

Przewalski horses, wolves and khulans in Mongolia

Report December 2002, by Petra Kaczensky and Chris Walzer



FWF

RESEARCH for
CONSERVATION
SALZBURG ZOO



1 The Przewalski horse population

Status of the free-roaming population

Group composition and status of the wild takhi population has not changed since the last report (July 2002). There are still a total of 36 takhis in the four groups *PAS*, *MUNDOL*, *TUULAI* and *BACHLOR* roaming free in Takhin Tal (Table 1). All horses are in good or very good condition and fattened up for the winter.

Monitoring of the free-roaming groups with GPS/ARGOS transmitters

On 15.10.02 and 17.10.02 we successfully triggered the remote releases (LOTEK, USA) of the GPS/ARGOS collars on the mares SHAGAI and TOODOK, respectively. Both collars were at the end of their pre-scheduled one-year monitoring period. But whereas SHAGAI's collar had performed well during the entire monitoring period, TOODOK's collar did not send GPS positions via ARGOS uplink. NorthStar will evaluate the reason for the malfunctioning over the winter and hopefully extract the data from the internal storage. SHAGAI's collar was in very good shape and only showed minor signs of wear. TOODOK's collar, on the other hand, had a crack in the battery part of the collar.

The collar of the stallion MUNDOL had stopped working on 13.04.02, but due to a malfunctioning of the remote release could not be removed without capture. Unfortunately all capture attempts in June had failed and we have not been able to remove the collar for evaluation of the problem to date (see report July 2000). On 12.10.02 MUNDOL had a fight with a large domestic stallion and as a result the radiocollar was destroyed (the box with the battery pack was missing the following day).

To allow further monitoring of the free-ranging groups, UUGAN a 10-year old mare in the *PAS* group and SOIR a 5-year old mare in the *MUNDOL* group were equipped with GPS/ARGOS radiocollar on 17. and 24. October, respectively. Horses of both groups were lured with hay and darted with an air powered dart gun (Distinject, Denmark) at distances of 50 m. MUNDOL, on the other hand, evaded three capture attempts. At present, four horses wear radiocollars of which only two are working properly: the GPS/ARGOS collar of SOIR (*MUNDOL* group) and the ARGOS collar of TAYAN (*BATCHLOR* group). MUNDOL's collar failed and is finally also physically broken, whereas UUGAN's collar seems to have problems with transmitting the data via ARGOS. However, while transmitting, all collars performed as expected realizing 3.4-3.9 locations per day (1 year battery capacity) and 1.7-1.9 locations per year (2 year battery capacity) inspite of ambient temperatures below -30°C in the winter time (Table 2, Fig. 1).

Table 1: Most recent group composition, fate and reproductive success of the free roaming horses in the Gobi B strictly protected area (December 2002).

name	stud-	Sex	age	Comments
<i>Pas group</i>				
CHOUWTSCH	1818	stallion	13	
SCHAGAI	2141	mare	11	GPS/ARGOS collar remotely removed 15.10.02
SHAGAIS foal	-	mare	0	
TSCHANDAGA	2130	mare	11	
TSCHANDAGAS foal	-	mare	0	
UUGAN	2398	mare	10	equipped with GPS/ARGOS collar 17.10.02
UUGANS foal	-	stallion	0	
BULGA	2787	mare	7	
BULGAS foal	-	mare	0	
MITSCHID	2921	mare	6	
MITSCHIDS foal	-	?	0	disappeared
TOOT	3072	mare	5	
TOOTS foal	-	mare	0	
ANGIRT	T200	mare	2	
MAIGA	T201	stallion	2	
<i>Mundol group</i>				
MUNDOL	3069	stallion	5	GPS/ARGOS collar destroyed due to fighting on 12.10.02
TOODOG	3035	mare	8	GPS/ARGOS collar remotely removed 16.10.02
TODOOKS foal	-	stallion	0	
IMSH	2748	mare	8	
ZAGAADAJ	2940	mare	6	
ZAGAADAJS foal	-	mare	0	
MISCHEEL	3084	mare	5	
MISCHEELS foal	-	stallion	0	
SOIR	3045	mare	5	equipped with GPS/ARGOS collar 24.10.02
SOIRS foal	-	?	0	disappeared
DOROTHEE	3230	mare	3	
<i>Tuulai group</i>				
TUULAI	2911	stallion	6	
YUL	2712	mare	8	brought back to enclosure in winter due to poor condition,
YULS foal	-	mare		
KHOKHOO	2984	mare	5	
SHAAZGAI	3097	mare	5	GPS/ARGOS collar - died during foaling begin May 2002
SHAAZGAIS foal	-	mare	0	died during birth
TAGTAA	3143	mare	4	
ORCHON	T212	mare	2	
MARAL	T202	mare	2	
KHERLEN	T203	mare	2	
<i>Bachlor group</i>				
HUBSUGUL	3233	stallion	5	
TAYAN	3066	stallion	5	
ZANDAN	3166	stallion	4	
MYANGAN	T204	stallion	2	
<i>foals born</i>			12	
<i>foals alive</i>			9	
<i>adult fatalities</i>			1	
<i>total free-roaming takhis alive</i>			36	

