are crucial to understanding morbidity causes, possibly resulting in mortality.

However, as all rangers except one are locally recruited ex-herders, collecting scientifically analysable data proves a challenge, as well known to all projects carrying out participative research projects. The presence of a Mongolian ranger trained by our project and holding a master from Khovd University, in addition to the European volunteers with a scientific background, greatly improved field methodology. Our first volunteer continued to work for the project as a database assistant and entered much of the data gathered since 2004. Consultancy with a professional database manager proved invaluable for restructuring our ‘Access’ database, with the result of combining 20 years of genetic, life history and behavioural information based on the same methodology, which starts with the horses imported from European zoos to Le Villaret in 1993. However, data entering is still incomplete. Data analyses suffered from an additional drawback due to the misidentification of an individual revealed through genetic data. Re-analyses of mate choice, social bonding and consequences for the demography and genetic herd composition are now under way.

We presented a Poster on ‘Delayed reversibility of PZP in free-ranging Przewalski’s horse mares’ at the ‘International Wild Equid Conference’ in Vienna in September 2012. The results of our long term data controlling for previous mare fecundity and male fertility clearly show that reversibility of this contraceptive is not guaranteed or delayed in Przewalski’s horse mares and should therefore be used with caution. These results are a first and were obviously not available when we administered PZP to the mares.

The initially planned popular book on the project has been postponed. The book for children aimed at a local and international public on the story of one of the Seer horses is completed but not yet printed or distributed.

2) We continued our long-term collaboration with Khovd University in Western Mongolia. One Mongolian student successfully finished his Master (Magister) study on the subject of ‘Simultaneous day time home range and habitat use of Przewalski’s horse family and bachelor groups’ in 2010. His results showed that the herd consisting of 4 family groups had priority access to high quality vegetation types over the whole year compared with the bachelor groups. Distance between the herd and the
bachelor group was greatest during the breeding season and decreased in winter. We enrolled a second Master student in 2013, investigating ‘Social play in Przewalski’s horses’. Social play in young mammals has been shown to contain elements of adult fights and a better understanding of play could therefore be relevant to the outcome of such fights as adults.

We signed a Memorandum of Understanding for collaboration with the National Mongolian University (NUM). One of our rangers started a PhD programme with the National University of Mongolia, but unfortunately quit for personal reasons before finishing his first year exams. We further signed an agreement with Nottingham Trent University, UK, for enrolling a PhD student working on ‘Mechanisms of social cohesion in groups of reintroduced Przewalski’s horses in Mongolia’. Herd formation is clearly an advantage with regard to predator defence, and may even act against hybridisation with domestic horses, but mechanisms are poorly understood.

**Objective 3. Continue scientific cooperation with other re-introduction projects to analyse problems and identify solutions for successful re-introductions**

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<th>Objective:</th>
<th>Yearly scientific workshops with members of all three reintroduction projects in Mongolia are held.</th>
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<tr>
<td>Projected outputs and evidence:</td>
<td>Reports from yearly workshops give scientific evidence on problems and solutions for successful reintroductions.</td>
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This objective has been fully delegated to the Mongolian team. All four workshops were held in Ulaan Baatar on our initiative, once a year. The need for a common database was fully acknowledged by all participants of the three Mongolian re-introduction projects, and our project made a financial contribution towards this goal in 2013.

In order to compare important data on mortality and morbidity and identify their causes in all three projects, common definitions are an essential prerogative, but these are unfortunately still not agreed upon. The analyses on demography and hopefully genetic composition of the three reintroduced populations should serve as evidence for a report to the government for a future nationwide management plan.

In addition, the need for a common website and exchange of horses between the 3 projects was expressed, but not yet implemented. Exchanging horses between the 3 re-introduction projects in Mongolia had been on the agenda for several years. The feasibility to capture and transport 3 young stallions from Hustai Nuruu to Seer, as we had planned, proved difficult. As cargo planes are no longer available in Mongolia, transport by road is the only option. At the time, such a transport over many hundred kilometres would last 4 to 5 days in the present state of Mongolian roads, too risky for the horses.

Additionally to the planned objectives, we acted as consultants to possible new re-introduction projects and one ‘conservation introduction’ project outside the historic range of the Przewalski’s horse:
1° Agyash Island, KharUs Nuur National Park, Mongolia. The results of a vegetation and insect survey showed that the 50,000 ha has a high potential for Przewalski’s horses or saiga antelopes. However, grazing pressure by sheep, goats, cows, horses and camels is so intense that the survival of the wild animals would be jeopardized should they be released at the present time.

