Asiatic Wild Ass collaring mission for the Great Gobi A Strictly Protected Area in Mongolia

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&

"Conservation of the Great Gobi Ecosystem and Its Umbrella Species Project" by UNDP

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1. Introduction

Mongolia is an important stronghold of the Asiatic wild ass (*Equus hemionus,* khulan in Mongolian) and has a global responsibility to ensure their conservation. At the present time, Mongolia is anticipating development of a commercialized agricultural sector that could easily cause greater intrusion of human activities in the gobi environment than current pastoral livestock production. Development of other sectors of the Mongolian economy, especially mining and road construction, could also impact environmental security in general and habitat needs of the khulan and associated wildlife in particular.

At present, the status and trend of the khulan population in Mongolia is difficult to assess, as no standardized monitoring has been installed and very little is known about khulan ecology and movement patterns. We believe that without immediate conservation actions prospects for long-term survival of the khulan are poor and the species may potentially face extinction as did the other native equid species of Mongolia the Przewalski's horse (*Equus ferus przewalskii*). The aims of our three year research project are to:

- assess to what extent (if any) the wild ass is affected or competes with domestic livestock and other human intrusions, and to what degree
- develop a dynamic khulan habitat model to identify (1) key habitats, (2) prospective movement corridors and (3) potential and existing conflict areas
- assess the spatial integrity of the khulan population in Mongolia
- test ground survey methods to design future- and interpret past wildlife surveys

We have selected three focal study areas: Great Gobi B SPA, Great Gobi A SPA, and the SE gobi including the Small Gobi SPA. Together these areas encompass about 200.000 km² of the potential khulan distribution range in southern Mongolia. Habitat conditions range from true desert areas with almost no human use in the Great Gobi A, over desert-steppe areas with moderate grazing pressure in the Great Gobi B, to desert-steppe areas heavily grazed by livestock and impacted by mining activities in parts of the SE gobi.

2. Great Gobi A SPA

The Great Gobi Strictly Protected Area (SPA) "A" located in the southwestern part of Mongolia bordering with People's Republic of China is one of the world's great desert ecosystems. The extremely harsh environment has given rise to a unique ecosystem with particularly well-adapted species, many of which are found nowhere else in the world. The large mammal fauna consists of several rare or globally threatened species, namely the wild

Bactrian camel (*Camelus batrianus ferus*), the Gobi bear (*Ursus arctos gobiensis*), the snow leopard (*Uncia uncia*), the argali wild sheep (*Ovis ammon*) and the Asiatic wild ass (*Equus hemionus*).

Yet human pressures for pastures and water on the edges of the Great Gobi SPA and in its buffer zones have substantially increased since the early 1990s and are believed to have lead to significant habitat degradation in some areas. Thus in June 2003 a UNDP / GEF founded project "Conservation of the Great Gobi Ecosystem and its Endangered Species" was initiated. The project aims to ensure the long-term conservation of the Great Gobi ecosystem and its umbrella species by building the capacity of the park management authority, improving participation of local communities in the management of the protected area (SPA) and supporting research and environmental monitoring activities through the development of a model conservation program using the wild Bactrian camel as an "umbrella species".

This summer's work was conducted within the framework of the two projects mentioned above. The specific aims of this summer's trip were to:

- collar 8 Asiatic Wild Ass with GPS / ARGOS collars
- count Asiatic Wild Ass and Wild Bactrian Camels along our travel route
- locate the three Wild Bactrian Camels radiocollared in December 2005 and subsequently capture and re-initialize the faulty collars
- collect blood samples for health screening of all the captive Wild Bactrian Camels at Zakhin Us

3. Asiatic Wild Ass collaring in the Great Gobi A SPA

3.1. Time table & route

The field trip for Asiatic Wild Ass (khulan) collaring in Mongolia was conducted between 18 June and 6 July 2006 (Table 1). The team covered ~1000 km within the Great Gobi A SPA (Fig. 2).

Table 1: Travel dates and route of the khulan expedition in June/July 2006.