Table 2: Locational data from GPS/ARGOS collars from 30. October 2001 until 27. November 2002.

horse	monitoring period	number of GPS locations	mean number of GPS locations per day
MUNDOL (<i>Hubs gul/Mundol</i> group)	01.11.01-13.04.02	284	1.9
SHAGAI (<i>Pas</i> group)	04.11.01-15.10.02	1080	3.4
SHAZGAI (<i>Tulai</i> group)	30.10.01-02.05.02	349	1.9
TODOOK (<i>Hubs gul/Mundol</i> group)	ARGOS failed	4	-
TAYAN (<i>bachlor</i> group) ¹	24.06.02-ongoing	20	ARGOS locations only
UUGAN	ARGOS failed	0	-
SOIR	24.10.02-ongoing	91	3.9
total		1,808	

¹ This horse received an ARGOS collar without GPS unit and location accuracy is much lower – between: 150 to 1000m

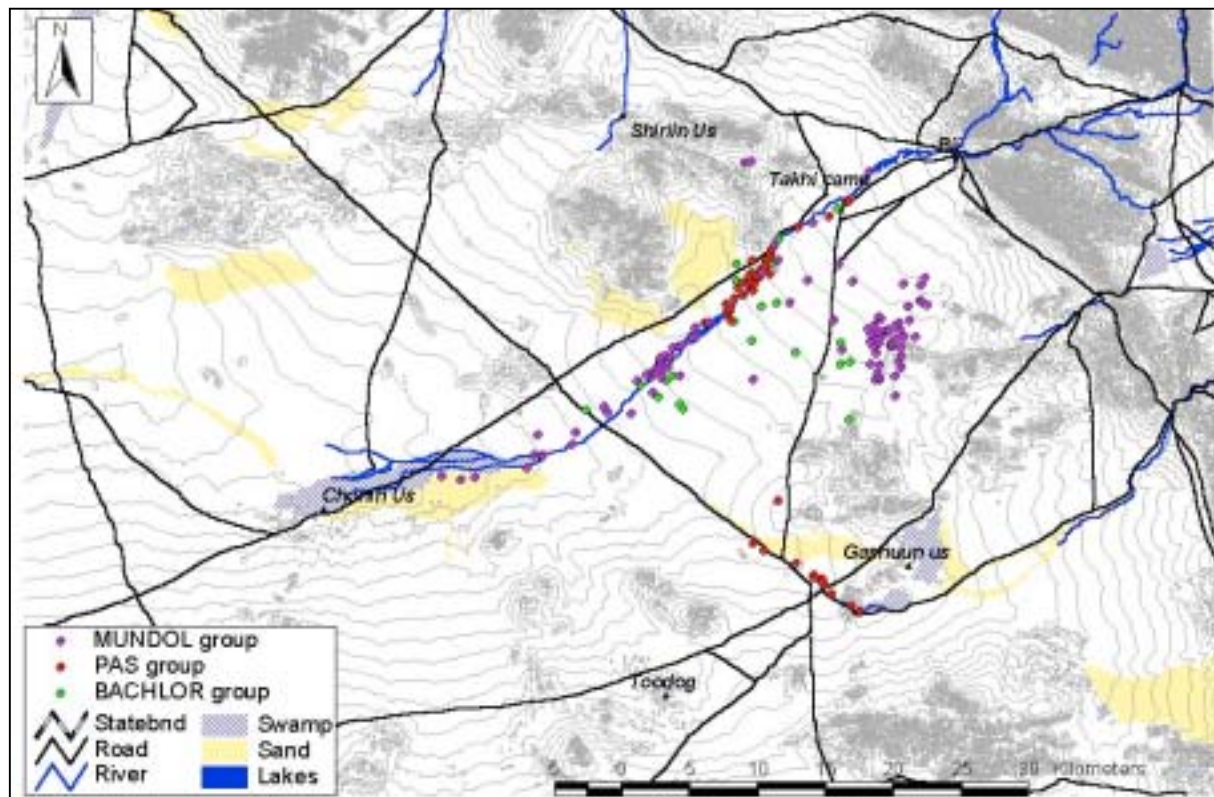


Fig. 1: Takhi movements determined by GPS/ARGOS (MUNDOL and PAS group) and ARGOS only collars (BACHLOR group) in September - November 2002.

In order to better document takhi observations and allow easy data entry into the GIS, we introduced takhi observation forms and provided plastic coated topographic maps with an overexposed grid (2x2 km) to the rangers (Fig. 2). Each time a rangers sees a takhi group, he now writes down the date, time, number of adults and foals seen, distance to the takhi group and the grid cell of the observation.