2° In 2012, we were invited to give a presentation at the “Sixth International Symposium on Steppes of Northern Eurasia” in Orenburg, Russia. On further invitation, we subsequently visited a potential future re-introduction site of a very suitable ca. 15,000 ha mostly pristine steppe area close to Orenburg, which was set aside and managed by a Russian Nature Protection association. Latest news confirms the take-off of the project.

3° ‘Conservation Introductions’, by building up naturally living populations of an endangered species outside its historic range, can act as an important contribution to the survival of a species. Such projects can act as a reservoir for reintroduced populations which are easily wiped out by a stochastic event due to their small size. We visited Salgüero, Spain which is close to the prehistoric site of Atapuerca in the vicinity of Burgos in spring 2013. In a first stage, 200 ha of mostly suitable habitat will be reserved for both Przewalski’s horses and European bison, with strong support from local associations.
The aim of this objective, through the 8 outputs described below, is to prevent overgrazing of the local pastures and poaching to ensure a safe access to forage for the Przewalski’s horses once released from their fenced site.

**Objective 1. Provide Khomyn Tal Herders with technical knowledge derived from the previous integrated pastoralist study to adjust their stocking rate according to pasture condition**

**Indicator:**
Herders make decision about a sustainable stocking rate strategy, on their own.

**Outputs and evidence:**
Through description of the Khomyn Tal grazing system and orientation for sustainable management defined, herders provided methodological tools to adjust stocking rate to pasture condition at KTL scale and, in 2013, herders monitor and make a decision on their own.
1.1 Synthesis of 06-09 pastoralist study finalized

We wanted to synthesize all the studies carried out on the impact of pasture use by local herders and from this, propose management guidelines. We compiled our dataset on vegetation ecology, pasture mapping, nomadic movements and rearing practices and integrated the recommendations of range scientists working in arid environments. This allowed us to design an adaptive management framework based on the monitoring of the local pasture grass productivity. It has been possible to identify this productivity sampling scheme, based on only 10 plots, thanks to our precise understanding of pasture dynamics and fine knowledge of pastoralists’ practices. Otherwise, monitoring the 2,900 km² of Khomyn Tal would have been impossible.

Besides that, our studies of herders’ camps site and rearing practices confirmed that domestic horses will be the main competitors of our Przewalski’s horses for grass. Other livestock species are either too restrained to the camps’ vicinity (goats, sheep, cattle), have low fecundity (camels), are too exposed to winter mortality (goats, sheep, cattle) or require too much labour from the limited herder population to grow to a level that would cause degradation (sheep, goats). In addition, domestic horses will threaten Przewalski’s horses by competition for grass, but also through disease transmission and hybridization.

1.2 Herders provided with methodological tools and stewardship competences to adjust stocking rate to pasture condition at the KTL scale

We implemented a first cycle of pasture adaptive management that compared the trends of livestock numbers and pasture productivity. With the help of 10 fenced off control plots of 0.5 hectare, we demonstrated that at this moment, livestock do not threaten vegetation. We involved some herders in this experience, which gave us the opportunity to provide them with training. Some of them proved fully capable to carry out pasture monitoring, notably local students.

However, the process of comparing the pasture condition trend with the livestock number trend proved complicated. Indeed most herders are not familiar with chart analysis, graphs and patterns. A bit more experience and some more cycles of adaptive management are therefore needed and then, they will be completely able to apply our guidelines.
OBJECTIVE 2. AS A START TO A LONG-TERM FUNCTIONAL INTEGRITY STUDY, INVESTIGATE THE IMPACT OF GRAZING EXCLUSION AND IMPROVED MONITORING METHODS ON THE VITALITY OF KEY FORAGE SPECIES.

Indicator:
Monitoring results with regard to the functional integrity of the key forage species and development of better management practices applicable to Khomyn Tal.

Outputs and evidence:
Validate or invalidate an early warning indicator, and use long-term monitoring to describe the quantitative changes within the vegetation communities of Seer release site.

