

## Przewalski's Horse (*Equus ferus przewalskii*) Re-introduction in the Great Gobi B Strictly Protected Area: from Species to Ecosystem Conservation

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### Abstract

The Przewalski's horse (*Equus ferus przewalskii* Poljakov, 1881), or "Takhi" in Mongolian, became extinct in the wild by the mid 1960's. The last recorded sightings of Przewalski's horses occurred in the Dzungarian Gobi desert in SW Mongolia, today's Great Gobi B Strictly Protected Area (SPA). A re-introduction program was initiated in 1992 and the first group of captive-born Przewalski's horses was airlifted to the SPA. Given the logistical challenges associated with such a venture, the initial project focus has been on transport logistics and the well-being of the re-introduced horses. Today, conservation efforts are spread over the entire protected area. Present day efforts include other mammals, vegetation and the local people. Due to its important symbolic value in Mongolian culture, the Przewalski's horse became an important flagship species for the protected area's conservation and management.

**Key words:** *Equus ferus przewalskii*, conservation, management, Mongolia, re-introduction

### Introduction

The Przewalski's horse (*Equus ferus przewalskii* Poljakov, 1881), called "Takhi" in Mongolian, became extinct in the wild and has only survived due to captive breeding (Wakefield *et al.*, 2002). The last recorded sightings of the Przewalski horse in the wild occurred in the mid 1960's in the Dzungarian Gobi of Mongolia (Sokolov & Orlov, 1986). Thereafter, the species survived only due to captive breeding based on 13 founder animals (Wakefield *et al.*, 2002). The reasons for the extinction of the Przewalski's horse were seen in the combined effects of pasture competition with livestock and over-hunting.

In the 1975 the Dzungarian Gobi was declared as part B of the Great Gobi Strictly Protected Area (SPA). By the mid of 1980's the captive Przewalski's horse population had grown to over 1,000 individuals – an important pre-requisite to initiating a re-introduction program. With Mongolia's independence, a private fund and the

Mongolian Society for the Conservation of Rare Animals initiated the "Takhiin Tal" project with the support of various international sponsors (Kaczensky *et al.*, 2004).

In 1992 the first group of captive born Przewalski's horses was airlifted to Takhiin Tal at the edge of the 9,000 km<sup>2</sup> Great Gobi B SPA. In 1997 the first harem group was released into the wild from the adaptation enclosures, and 1999 the first foals were successfully raised in the wild (Slotta-Bachmayr *et al.*, 2004).

International criticism and recommendations (Van Dierendonck & Wallis de Vries, 1996) resulted in the establishment of the International Takhi Group (ITG) in 1999 with the aim to continue and extend the Takhiin Tal project in accordance with the IUCN re-introduction guidelines. Today the Takhiin Tal project receives international recognition and although it is still too early to judge whether the project is a success or failure, the positive trend of the free-ranging Przewalski's horse population is encouraging (Fig. 1). However,

