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[Notes from the field]

Survey of Gobi Bear (*Ursus arctos gobiensis*) in Great Gobi 'A' Strictly Protected Area in 2004

N. Batsaikhan[1], B. Mijiddorj[2], Sh. Boldbaatar[3] and Ts. Amgalan[3]

[1]Department of Zoology, Faculty of Biology, National University of Mongolia, Ulaanbaatar 210646, Mongolia
[2]Great Gobi A Strictly Protected Area, Gobi-Altai Province, Mongolia
[3]Institute of Biology, Mongolian Academy of Sciences, Ulaanbaatar 51, Mongolia

Introduction

The Gobi Bear (*Ursus arctos gobiensis*) is scarcely distributed, living in inaccessible areas and because of this it has been studied very little. Although it has been seen by biologists and rangers in the past 4 years, females with young have not been seen and so it is difficult to estimate the population size and structure.

The Mongolian Academy of Science organized expeditions to study the geography, flora and fauna in trans-Altai Gobi in 1927, 1935 and 1936. In 1937 the geographer A.S Simukov mentioned that local people living in Tsagaan Bogd Mountain reported bears living in the area between Tsagaan Bogd and Edren Mountain. Bannikov (1954) and his friends saw Gobi Bear in Tsagaan Bogd mountain and they also saw a bear carcass. He identified this bear as *Ursus priunosus* based on its size, colour, toes, claws and by some behavioural traits and its diet.

The movie producer O. Urtnasan and natural history museum specialist S. Tumurochir whilst travelling in Gobi Altai and Bayankhongor aimag, hunted a male Gobi Bear in Tsagaan Bogd mountain on 2 October 1966. That was the first Gobi Bear specimen to be collected. Bold (1967) studied and published the first scientific article on Gobi Bear comparing it to the Brown and Tibetan Bear.

At the beginning of the 20 century, Gobi Bear was distributed from Aj Bogd in the west, Tost and Nemegt mountains in the east, Eejkhairkhan, Zakhui Zarman oasis and Edren mountain in the north to the national border in the south (Bannikov 1954). Since the mid 1990's the Gobi Bear was distributed from Tsagaan Bogd in the east, Baruun Tooroin in the west, Zaraa, Buurin Khar mountain in the north and the state border in the south. This distribution is half of the previous distribution area and now the Gobi Bear lives in Segs Tsagaan Bogd, Shar Khuls and Atas Inges mountain. Since 1990 Gobi Bear has been occasionally found in Tost mountain.

Great Gobi A (Fig. 1) is located in the south western part of Mongolia and it occupies 4.419 million ha. This is one of the most extremely arid areas in central Asia. It is home to other globally