2.1 Investigation into a potential new objective Early Warning Indicator of pasture degradation
To further ease the monitoring aspect of our adaptive management framework, we tested a new pasture productivity indicator based on the shape characteristics of the most important forage grass. This allowed for an estimation of the grass’ renewal potential. We tested it in Khomyn Tal in 2011 by comparing it on grazed and non-grazed sites. Albeit some shape differences were observed, they did not concern those we were expecting. We therefore did not validate the indicator.

However, the grazed and non-grazed sites we used for the experiment were remote from each other (about 30 km). Indeed, the only site well protected enough was the Przewalski horses release site and it is far from the intensively grazed areas that we examined. However, because we now have fenced plots, we could therefore re-try a test of this indicator.

2.2 Continuation of long term monitoring of habitat restoration in the Seer ‘release site’ through study of quantitative changes within vegetation communities
The 14,000 ha Przewalski’s horse fenced site offers a unique opportunity to study the large scale effects of grazing exclusion. Such information is likely to help us to improve our adaptive management guidelines. Usually such studies are carried out on small fenced plots which preclude the expression of ecosystem scale phenomena and interactions. We therefore compared the vegetation condition outside and inside the site.

We found effects in 2 out of 3 of the arid pasture types, according to the kind of grazing they are exposed to. In one site, productivity and standing forage biomass was decreased outside the site while in another one, only this latter parameter was reduced outside the fence. One other very interesting result is that in one of the types, the absence of livestock inside the fence led to a big accumulation of uneaten dry grass. This may have consequences on the content of organic matter in soil. Its fertility is therefore going to increase which may have spectacular effects in some years on large scales (notably, new plant communities may appear).
**Objective 3. Protect Khomyn Tal wild ungulates**

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<th>Indicator:</th>
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<td>Average annual total population size of Mongolian gazelles in Khomyn Tal does not fall below 30 adults</td>
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<th>Outputs and evidence:</th>
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<td>Anti-poaching measures in place via 4 patrols per month and seasonal gazelles censuses, Mongolian master student conducts competition study between domestic and wild ungulates</td>
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### 3.1 Efficient anti poaching measures in place

Khomyn Tal is located in a buffer zone of the Khar Us Nuur National Park. To prevent poaching we supported the park administration to implement surveillance patrols. A ranger was hired from the local population and he declared making 3 to 4 patrols a month. Additionally, two censuses per year of the local gazelle species are carried out by TAKH and they indicate stable populations. For example, the numbers of Mongolian gazelle, the main local species, oscillate between 200 and 400 individuals since 2003. The populations therefore do not seem to be threatened at this moment.

However, in the future, we would like to improve the efficiency of these patrols. Indeed, even though gazelle population is stable, the animals remain surprisingly shy by comparison with individuals observed in the protected Przewalski’s horses’ site. Some poaching cases might therefore sporadically occur. In the future we may have to think about a more result-oriented support, rather than a simple logistic support of patrols.

### 3.2 Study on competition between domestic and wild ungulates is under way (outside funding)

We wanted to study the overlap of home ranges and plant diet preferences between wild and domestic livestock. The GPS collars we bought with EU funds to study movements of livestock never worked, but we could not exchange them since the manufacturing company went bankrupt. In addition, the 4 persons we had hired to do the diet study field observations, in the framework of a University diploma, all quit before the end of the study. The last one quit, without notice, after having sent false data.

However, the pastoralists study confirmed with sufficient evidence that domestic horses are the main Przewalski’s horses competitors. We therefore have enough knowledge of the livestock grazing system to continue our discussions with the local herders about the cohabitation between livestock and our reintroduced horses. In addition, we learned that we should first adjust the length of time of the fieldwork we propose, and that when hiring students we should involve more deeply their University in checking their work.

*A camel with a GPS collar*
**Objective 4. Cooperate with other relevant rangeland management projects in Mongolia in order to provide technical knowledge for a nationwide Gobi pasture use plan**

**Indicator:**
Exchange data with other rangeland projects, propose management tools to relevant stakeholders

**Outputs and evidence:**
Attend at least 2 workshops in 4 years and organize at least 2 institutional exchange visits per year, visit at least one with local politicians and welcome them at least once to Khomyn Tal to discuss a nationwide pasture use plan based on our experiences.

4.1 Attendance at workshops and institutional exchange visits

We participated in the planned workshops and conferences (10 in total). We were particularly interested in exchanging lessons learned regarding implementation of pasture adaptive management and realized that we were one of the rare experiences that exist in arid environments.