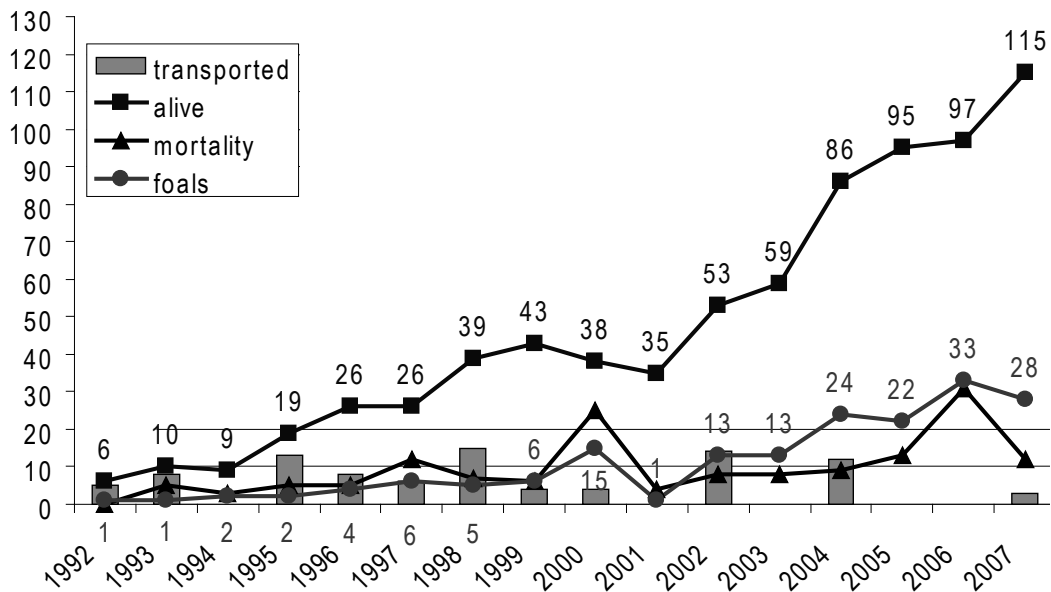


Figure 1. Population development of the Przewalski's horse population in the Great Gobi B SPA in south-western Mongolia. [For total population see numbers above graph "total population", for number of foals see numbers below and above graph "foals". Years refer to "horse years" from birth in May to the end of April the following year.]

for the successful implementation of this re-introduction program it needs to be embedded in a broader context of ecosystem conservation. Hereunder we would like to describe how and why the project, which started as a single-species re-introduction was greatly expanded in recent years.

### Infrastructure

International transports from Europe to Mongolia were both a logistic and a financial challenge. Therefore, initial re-introduction efforts were focused on well-being of the Przewalski's horses in and around the adaptation enclosures (Robert *et al.*, 2005). However, the establishment of a permanent field station with the necessary infrastructure (solar power, laboratory, office with EDV, vehicles and petrol), and communication abilities (VHF communication, satellite-based email and phone) proved equally important.

In 2004 the Takhiin Tal camp hosted the 2<sup>nd</sup> International workshop on the re-introduction of the Przewalski's horse. In 2005 facilities at the Takhiin Tal camp were further upgraded with the construction of the Great Gobi B SPA park headquarters funded in part by the Austrian Ministry of Environment. Facilities at the Takhiin Tal camp now allow year-round living and working space. The camp provides training possibilities for young Mongolian biologists, has created local

employment options and is run by well-trained and motivated local staff (see [www.takhi.org](http://www.takhi.org)).

### Monitoring

Monitoring is a key element of any re-introduction project. In the Great Gobi B SPA monitoring has employed standardized methods since 2002 with a focus on: (1) population dynamics and distribution of re-introduced Przewalski's horses, (2) distribution of wild and domestic ungulates and (3) human impacts on the protected area.

Park rangers are able to identify individual Przewalski's horses and check their groups 2-3 times a week (Ganbaatar, 2003). They determine the location of individual Przewalski's horse and groups based on a raster map, note group size and composition, and protocol any peculiarities of individual horses (e.g. injuries, poor body condition etc.). The data is fed into a central database, and all data on population dynamics and group composition are passed onto the European Endangered Species (EEP) coordinator for annual reporting. As of December 2007 the Przewalski's horse population in Takhiin Tal had increased up to 115 individuals (Fig. 2).