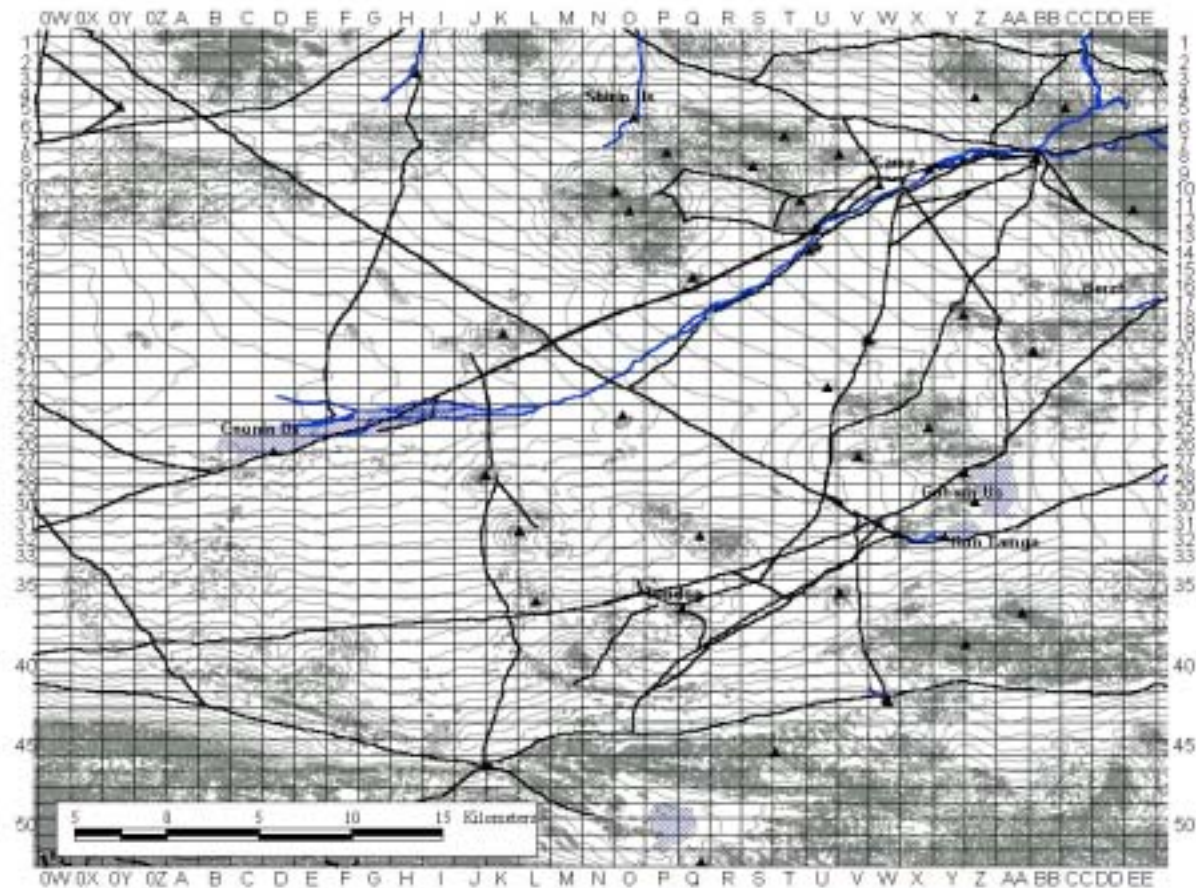


Fig. 2: GIS compatible takhi observation map for rangers within the takhi distribution range of the Gobi B Strictly Protected Area.

Captive takhi population

One foal was born to COOGO of *JIGUUR* group on 11.09.02. Otherwise composition of horses has not changed since July (Table 3; also see report July 2002). Up to the end of November the body scores of horses ranged from fair to fat. The new horses appear to cope quite well with the low temperatures of their first winter (end of November the nighttime minimum was -32°C).

Table 3: Captive population in the Takhin Tal enclosures at the NE edge of the Gobi B National Park (December 2002).

name	stud-book #	Sex	age	comments
Jiguur group				this group remains in captivity for breeding and educational purpose. born 11.09.02
JIGUUR	2363	stallion	10	
CHALIUUNA	1669	mare	14	
COGOO	2586	mare	9	
COGOOs foal		stallion	0	
OD	2645	mare	8	
CHONGOROO	3038	mare	7	
GURGUUL	2786	mare	7	
ZUUN	T214	stallion	1	
mare group				
ERDENE	3040	mare	4	
MONDOR	3194	mare	4	
TSAKIR	3298	mare	3	
OODON	3332	mare	3	
MONGON	3273	mare	3	
ZOGII	-	mare	2	
ZORGOL	-	mare	2	
SONJA	-	mare	2	
stallion group				
KHANGAI	M697	stallion	4	died, most likely due to piroplasmosis / Histo exam pending
MOOGI	3342	stallion	3	
ERKHIM	3294	stallion	3	
KHUCHIT	3320	stallion	3	
MAGNAI	T154	stallion	2	
SELENGE	T160	stallion	2	