4.2 Meetings with local government to discuss a nationwide pasture use plan using our experiences as an example

We had 4 meetings with the local stakeholders about our management experimentation (the planned number was 2). Similar to the discussions with the herders, we saw that pasture monitoring data was not so easy to collect or interpret. We therefore took the opportunity of the meetings to think about ways to simplify it, rather than pushing for a premature application of our guidelines on larger scale. We will urge again for the adoption of our pasture use framework when it is fully operational in Khomyn Tal.

*Meeting with local officials to present and discuss pasture use*
CONCLUSION

Our extensive data set on rearing practices and vegetation ecology made it possible to design pasture condition monitoring based on only 10 plots. This is very few for a site of 2,900 km² and it paved the way for the definition of realistic pasture management guidelines. We proposed them to herders and, with a bit more experience in interpretation of vegetation data monitoring, they will be fully able to apply them. It is now up to them to decide to use the guidelines and prevent loss of pasture productivity.

In addition, a better knowledge of rearing practices and characteristics of local livestock decreased our concerns concerning goats, which has dramatically grown in numbers over the last 20 years. The concern was replaced by that of domestic horses that not only threaten Przewalski’s horses through competition for grass, but also through hybridization and disease transmission. We therefore now have a sufficient knowledge of the grazing system to continue our dialogue with local herders, and focus in on what matters. We will continue it through conservation agreements that will propose a financial support in exchange of implementation of domestic horses’ movements control and/or pasture adaptive management.
COMMUNITY DEVELOPMENT

The 2010-2013 community development activities focused on moving us toward the objective of creating economic incentives for the conservation of Przewalski’s horses and their habitat. Achieving this means both developing sustainable, lucrative businesses and proposing a domestic horse and pasture management plan that includes these businesses as incentives. The work in 2010-2013 focused much more heavily on the former by establishing a baby camel wool export business, and improving and expanding the felt products business. To advance and discuss conservation in Khomyn Tal, we also offered yearly summer schools for children and forums for herders. And, aware that conservation comes second to basic social services and needs, we advanced the health care system in Khomyn Tal.

All these programs, while directly improving the lives of herders, also indirectly advanced our work by building trust between TAKH and Khomyn Tal and providing opportunities for us to identify gaps and opportunities in terms of organizational and technical skills in the community.
**OBJECTIVE 1: INCOME DIVERSIFICATION THROUGH ADDED VALUE OF CAMEL AND SHEEP WOOL PRODUCTS IN EXCHANGE FOR A REDUCTION IN REPRODUCTIVE HORSES AND SUSTAINABLE NUMBERS OF GOATS/SHEEP IN KHOMYN TAL.**

**Indicator:**
Income statistics show increased household income from felt and camel wool sales, reduced number of reproductive horses in Khomyn Tal

**Outputs and evidence:**
Camel wool export business established, women generative supplementary income, contract stipulating a reduced number of reproductive domestic horses in Khomyn Tal, domestic horse management plan, 60 camel bought and 60 women sign contracts, up to 200 kilograms of baby camel hair and 40 kg of felt products sold to France each year

1.1: Already tested baby camel hair export business to France established through the creation of a new camel breeding herd, managed by the already established Women’s Community Council (Mongolian NGO), the terms of which are defined under a contract stipulating reduction in numbers of reproductive domestic horses

In May 2010, a camel herd was purchased and driven to Khomyn Tal. Sixty-one adults and 15 calves were selected by lottery and given to families. In 2010 and 2011, several individuals were either lost or killed by wolves; however the community ultimately improved the management of the surviving camels. By December 2013, this EU-purchased herd was at 92 and the total number of camels in Khomyn Tal was nearly 350.

In March of 2010, a 4-year contract was signed between TAKH and the President of the Women’s Community Council (WCC) which charged the WCC with the onsite camel project logistics and developing a domestic horse management plan. In June of 2010, 61 3.5 year contracts were signed between the WCC and the camel owners in which the camel owners agreed to not sell or kill the camel and to sheer the wool for export to France.