Date	Location	Task
22/23 June 2006	UB-Bayantorooroi	domestic travel to gobi
24 June 2006	Zakhyn Us	sampling of captive wild camels
25/26 June 2006	Camp 1	near Makhen bulag
26-28 June	Camp 2	near Gandigaryn us
28/29 June	Camp 3	near Baruun tooroin bulag
29/30 June	Camp 4	near Bogts tsagaan ders
30 June - 2 July	Camp 6	near former military base water point
2/3 July	Camp 7	near Khoshootyn Dood us
3/4 July	Camp 8	near Choigyn us/Buuryn khyar
4-6 July	Camp 9	near Canyon water point
6 July	Bayantooroi	back to park headquarter

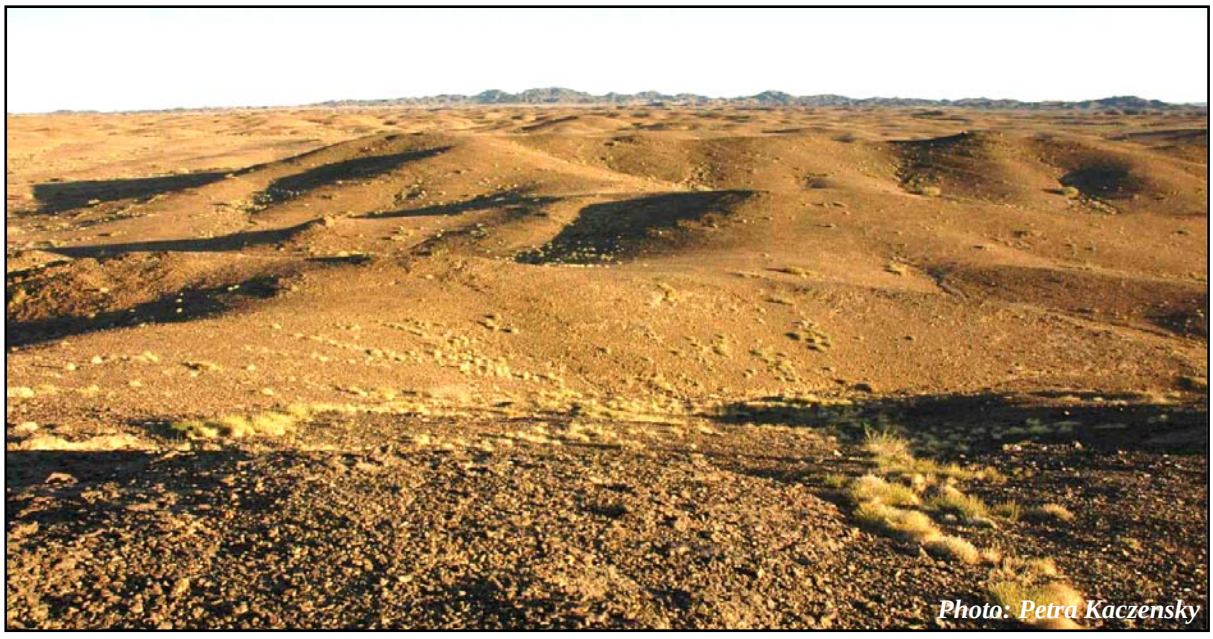

Fig.1: Northern edge of the Gobi A SPA.