Range use of the re-introduced Przewalski's horse population increased gradually and pasture use was largely confined to the north-eastern corner of the protected area (Fig. 2). In 2005 one

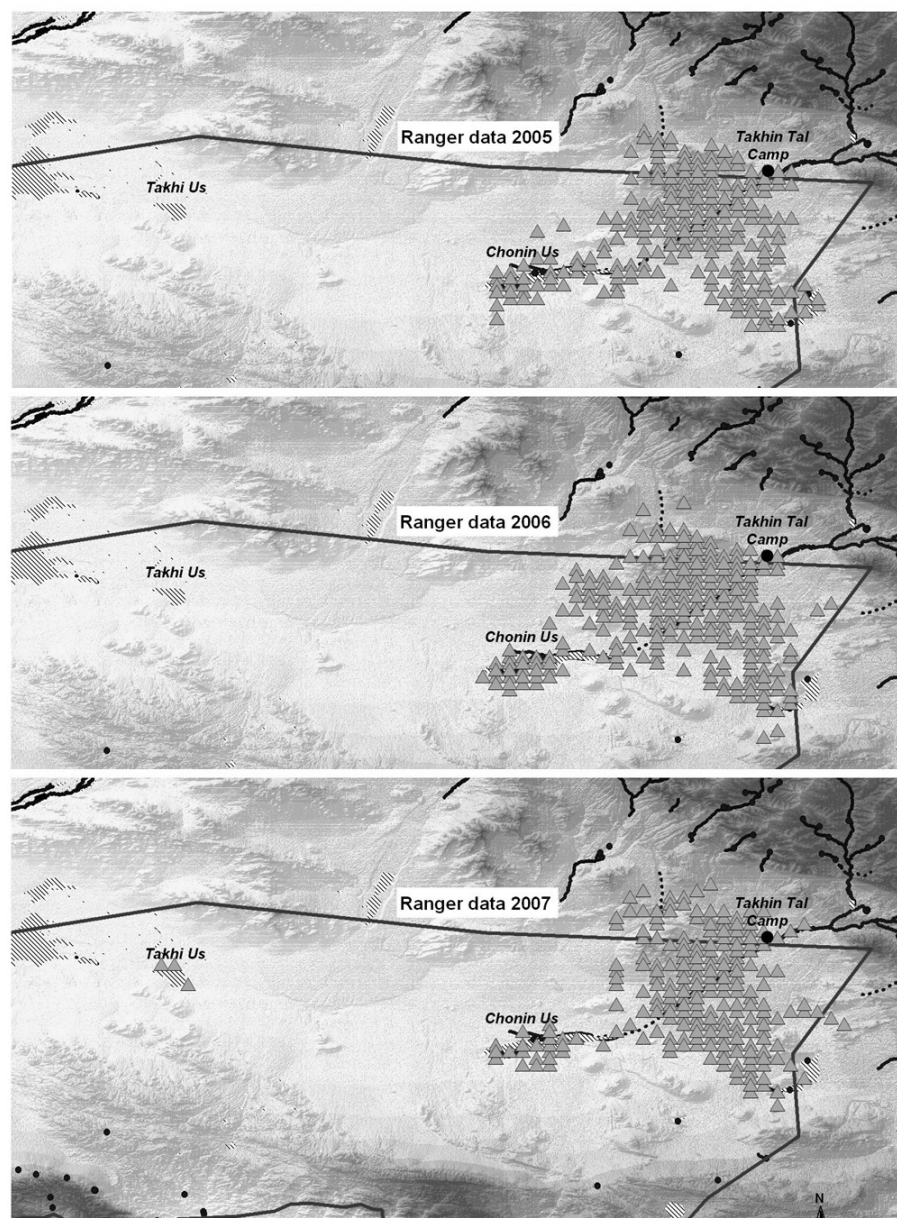


Figure 2. Range use by Przewalski's horses in Takhiin Tal as determined by ranger observations 2005-2007. Monitoring of the group released at Takhiin Us in 2005 was initially performed by satellite telemetry. Since 2007 this group is also included in the ranger monitoring.

harem group was released at Takhiin Us water point about 120 km west of the Takhiin Tal camp to speed up the expansion of the distribution range. To facilitate monitoring and to gain sound data on habitat and space use, 10 individuals of Przewalski's horses were monitored with satellite collars (Kaczensky *et al.*, 2008). Range sizes based on telemetry differed only marginally from those determined by the ranger observational data. In Takhiin Tal the individual horse groups cover non-exclusive home ranges of 152-826 km<sup>2</sup> (Kaczensky *et al.*, 2007; Kaczensky *et al.*, 2008). Adaptation of newly released Przewalski's horses was also monitored through behavioural

observations of selected groups (Souris *et al.*, 2007).