Unfortunately, the functioning of the WCC left wanting. Thus, this added the additional objective of re-orienting and re-organizing the WCC so that they can take on greater responsibilities (which they unanimously desire to do), while placing the immediate logistical tasks under the responsibility of the France and Khovd-based TAKH staff. Indeed, TAKH staff had a “heavy hand” over the logistics and organization of the wool business, which also created a sense of dependence and lack of motivation on behalf of the WCC.
In terms of logistics, herders’ participation and the amount of wool collected each year was highly variable, which meant that our method of collecting, transporting and selling the wool changed each year. Traceability, which is critical for maintaining an ethical aspect of the value chain, implementing quality control guidelines, and returning profits to owners, quickly became an issue when herders began selling us wool from other herders. We believe that forming a cooperative or facilitating the WCC to act as the organizing body, will improve these issues.

Despite these challenges and lessons learned, this output was chiefly met: we collected a total of 964 kg of raw baby camel wool in the four years which provided to herders, on average, 268% more income than if they would have sold the wool on the Mongolian market (thanks in part to EU and MAVA funding which covered a majority of the logistical costs). Once outside funding is gone, we estimate that herders can make 6 to 7 Euros per kilo from raw wool, as opposed to the current Mongolian market price of 2.20 Euros per kilo.

We currently have three customers in France for the washed and de-haired baby camel wool and in 2013 we began selling yarn handspun by the WCC members.

1.2: Women’s Community Council generates supplementary income through sale of felt handicrafts already established and sold at Le Villaret

The felt product business, which was already off to a respectable start in 2010, experienced similar organizational issues. Nonetheless, this business improved on all fronts: the quality of products improved and consistency among products increased, timeliness improved and sales increased and trainings for the WCC continued. In 2013, effort was placed on creating a quality control system in Khomyn Tal.

Each summer, felt handicrafts were sold at the Villaret Information Centre. Villaret is the optimal outlet for the sales of the felt products, but is limited in its market to summer-only visitors. Furthermore, the women are capable and motivated to increase their production. We attempted to expand the market by testing a simple online marketplace and creating a paper catalogue targeted primarily to zoos with Przewalski’s horse.

1.3: Agreement between TAKH and mayor of Khomyn Tal community towards reduction of reproductive domestic horses and their common management

Discussions with herders in 2010 and 2011 demonstrated a general resistance on their behalf. Therefore, we decided not to discuss the goal of reducing domestic horses until the camel project became successful, which would help us gain more trust on behalf of the community. These first years of the camel project were too unstable to provide an adequate incentive for domestic horse management. But, unfortunately, the community does not recognize the conservation issues being
addressed by our wool-based businesses or see the links between our community development work and our rangelands and Przewalski’s horse programmes. In the spring of 2013, the idea of a conservation contract, in which herders receive a bonus on felt or camel products in exchange domestic horse and pasture monitoring, was presented individually to each herder who had a nearly unanimous favourable response.

**OBJECTIVE 2: CONSERVATION AND RANGELAND MANAGEMENT AWARENESS-RAISING THROUGH CONTINUED FORUMS AND A LOCAL INFORMATION CENTRE.**

**Indicators:**
Forums and summer schools held

**Outputs and evidence:**
Herders and their children attend yearly forums and summer schools, information centre at Khom Station is equipped with awareness-raising materials.

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2.1: Continued Forums and ‘summer schools’ for Khomyn Tal children

Each summer a herder’s forum and summer school were held. During the forums presenters from Mongolian NGO’s or governmental structures, and TAKH staff, presented a number of husbandry and pasture management topics to approximately 50 herders. These forums provided key opportunities for communication and discussion about current future conservation or sustainable development projects in Khomyn Tal.

The environmental science-based summer school served approximately 30 children aged ranging in ages from 8-17. This yearly summer school offers children an opportunity to conduct experiments and observations, and practice team sports. However, it is challenging to adapt to a broad age range.

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2.2: Equipped information centre at Khom station

An information centre was not built because herders rarely go to Khom station, especially during fall and winter. We favoured an approach of bringing information to herders which included adaptive management leaflets, herder newsletters, calendars and a film of our more than 10 years of work in Khomyn Tal (to be completed in 2014).
**OBJECTIVE 3: LIVELIHOOD IMPROVEMENT OF HERDERS THROUGH BETTER HEALTH CARE**

**Indicator:**
Medical room and information centre operational  
**Outputs and evidence:**
community members use medical room, mobile nurse visiting Khomyn Tal families.