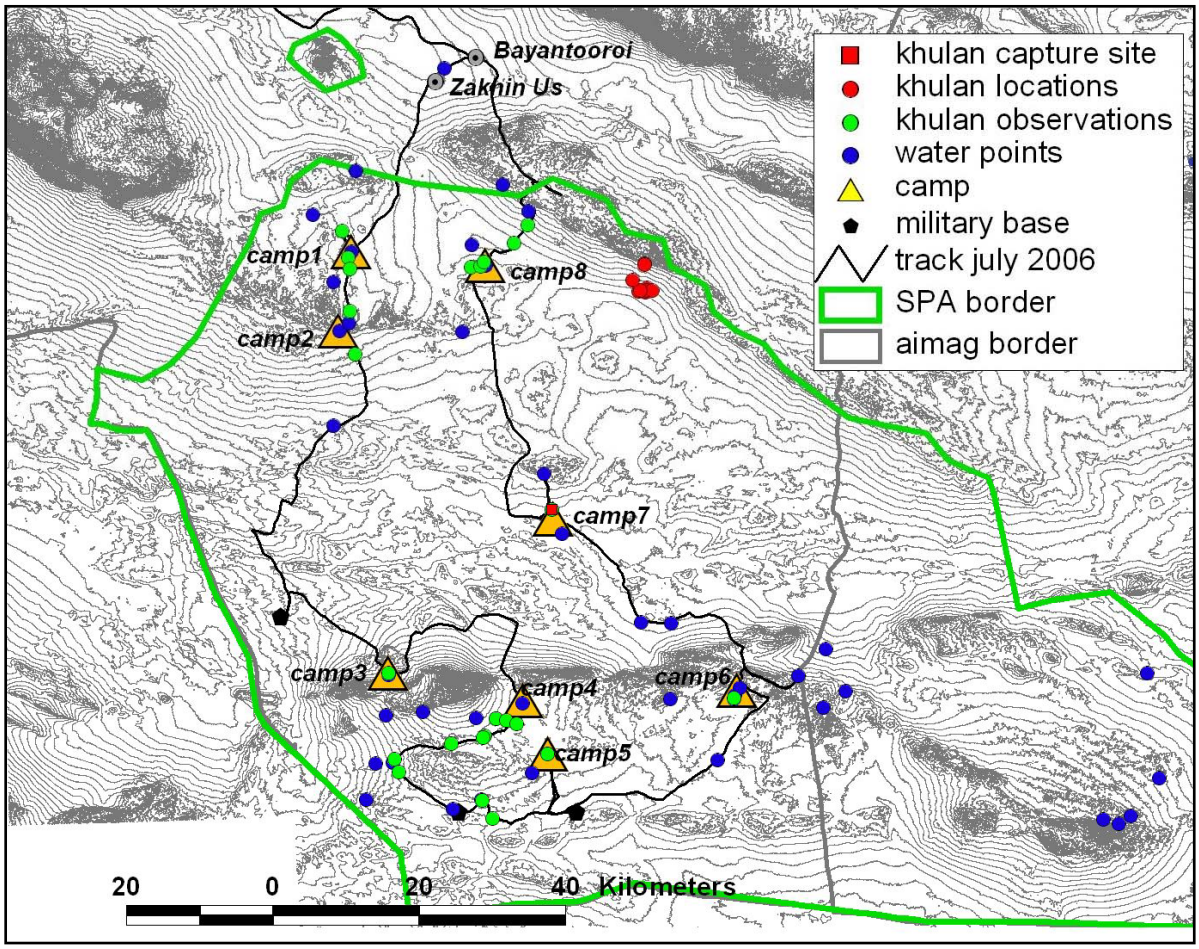

Fig. 2: Route in the Great Gobi A SPA from 25 June until 6 July 2006.

3.2. The field team

The field team consisted of 12 participants:

National:

- Enkhbileg Dulamtseren; Coordinator, Wild Camel Protection Foundation & Mongolian National Commission for Conservation of Endangered Species
- Adiya Yadamsuren; Camel Researcher, Institute of Biology Mongolian Academy of Sciences
- Dorvchindorj Ganbold; Researcher, Great Gobi A Strictly Protected Area
- Khatanbaatar Igoriin; Researcher, Laboratory of Parasitology, Institute of Veterinary Medicine
- A. Tsolmon; Institut of Botany, Mongolian Academy of Science
- B.Choijin; Ranger Adviser, Great Gobi A Strictly Protected Area
- T. Ankhbayar; Driver & Ranger Great Gobi A Strictly Protected Area

- G.Enkhbold; Driver Great Gobi A Strictly Protected Area
- A. Gerelmaa; Cook and Camp Assistant, Great Gobi A Strictly Protected Area
- Dugeree; Driver

International:

- Chris Walzer; Zoo and Wildlife Veterinarian, Research Institute of Wildlife Ecology, University of Veterinary Medicine, Vienna, Austria
- Petra Kaczensky; Wildlife Biologist, Research Institute of Wildlife Ecology, University of Veterinary Medicine, Vienna, Austria c/o Department of Wildlife Ecology and Management, University of Freiburg, Germany

3.3. Khulan capture anesthesia and collaring

We were able to capture and collar only one out of eight khulans on this trip. For this animal we employed a chase method where the khulan is darted from a moving jeep (see report on wild camel darting for details). Contrary to camels which have a maximum speed of about 35 km/h, khulan run as fast as 60 km/h. Thus a fairly large area of flat open ground needs to be available to employ this method.

Instead of using a preferred UAZ Russian jeep, we had to use a Toyota Landcruiser for this chase. The Landruiser is faster, has seat belts and windows which can easily be lowered. However, any possible damage inflicted to the car during the chase is much more costly and harder to repair in the field. Quite understandably our driver was very reluctant to use this method in the first place.

For remote dart application we used a modified high pressure CO_2 dart gun (Daninject JM™, Wildlife Pharmaceuticals, Fort Collins, CO 80524, USA) with a short 4 cm barrel. The animal was darted at a range of 10-15m with a single 3ml dart (Telinject) containing a combination of 4.4 mg Ethorphine (M99, C-Vet Veterinary Products, Lancs, UK), 10 mg Detomedine-HCl (Domosedan, Orion Corp. Farmos Finland) and 10 mg Buthorphanol (Torbugesic, Fort Dodge Animal Health, Iowa, USA).