2 Wolf population status and feeding ecology

Wolf feeding ecology

An additional 50 wolf scats were collected in November. Including the scats collected in spring, a total of 284 wolf scats, systematically collected over the present takhi range in the Gobi B SPA, will be analyzed by Saikhanaa over the winter. In addition, close contacts were established with Mijiddorj, director of the Gobi A National Park and Saikhanaa will additionally analyze wolf scats collected in the Gobi A SPA. A comparison of the wolf feeding ecology will be very interesting as both areas differ greatly in respect to prey availability. There is no livestock in the Gobi A, water is much more scarce and wild ungulate densities appear significantly lower than in the Gobi B. Furthermore, predation by wolves is believed to be the main reason for the low reproductive output of the highly threatened wild bactrian camel population of the Gobi A. Analysis of wolf scats will bring new evidence on this aspect and help re-defining conservation needs for wild camels.

Wolf hunting

Hunting pressure on wolves in the Gobi B SPA seems high - between 1.January and 26. November 2002 37 wolves were killed in or near the western part of the Gobi B SPA (1 wolf

killed/116 km²; Fig. 3). Despite this high death toll, wolf numbers are generally believed to increase, while hunting pressure is perceived to have decreased. However, no data on wolf densities, based on any systematic monitoring, is presently available.

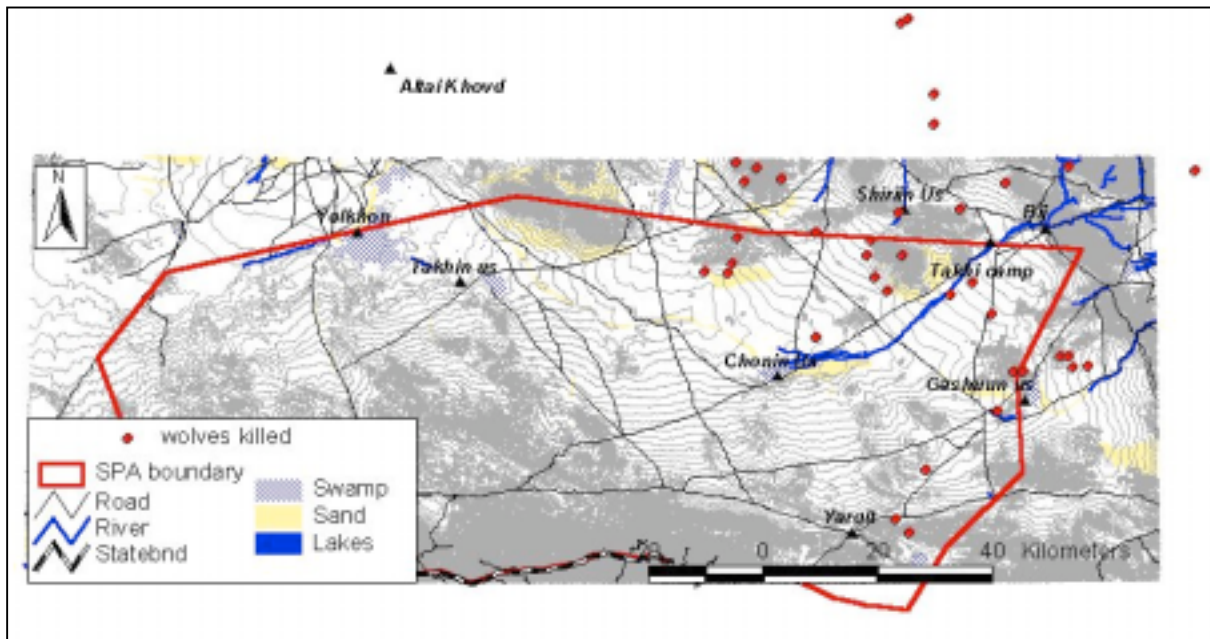


Fig. 3: Wolves killed in an 4,310 km² area in and near the western part of the Gobi B SPA (Bij and Soyombo administration) from 1. January until 26. November 2002.

Wolves are the only animals in Mongolia which can be hunted any time and anywhere, including the protected areas. The Ministry of Environment pays 10 US\$ per male wolf and 12 US\$ per female wolf killed within strictly protected areas (Suchebaatar, director of the Gobi B SPA, pers. comm.). A complete wolf carcass sells for about 45 US\$ in China, but most often dead wolves are merely used to show around.

All wolves shot are supposed to be registered with the bag administration, but to date this has only been implemented sporadically. To ensure a more systematic documentation of the wolf hunting toll in the entire Gobi B SPA, we distributed standardized forms to the bag administrations. The forms ask for the name of the hunter, date of kill, sex, age class (puppy, young, adult), location of the kill, and the measures used to kill the wolf (gun, trap, car).