3: *Khom station equipped with a medical room and mobile nurse*

Beginning in March of 2012, EU funds paid for a four-wheel-drive nurse van, driver salary and petrol costs, the renovation of a medical room and medical supplies. Nurse visits increased by 70%, and people needing urgent care were more easily taken to nearby hospitals. While a success, it is uncertain as to whether the Durvuljin soum government will be able to take over the gas and driver salary cost as of 2014.

Much discussion took place as to where to build the medical room. Considering that no other option existed, and there was not a sufficient budget enough to construct a new building, we renovated the medical room in Khom station in 2011. It is only used in the summer, and mainly serves as storage for the nurse.

*Khomyn Tal community receives the 4WD van for the nurse, March 2012*
Objective: Maintain a socially natural and genetically diverse herd of Przewalski’s horses

Projected outputs and evidence:
- Maintenance of a minimum of 4 family groups plus bachelor groups in continuous contact with each other, using contraceptives to maintain the number if no outside places can be found.
- Continued pedigree of all horses.

We have two pastures for Przewalski’s horses: le Villaret and the extension in Nivoliers, which is partly on land owned by the local government, yielding approximately 400 ha. This limits us to no more than 40 horses if we want to avoid overgrazing.

The herd and the fence were checked weekly. From 31 horses in 2010, the herd grew to 39. The herd welcomed a total of 20 foals from 2010 to 2013, 5 of whom died a few days after their birth. In addition, 4 adult horses died during the four years. While the herd has remained at 4 family groups and separated bachelor stallions, the group composition has changed. The sex ratio was very unbalanced in 2010, but it rebalanced by the end of 2013 with 20 males and 19 females. No contraceptives were given to the mares during the 4 years because the growth of the herd was controlled thanks to the transport of 3 stallions in 2012 to San Cebrián de Mudá in Spain in a reserve which also protects European Bison. One of the transported stallions died in 2013. Preferring to find an outlet for the horses over giving them contraceptives, we are planning another transport to Spain in 2014.

In order to determine the father and confirm the mother of all individuals, we systematically take biopsies of living horses and skin samples of dead horses for DNA extraction, which are then analysed for 11 microsatellites used for paternity analyses in domestic horses by the commercial laboratory Labogena. As of December 2013, most foals have been analyzed, with the exception of 2 foals of 2012 and all of the 2013 foals. The genetic analyses allowed to ascertain that one mare had been incorrectly identified for several years.
**Objective 2: Continue courses on behavioural ecology of wild horses and their conservation for students, professional ‘horse people’ and the general public**

**Objective:**
Courses run

**Projected outputs and evidence:**
Training courses in behavioural ecology of wild horses and large mammal conservation for university students, and in wild horses social behaviour for ‘horses professionals’ and the general public.

As a part of our efforts to raise awareness about Przewalski’s horses, behavioural ecology and ethology, we continued to welcome trainings and students. Each year, a training for horse ethology students of Rennes University took place for one week in May. In 2011, we also welcomed the Swiss National Haras for their “Equigarde plus” course. Also in 2011, 4 Master’s students from the University of Bourgogne came to Le Villaret for 6 weeks. They were studying organismal and population biology, with a focus on Behavioural ecology. Furthermore, three PhD students defended their thesis between 2010 and 2013, which included work on Przewalski’s horses in collaboration with TAKH. Moreover, 12 groups of students aged 14 to 25 visited Le Villaret and were guided by our ranger. Hélène Roche, an independent ethologist, provided training for the general public at Le Villaret during August. She welcomed 7 small groups in 2010, 2011 and 2013. These trainings met with more and more success, allowing Takh to generate some revenue.

**Objective 3.1: Develop a partnership with the PNC restoring the Villaret site to raise conservation awareness, included a shared information centre**

**Objective:**
Functional information centre in July and August

**Projected outputs and evidence:**
Shared information centre on site (TAKH and the PNC) focusing on conservation.

The information centre has been open every year during the summer in July and. Admission is free and it is open every day, except Saturday, from 10am to 1pm and from 4pm to 7pm. Visitors can read interpretive panels about the project and watch a film. Moreover, there are always volunteers to answer visitors’ questions and to explain how to see the horses. Finally, people can also...
buy TAKH merchandise and felt items from Mongolia. We experienced a significant decrease in 2012, also experienced by other touristic sites near Le Villaret (see table 4.1). Every year most visitors came during the first half of August.