Anaesthesia was reversed with an intravenous combination of 12 mg Diprenorphine (M5050 Revivon, C-Vet Veterinary Products, Lancs, UK) and 20 mg Antipamazole (Antisedan, Orion Corp. Farmos Finland).

The chase time was closely monitored, lasted 12 minutes and thus did not exceed our pre-established cut off time of 15 minutes.

The animal was collared with a GPS / ARGOS collars (TGW-3580, Telonics, Mesa, USA). The collar was programmed to attempt 1 GPS location every 7 hours and transmit GPS data via ARGOS uplink every other day. With this schedule, the collar is expected to last for ≥19 months. For animal welfare reasons and to allow collar retrieval, the collar was equipped with a pre-programmed drop-off device (CR-2A, Telonis, Mesa, USA), which will release the collar on 30 October 2007.

Table 2: Capture and collar specifications of the khulan captured in the Great Gobi A SPA.

General information	
Capture date	04.07.2006
Capture time	08:00 a.m.
Capture location	43.75687 / 96.94633
ARGOS ID	58849
VHF frequency	151.550
Ear tag (left)	50 yellow
Body measurements (cm)	
Sex / Age	male / adult
Total length	210
Shoulder height	128
Neck circumference	65
Head length	54
Ear length	9

Fig.3: Khulan capture in the Great Gobi A SPA on 4 July 2006.

3.4. Collar testing

Collars were tested according to the Telonics protocol by Petra Kaczensky and the initiation process did not produce any error messages. Collars were turned on in UB on June 19 and left running throughout the trip. All collars produced locations which were checked with a mobile satellite modem throughout the trip (Table 3, Fig. 4).

Table 3: GPS positions transmitted via the ARGOS satellite system from 8 collars before deployment.

ARGOS ID	N
22366	25
25731	14
25778	11
25805	14
25806	14
25915	12
58849	13
23091*	>10
total	***>113***

** initial coding wrong*

Once on the khulan, collar 58849 did not produce any more locations. On 21 August and 4 September the collar finally managed to contact the ARGOS satellite and on these two days transferred two times 5 GPS locations for the collared animal. All ten locations were at the northern edge of the Great Gobi A SPA, about 70 km from the capture site (Fig. 2).

Failure evaluation with TELONICS and ARGOS is pending, but most likely background noises in Asia have risen to a level, where a 500mW output power is too low to be picked up by the ARGOS satellite system.

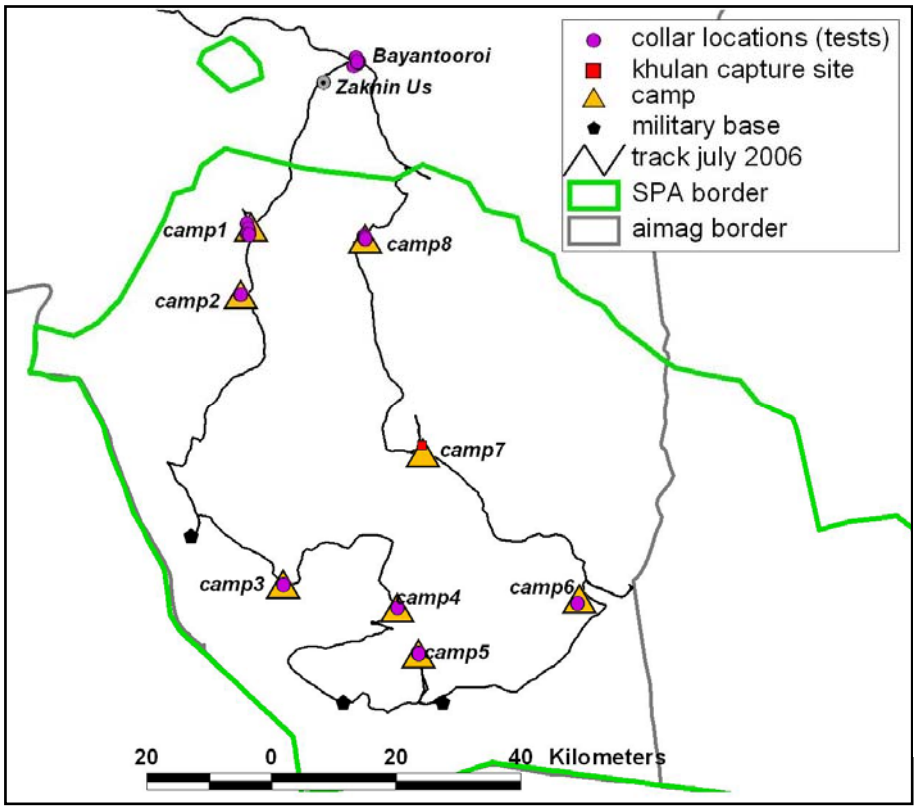

Fig. 4: GPS locations produced by the 7 collars, while stored in a peli box during traveling. All locations coincide with evening camps, when the collar box was unloaded from the jeep.