3 Khulan movements and habitat use

Performance of ARGOS collars

All ARGOS only collars are still transmitting locational data on a regular basis. However, performance varies greatly between individual collars ranging from 0.63 locations per day for TAYAN to 2.21 locations for ATOS. For unknown reasons GPS/ARGOS collars, when working correctly, were more successful in acquiring high quality ARGOS positions than ARGOS only collars (Table 4). So far ARGOS only collars proved to be a valuable tool in

following khulan movements. Monitoring via conventional VHF radiotelemetry would have been impossible due to huge home ranges and the great distances covered on a daily basis.

Table 4: Performance of the ARGOS unit of ARGOS only and GPS/ARGOS collars deployed in Takhin Tal, Mongolia from October 2001 until November 2002.

ID		sex	LC 1+2+3 ¹	% LC 1+2+3 of total
ARGOS only collars				
ZAR	khulan	female	141	20
ATOS	khulan	male	304	34
DSCHINGIS	khulan	female	94	15
TAYAN	takhi	male	91	14
average				22
GPS/ARGOS collars – ARGOS part				
SHAGAI	takhi	female	281	30
SHAZGAI	takhi	female	251	50
MONDOL	takhi	male	172	48
TOODOG	takhi	female	no data	--
SOIR	takhi	female	47	41
UUGAN	takhi	female	no data	--
average				39

all

¹LC1 = ± 1000m, LC2 = ± 350m, LC3 = ± 150m

Khulans expanded their range further west, but predominantly remained within park boundaries (Fig. 4). From June-November the two mares ZAR and ATOS covered 4,598 km² and 4,499 km², respectively and the stallion DSCHINGIS 6,035 km². Rather frequently straight-line distances of > 20 km were covered within 24 hours.

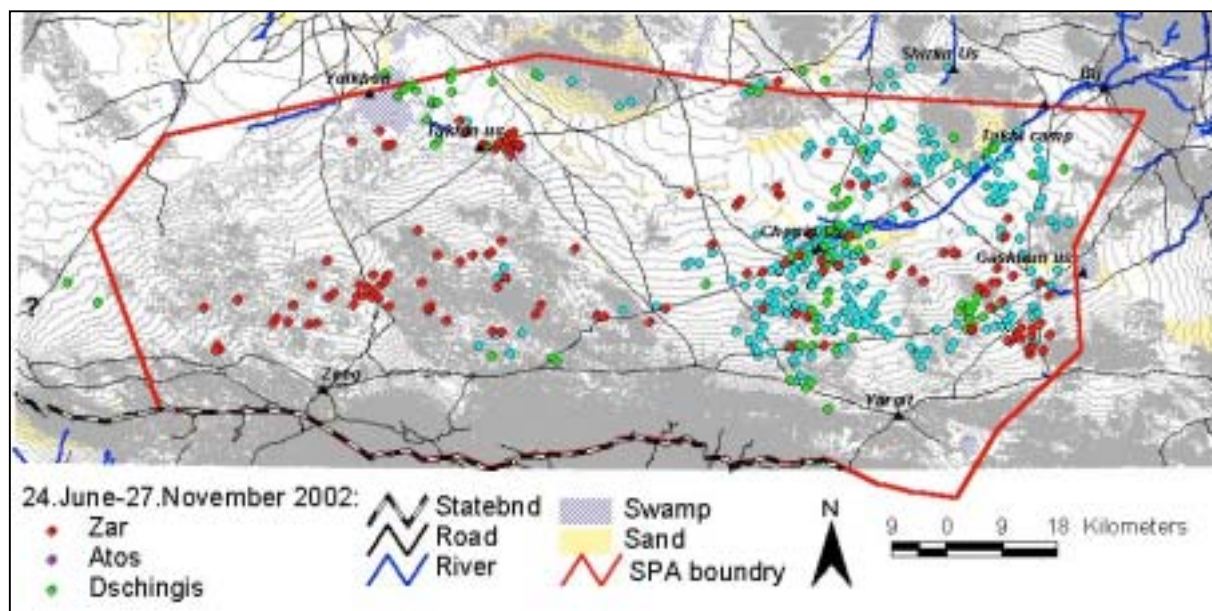


Fig. 4: ARGOS locations of three khulan in the Gobi B Strictly Protected Area, 24. June to 27. November 2002.

Development of Collar alternatives

Within the framework of a cooperative effort, a Diploma thesis carried out at the Interstate technical University in Buchs, Switzerland, (www.ntb.ch) by Marcel Neusch and Martin Scheu developed an alternative GPS collar. In contrast to the system we are presently using, this prototype collar uses an automated VHF download system. Together with the two students we plan to test deploy a collar in Mongolia in spring 2003.



Fig. 5: Transmitter/receiver deployed on a domestic horse.

4 Human use of the park

Livestock monitoring

Standardized livestock inventory forms were distributed to the chairmen of Bij, Soyombo, Altai-Khovd and Uench to assess livestock numbers, livestock losses and nomad camp positions in the Gobi B strictly protected area. In total 103 families with about 74,000 heads of livestock are using the park, mainly during the winter months (Fig. 5). Only in the eastern part some families additionally use the park for spring and fall camps.