Table 4.1 – Number of visitors from 2010 to 2013 compared to the number of opening days

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of visitors</th>
<th>Opening days</th>
<th>Average / day</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010: July 7- August 26</td>
<td>4390</td>
<td>44</td>
<td>99,8</td>
</tr>
<tr>
<td>2011: July 8 – August 25</td>
<td>3932</td>
<td>42</td>
<td>93,6</td>
</tr>
<tr>
<td>2012: July 8 – August 31</td>
<td>3283</td>
<td>48</td>
<td>68,4</td>
</tr>
<tr>
<td>2013: July 7 – August 30</td>
<td>3402</td>
<td>48</td>
<td>70,87</td>
</tr>
</tbody>
</table>

The partnership with the Cevennes National Park (PNC) has not progressed as expected for two reasons: 1) new elections of the board of directors of the PNC in 2010 which favoured other sites in the Park and 2) serious government budget cuts and a subsequent reorientation of their budget. However, we continue to do awareness-raising with our information centre, even without financial support from the PNC.

**OBJECTIVE 3.2: DEVELOP A CULTURAL EXCHANGE BETWEEN KHOMYN TAL AND HURES-LA-PARADE COMMUNITIES BASED ON SHEEP REARING KNOWLEDGE AND COMMON ENVIRONMENTAL PROBLEMS**

**Objective:**
Agreements signed and implemented

**Projected outputs and evidence:**
Khomyn Tal and Hures communities have an official twinning agreement

The organization of a twinning agreement and a cultural exchange between Hures-la-Parade and Khomyn Tal was very ambitious. There was a lack of motivation on behalf of Hures-la-Parade, and clearly TAKH could not accomplish the goal otherwise. Regrettably, even if some steps were reached, this was not achieved.

**OBJECTIVE 3.3: MEDIA OUTPUT**

**Projected outputs and evidence:** Media output (press, radio, television)

Our media relations are not particularly impressive and could improve if we were more reactive to journalists. They could help us inform the general public about our project, but also participate in
awareness-raising on conservation. Moreover, they are also very important in our fundraising efforts by informing people about our “adopt a horse scheme” and by increasing the visibility of our sponsors.

**Objective 4: Have sufficient funding to cover 100% of Le Villaret expenses without MAVA support**

Objective:
Positive income/expenditure balance, no costs charged to MAVA

Projected outputs and evidence:
Funds generated through partnerships, subsidies, sale of Takh items, and the ‘adopt a horse scheme’ show sufficient profits to cover expenses at le Villaret

The main grant received for Le Villaret is from the Common Agricultural Policy (CAP) of the European Union. Thanks to new contracts signed in 2011 and 2012, funding increased by 70%: from 19,915 € in 2010, we reached 33,762 € in 2013. Due to the changes in the CAP in 2014, we do not know if we can count on the same amount. However, it seems that we meet the future priorities announced by the EU and the French government, particularly for pastures and extensive breeding, leading us to assume that we will continue to receive these subsidies.

Sales at Le Villaret are highly dependent on the number of visitors. During the 4 years, we sold almost the same items. The biggest portion of our sales is TAKH apparel (50% of all sales). Another big part of our sales is communication items (postcards, DVDs, etc). With the majority of all these items we make a 50% profit. As we are open for only 2 short months, we cannot have too much stock or too many items, and it is a bit difficult to find low-cost items in small quantity. Even if we purchase more items, we have a problem of storing the items good conditions. Another way to increase sales, which we already began to explore with felt products, is online sales.

Another source income for Le Villaret is the ‘adopt a horse scheme’. Every year, we sent one annual newsletter by mail, and in 2011, an e-newsletter and identity card. We can easily see that the number of adopters increased as the information sent to them increased. As we have more adopters, we receive more money. Paradoxically, in 2013, we had less adopters than in 2012, but we received more money.
because the average given by adopters increased. In 2013, we conducted an on-line survey about our adopt-a-horse program: 614 current or past horse adopters were contacted, 303 responded. The results helped us better understand our adopters and their wishes. It has shown that adopters want information more regularly, particularly about their adopted horse. Given this, we made changes so that they will receive more information, which we hope will yield more adopters that donate year after year and/or donate more.

The 3 parts of the self-financing budget increased during the 4 years, and the Le Villaret budget decreased. Even if Le Villaret is nearly completely self-funded thanks to the CAP, the sales and the adopt-a-horse scheme, we must develop a fundraising strategy for Le Villaret and explore other tracks.