Wildlife surveys are conducted on a monthly basis, alternating between the small surveys covering the north-western part of the park (4,000 km<sup>2</sup>) with an entire park (9,000 km<sup>2</sup>) assessment in the following month. During these surveys all wildlife and livestock seen from fixed transects are counted and mapped, thus providing qualitative data on ungulate distribution (Kaczensky *et al.*, 2007). The surveys are also an excellent opportunity to meet local herders and patrol for illegal actions such as poaching or saxaul (*Haloxylon* sp.) collection.

Additional monitoring data are obtained via interviews or questionnaires, mainly focusing on livestock numbers and herder camp positions (Kaczensky *et al.*, 2007), wolf (*Canis lupus*) predation on livestock (Enkhsaikhan 2002) and wolf harvest data (Kaczensky *et al.*, 2008 *in press*).

### ***Inventories***

The Great Gobi B SPA connects the Aralo-Caspian with the central Asian region and thus shows a mixture of floral elements which makes it rather unique within Mongolia (von Wehrden *et al.*, 2006a). In order to map plant biodiversity and vegetation types as a basis for habitat analysis studies, vegetation of the entire Great Gobi B SPA and its surroundings was mapped using a combination of ground surveys, multivariate statistics and remote sensing tools (Figure 3; von Wehrden *et al.* 2006b).

Other inventories within the Great Gobi B SPA focused on small mammals (Lkhagvasuren, 2004a) and an initial bat study (Lkhagvasuren, 2004b).

### ***Specific research projects***

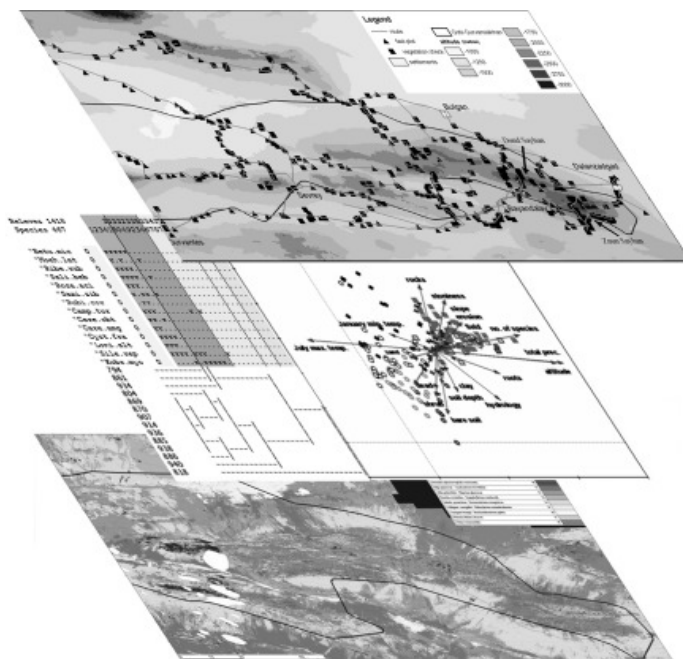
Besides the establishment of basic infrastructure, basic monitoring (designed to provide long-term data) and inventories (designed to derive baseline data), several short- and mid-

term research projects were initiated. In respect to wildlife, one research focus is on the spatial organization and habitat use of the Asiatic wild ass (*Equus hemionus*) and another is on habitat use and feeding ecology of the grey wolf.