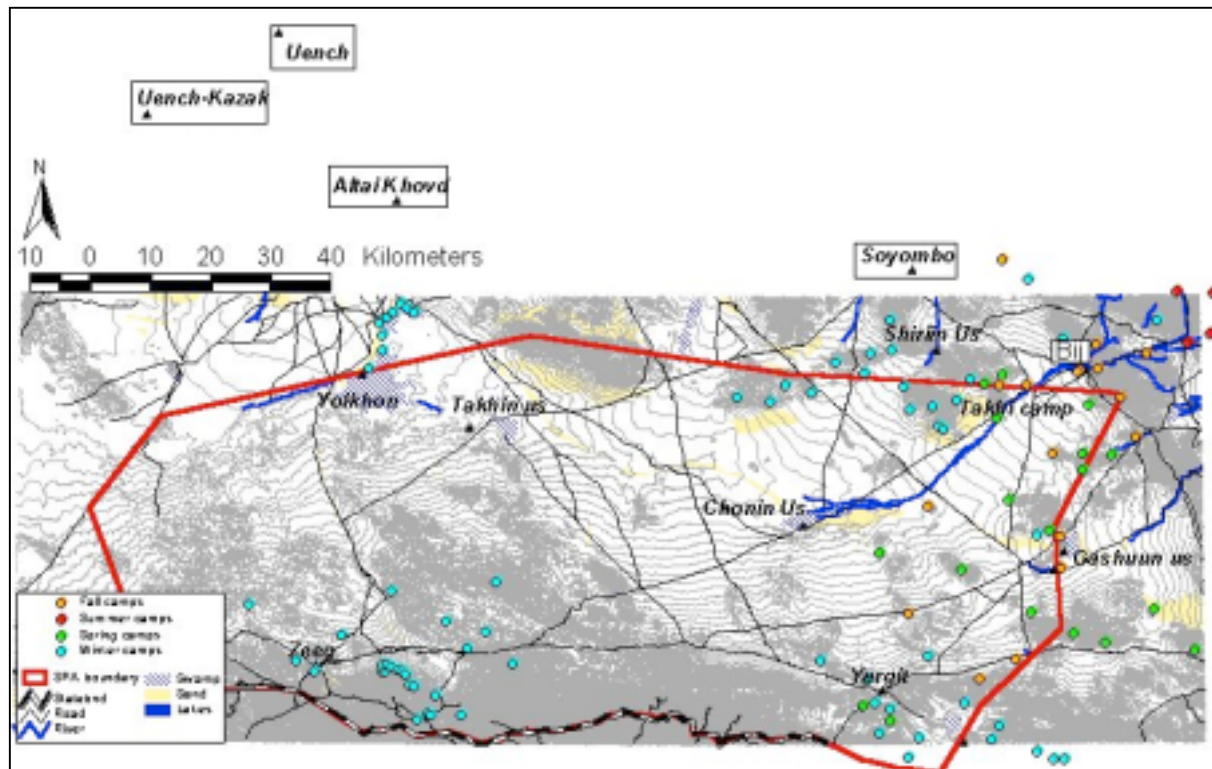


Fig. 6: Distribution of herder camps in and near the Gobi B SPA. The location of winter camps from the Uench administration was not yet available.

In the western part, families move out of the park in spring within 3-5 days. All summer camps are located in the high mountains north of the park. Only the military livestock and a large portion of the camel stock remain year round in the park.

Poaching

Signs of poaching of khulan and black tailed gazelle were found throughout the park. Most poaching seems to take place in fall, when families prepare their winter food. In spring we witnessed one case of khulan and gazelle poaching (see report July 2002) and in fall we found remains of poached gazelle and/or khulan in four more locations (Fig. 7). In three cases we were able to track down the poachers. During the hearings it became obvious that local people were not familiar with park regulations, nor aware of the high fines newly issued this year. Poaching black tailed gazelles is fined with 300 US\$, poaching of khulan with 100 US\$.

As rangers also were not very firm about park regulations, we organized a ranger workshop discussing park regulations and actions to be taken in case of violations against park rules. In addition, we printed a list showing the fines for killing different wildlife species in the park. The lists, with some explanations and the request to help protect the wildlife in the Gobi, were mounted in the VHF room of the takhi camp and distributed to the chairmen of Bij, Soyombo, Altai-Khovd and Uench.

Poaching in the park is facilitated by the fact that wolf hunting is legal and that it is no criminal act to drive around with a gun. Forty-five percent of all families using the park posses a gun, 30% have a car and 62% have a motorbike. However, it is not necessarily local people that go poaching, as there is quite a bit of trade traffic and some people come from as far as Gobi-Altai to go wolf hunting in the park!

Poachers have a low risk of being detected, as there are few rangers with very limited mobility and no communication system (neither with each other nor with the police). For the entire Gobi B SPA (~9,000 km²) there are four rangers provided by the park administration, one "takhi man" by the International Takhi Group (ITG) and three rangers by the bag administration of Uench, Altai-Khovd and Soyombo.