3.5. Khulan counts

During the 12-day trip through the Great Gobi A SPA we counted 107 khulans in 26 groups (Fig. 2). The distributions were highly clumped with most observations in the north and south and almost none in the central part of the park (except for the animal radiocollared; Fig. 2).

3.6. Other rare wildlife

All Wild Bactrian camels were counted and recorded by Adiya and Dorvchindorj. In addition to wild camels, two unmarked gobi bears were seen, one near Barun tooroi oasis (on 28 June around 19:30; Fig. 5) and one at Bogts tsagaan ders waterpoint (on 29 June around 13:00). Two additional bears were photographed with a mobile Cuddeback game trail camera (Cuddeback digital 3 MB, Non Typical Inc., Park Falls, WI, USA) at Khoshoot water point (Fig. 6).

Fig. 5: Gobi bear near Barun tooroi oasis on 28 June around 19:30.

Fig. 6: Gobi bears on a train at Khoshoot water point on 1 July at 22:00 and 2 July at 00:14.

4. Wild camel work

4.1. Captive Wild Camel health screening

Disease is one of many factors potentially affecting the viability of wild populations. In a balanced ecosystem, most populations survive with low levels of disease or with periodic epidemics. However, as wildlife populations become denser due to habitat restriction, the risk of a potentially catastrophic epidemic event within a wildlife population increases. Due to the increase of the livestock – wildlife interface the transmission of diseases between wild and domestic animals also becomes more likely.

On the 24.06.2006 19 wild camels and 2 domestic contact camels were sampled at the Zakhyn Us breeding facility. Some of the individuals were sedated with intramuscular dart containing xylazin (0.1 mg / kg). Blood was drawn from the jugular vein (Fig. 7).

Blood smears (for blood parasite determination) serum (for serological testing) and blood clot (for genetics) were collected and frozen in liquid nitrogen. The serological testing is presently being performed at a reference lab in Germany. The parameters being examined are summarized in table 4.

Fig. 7: Blood being collected from the jugular vein in a sedated wild camel at Zakhyn Us.

Table 4: Health parameters being examined in the captive wild camel population.

	Agent	Test
	Chlamydiophila abortus	ELISA
	Trypanosoma	
	F. tularensis	ELISA/ Serumagglutination
	Brucella abortus, B. mellitensis	ELISA
	Coxiella burnetti	ELISA
	M. paratuberculosis	ELISA
	FMD-virus	ELISA / NT
	Camel pox	ELISA
α-Herpesvirus	BHV-1	NT
	Cap-HV-1	NT
	CerHV-1	NT
equine - Herpes virus	EHV-1	NT
	EHV-4	NT
	EHV-9	NT
BVDV (BVDV-Genotyp I)	SH9/11	NT
	NADL	NT
	Grub	NT
	EMC-Virus	NT
	Bovine Respiratory Syncytial virus	ELISA
	Rinderpestvirus	ELISA
	BKF-associated virus	ELISA

The genetic samples were integrated into the on-going study "Genetic diversity of the Mongolian wild Bactrian camel (*Camelus bactrianus ferus*) facing the rising pressure of introgression" by Dipl. Tzt. Katja Silbermayr. This project is a co-operation between the Institute of Genetics at the University of Veterinary Medicine (VMU) Vienna, Austria, the Wild Camel Protection Foundation (WCPF) and the Mongolian Academy of Sciences.

4.2. Locating collared camels

We located one of the collared camels (bull #1, VHF frequency 151.051) near our camp at Makhan bulag on 25 June 2006 at 19:30. The puls rate of the signal was at 34 beeps / min, supporting the assumed faulty initialization of the collar. Because the VHF unit shuts down at 20:00 we were unable to locate the bull camel.

During the whole trip we checked for the camel frequencies in the car (with roof antenna) and opportunistically climbed hills (Fig. 8). We never picked up any camel radiofrequencies again and also never saw a collared camel. However, telemetry was made difficult by the presence of 8 running radio collars in the back of the jeep. None of the collars in the car had the same frequency as the camel collars, but interference phenomena and masking of weak signals probably greatly inhibited our ability to pick up signals from the camel collars.

Fig. 8: Chris Walzer checking for wild camel radiocollars.