### ***Socioeconomic projects***

Another focus is drawn on socioeconomic aspects of local people, their impact on the park and its surrounding (IPECON / NZNI 2003), and their attitude toward wildlife and management issues (Enkhsaikhan, 2002; Kaczensky, 2007). In 2005 training workshops on the construction and application of fuel efficient stoves were conducted in order to reduce the pressure for illegal saxaul and juniper collection. In 2006 a concept for environmental education for children in Takhiin Tal was developed, yet still needs to be implemented.

In 2007 with support from the Italian Region of Lombardia and under the auspices of the Istituto Oikos ([www.istituto-oikos.org](http://www.istituto-oikos.org)) a trans-boundary project in collaboration with the Xinjiang Institute of Ecology and Geography of the Chinese Academy of Sciences, was initiated. This project aims to support rural communities of nomadic pastoralists living in the trans-boundary area of the Dzungarian Gobi in China and Mongolia. Local livelihood should be improved through the strengthening of international collaboration



Field inventory of the vegetation in the Gobi: the choice of the vegetation plots was based on unclassified satellite images and digital topographic maps.

Classification of the vegetation based on multivariate statistics. Gobi-wide description of the units.

Classification of the satellite image based on vegetation plots.

Figure 3. Schematic figure of the analysis steps and data used within the creation of a park-wide vegetation map.

on sustainable development issues and the integration of an environmental component in the development process. We currently seek additional funds to strengthen local involvement and community development in the Great Gobi B area.

### Conclusion

Starting out initially as a single-species re-introduction project, the magnitude of the conservation activities has greatly expanded in recent years. Seen from a species perspective, research projects dealing with the Mongolian wild ass, grey wolf, various rodent species and the vegetation have been implemented. Whereas the initial re-introduction efforts were driven mostly by veterinarians, the disciplinary scope has also been significantly broadened with zoologists, botanists and remote sensing experts performing habitat mapping and assessment, and community development experts establishing a socio-economic framework for the future project development.

Away from the field an important prerequisite for project advancement has proven to be the lobbying activities both in Ulaanbaatar and to the international community. Lobbying activities not only enhance information flow and political understanding for the project, but also create collaborative opportunities and necessary alliances. Comprehensive interdisciplinary monitoring and research are the foundation for management decisions at the present, but training and empowerment of local scientists and residents will constitute the future of this program.

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### Хураангуй

Тахь буюу Пржевальскийн адуу (*Equus ferus przewalskii* Poljakov, 1881)-ны зэрлэг популяци 1960-аад оны дунд үед уугуул нутгаасаа бүрэн устсан билээ. Сүүлчийн тахь Монгол орны баруун өмнөд хэсэгт байрлах Зүүн Гарын говьд буюу өнөөгийн Их Говийн дархан цаазат газрын Б районд амьдарч байсан юм. Дэлхийн янз бүрийн оронд байрлах зоопарк, тусгай хамгаалалттай газруудад гаршуулж үржүүлсэн тахийг уугуул нутагт нь сэргээн нутагшуулах хөтөлбөр 1992 оноос эхлэн хэрэгжсэн бөгөөд тахийн эхний сүргийг Их Говийн дархан цаазат газрын Б районд авчирч нутагшуулж эхэлсэн билээ. Тахийг сэргээн нутагшуулах энэхүү хөтөлбөрийн эн тэргүүний зорилго нь гадаадаас авчирсан тахийг эсэн мэнд өсгөн үржүүлэх явдал байв. Эдүүгээ тахийг сэргээн нутагшуулж буй дээрх дархан цаазат газарт байгаль хамгааллын үйл ажиллагаа идэвхжиж, өргөжсөн бөгөөд бусад хөхтөн амьтан, ургамлыг хамгаалах, орон нутгийн иргэдийн амжиргааг тэтгэх г.м. үйл ажиллагааг мөн хэрэгжүүлж байна. Тахь нь Их Говийн дархан цаазат газрын хувьд биологийн бусад төрөл зүйл болон экосистемийг хамгаалахад шүхэр буюу нөмөр зүйлийн үүрэг гүйцэтгэж байна.

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