Fig. 7: Remains of a poached gazelle and poaching trial in Altai of Khovd.

Saxaul collection

Especially in the western part of the Gobi B SPA collection of saxaul for firewood is widespread. In the Altai-Khovd Aimag mostly saxaul and not animal dung is used for heating and cooking in gers and buildings (Fig. 8). Human population numbers are increasing and so is saxaul consumption. Presently the price for 1 truckload (about 4 t) of saxaul collected in the park is 48.000 Tg (for dung it is about 30.000 Tg / truckload). However, in 2003 a new law will take effect, that no longer allows saxaul collection in the park with trucks any more. Being aware of the new regulation saxaul collection peaked this year, with many people caching as much saxaul as possible. At the present no saxaul alternatives are provided to people. With the highly inefficient stoves and the poor insulation of public buildings like schools and hospitals it is not possible to use dung instead of saxaul.

In order to address this problem, first contacts were established with the “Improved Household Stoves” project of the Global Environmental Facility of the World Bank and a French Mongolian stove project (France-Tulga). In addition, a more efficient ger stove, designed by GTZ was bought and tested in Takhin tal. The stove burns very hot even with dung and is easy to regulate. End of December, Sukhbataar will visit the bag and aimag centers around the park to discuss the saxaul problem. On this trip he will take the new stove with him for demonstration purposes.



Fig. 8: Saxaul collection for firewood near Altai Khovd.

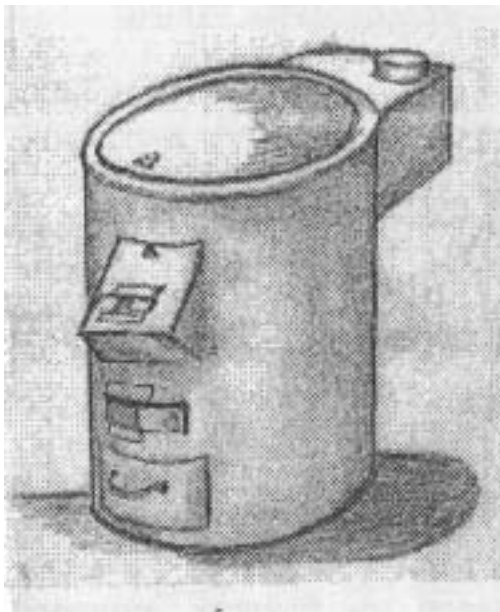


Fig. 9: Stove designed by GTZ and tested burning only dung in Takhin tal.

4 Other activities

Small mammals

During more than 5,200 trap nights (capture effort in gers and around camp was not measured) in two capture sessions in June and September 13 different species of small mammals were caught (Table 5). Grid transects (5 parallel lines of 5 traps all spaced 10 m apart) did not work very well in the coarse grained landscape of the Gobi B - in June only 1 animal was captured in 1,275 trapnights. In September we changed to line transects (a line of 80 traps with groups of 2 traps opposing each other spaced 10 m apart) and during 3,532 trapnights captured 37 animals (~1 animal/100 trapnights). However, trapping proved to be most successful within gers (27 animals) or on runways at active borrows (20 captures/100 trapnights). In September, Jochen Lengger, a veterinarian from Austria was able to take blood samples from over 60 of the small mammals captured. Blood samples will be analyzed to evaluate the importance of small mammals as disease vectors in the Gobi B ecosystem.

Additional data concerning the small mammal community in the Gobi B will come from raptor pellets, which Lkhogvasuren will analyze over the winter. For 2003 we plan to establish a standardized mark/recapture trapping scheme that will enable us to compare small mammal composition and density in different habitat types.

Table 5: Small mammals captured in June and September 2002 in the Gobi B SPA.

Species	Sex			total
	f	m	?	
<i>Allactaga bullata</i>	1	2		3
<i>Alticola argentatus</i>	1	1		2
<i>Crocidura suaveolens</i>	6	3		9
<i>Dipus sagitta pallas</i>	1			1
<i>Ellobius talpinus</i>	1			1
<i>Eolagurus puzawalskii</i>	2	5		7
<i>Meriones meridianus</i>	7	2		9
<i>Meriones unguiculatus</i>	4	5		9
<i>Meriones unguiculatus/meridianus</i>	4	3		7
<i>Microtus limnophilus</i>	2	6	2	10
<i>Microtus?</i>	1			1
<i>Mus musculus</i>	3	4	1	8
<i>Phodopus roborovskii</i>		9		9
<i>Phodopus roborovskii?</i>		1		1
<i>Rhombomys opimus</i>	6	1		7
<i>Scirtopoda telum</i>	1			1
total	40	42	3	85

Takhi film

ITG received a copy of a film about the takhi reintroduction project in the Gobi B SPA, moderated by Dr. Helmut Pechlaner. ITG had the film text translated into Mongolian language and the newly synchronized film was broadcasted on National Mongolian Television the begin of December. It received much attention and will be broadcast again by Gobi-Altai Television, Mongolia by the end of December and by Eagle Television, Mongolia

in January. In addition, VHF copies of the videos are being distributed to high schools and environmental organizations in Ulaan Bataar, Gobi-Altai and Altai-Khovd aimags.

Education

Dr. Leopold Slotta-Bachmayr from the Zoo Salzburg initiated an education project to inform children at local schools in Mongolia about the return of the horses. We developed an information kit, which contains a map of the world with pictures of different habitats, and a book, which tells the story of a Przewalski horse transported from an European zoo to the release site in Mongolia. The story also includes the horses' exploration of their new environment and their meeting with other species of the region.



Fig 7: Ganbaa and Enktur (school inspector Khovd Aimag) viewing the new educational material

5 Acknowledgements and Funding

The project is conducted within the framework of the Przewalski horse reintroduction project of the International Takhi Group (ITG), in cooperation with the Mongolian Ministry of Nature and Environment and the National University in Ulaan Baatar, Mongolia. Funding for the research part on takhis, wolves and khulans is provided by the Austrian Science Foundation (FWF project P14992) and the Austrian National Bank (Jubileums Fonds) through the Zoo Salzburg (Research for Conservation).

Involved in the presented work were Dr. Petra Kaczensky, Dr. Chris Walzer, Suchebaatar, Enksaikhanaa, Ganbataar, Jochen Lengger and Lkhogvasuren. In Mongolia work would not have been possible without the help of the rangers and local people from Tachin Tal – many thanks for their help, patience and their incredible hospitality.

6 Literatur output

1. Boegel, R.; Slotta-Bachmayr, L.; Stauffer, C., and Walzer, C. Population trend and extinction risk evaluation of a reintroduced Przewalski horse (*Equus przewalskii*) population in the Gobi B Strictly Protected Area (Southwestern Mongolia). *J. Wildl. Manag.* 2002; submitted.
2. Elias, F.; Sterregaard, F.; Baumgartner, R.; Walzer, C.; Slotta-Bachmayr, L.; Ganbataar, O.; Bajalagmaa, N.; Isenbugel, E., and Deplazes, P. Parasitologic examinations in reintroduced Przewalski horses (*Equus c. przewalskii*) compared to Mongolian domestic horses (*Equus caballus*) and Dschiggetais (*Equus h. hemionus*) in the Dzungarian Gobi, Mongolia. *Proceedings European Association of Zoo- and Wildlife Veterinarians (EAZWV) Heidelberg, Germany.* 2002; 233-240.
3. Rugg, S.; Walzer, C.; Robert, N.; Doherr, M., and Friedhoff, K. Disease Risk Assessment: Piroplasmosis at the reintroduction site of the Przewalski horse (*Equus przewalskii*) in the Dzungarian Gobi, Mongolia. *Proceedings European Association of Zoo- and Wildlife Veterinarians (EAZWV) Heidelberg, Germany.* 2002; 141-146.

4. S. R. Ruegg; C. Walzer; K.T. Friedhoff; M.G. Doherr; N. Robert, and R. Bose. Piroplasmosis at the reintroduction site of the Przewalski's horse in Mongolia. *International Journal of Parasitology*. 2002; Submitted.
5. Slotta-Bachmayr, L.; Walzer, C., and Kaczensky, P. Reintroduction of Przewalski Horses to Mongolia: linking field research and zoo education. *Zooeducational Progress Reports. Abstracts 16th Int. Zoo Educators Conf. Vienna, Austria, Aug. 17-22. 2002; 69.*
6. Sterregard, F.; Elias, F.; Baumgartner, R.; Isenbugel, E.; Schwarzenberger, F.; Slotta-Bachmayr, L., and Walzer, C. Boss or not? Endocrinologic evaluation of reintroduced Przewalski horse stallions (*Equus caballus przewalskii*) in Mongolia. *Proceedings European Association of Zoo- and Wildlife Veterinarians (EAZWV) Heidelberg, Germany. 2002; 387-390.*
7. Walzer, C.; Baumgartner, R.; Robert, N.; Suchebaatar, Z., and Bajalagmaa, N. Medical aspects in Przewalski Horse (*Equus przewalskii*) reintroduction to the Dzungurian Gobi, Mongolia. *Proc. AAZV and IAAAM Joint Conf. New Orleans, Louisiana. 2000; 17-21.*
8. ---. Medical considerations in the reintroduction of the Przewalski Horse (*Equus przewalskii*) to the Dzungurian Gobi, Mongolia. *Proceedings European Association of Zoo- and Wildlife Veterinarians (EAZWV) Paris, France. 2000; 147-150.*
9. Walzer, C.; Stauffer, C.; Robert, N., and Zedensodnom, S. Beta haemolytic streptococcus infections as a limiting factor to population growth in a reintroduced Przewalski horse (*Equus przewalski*) population in Mongolia (first results). *Verh. Ber. Erkr. Zootiere. 2001; 40:189-192.*