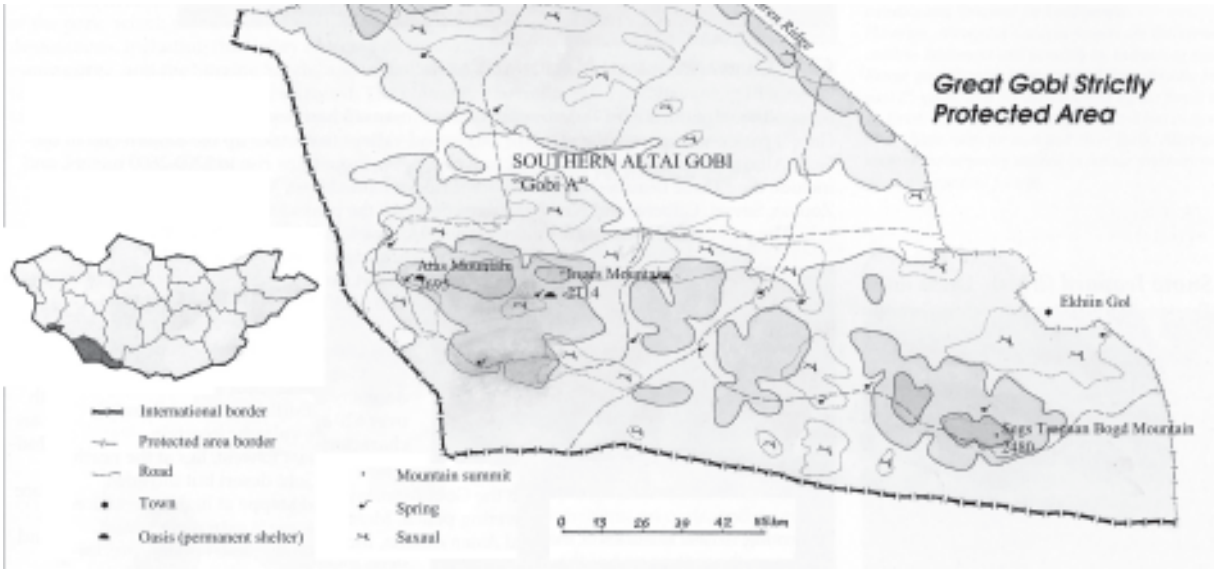

Fig. 1. Map of study area

endangered species such as wild Bactrian Camel (*Camelus bactrianus)*, Gobi bear (*Ursus arctos gobiensis*), Wild Ass (*Equus hemionus*), Black-tailed gazelle (*Gazella subgutturosa*), Argali sheep (*Ovis ammon*), snow leopard (*Uncia uncia*) and ibex (*Capra sibirica*). It became a protected area in 1975 and in 1991 this area was designated as a UNESCO Biosphere Reserve.

Gobi Bear survey was conducted for 2 weeks from 25 March 2004 in Great Gobi Protected Area A. The survey was organized by UNDP and the MNE as part of the the 'Great Gobi Ecosystem and Umbrella Species Conservation' project. The survey consisted of three teams surveying three different regions: Tsagaan Bogd, Shar Khuls and Atas Inges mountains.

Previous Population Estimates

The population size of Gobi Bear has not been studied or estimated in detail. According to the literature there were 15-20 individuals in the 1960's (Bold, 1967), more than 20 in the 1970's (Bold & Dulamtseren 1981); 20-25 in the early 1980's (Bugaev & Tumur 1982); 25-30 in the early 1990's (Schaller *et al*. 1993). Great Gobi SPA biologists assessed that the number is 25-30 based on a survey conducted in 2001 and they considered the population size to be stable during the last 10 years (unpubl.). The main factors restricting the population size seem to be an extremely arid climatic condition and lack of suitable food and water. The latter causes bears to fight and compete with each other (Tulgat 1995). During the past 3 years there has been drought in the whole of Great Gobi A and during this time no young bears have been seen. From the literature the estimated population size is somewhere between a minimum of 15 animals and a maximum of 50.

The total known population within Mongolia seems to consist of three small, isolated groups of bear. They are in Tsagaan Bogd, Shar Khuls and Atas Inges mountains. The distance between Tsagaan Bogd and Atas Inges is about 300kms. Shar Khuls mountain is located inbetween. The mountains are separated by dry, barren desert with no water sources. This isolation may have caused inbreeding and/or changes in group structure.

Counting of tracks is the method used to estimate numbers of Gobi Bear, Snow Leopard, Grey Wolf (*Canis lupus*), Red Fox (*Vulpes vulpes*), Manul Cat (*Otocolopus manul*) and other predators. It is effective for counting nocturnal and secretive animals. Stream areas are cleaned and covered with a scattering of sand and dirt in order to mark the footprints. The age of Gobi Bears can be estimated based on the size of the hind footprint.

2004 Survey (Shar Khuls mountain)

Fig. 2. Typical bear habitat in Shar Khuls

An adult male Gobi Bear in good well-fed condition was found near a food supplementation site on 29 March 2004 in Khushoot oasis area (Fig. 2). There are several sites where rangers from Great Gobi 'A' feed bears with prepared food made from vegetation (Fig. 3). The researchers took a photo (Fig. 4) and observed the individual for about 20 minutes after which they measured the footprints, the hind foot print size was 20:13cm (length:width). Length is measured from the heel to the front without the claws. Width is measured at the widest point. This individual was not seen again. The team recorded 8 footprints in five different oasis areas (Table 1).

Fig. 3. Artificial feeding site

Fig. 4. Bear photographed in Shar Khuls

One footprint was found in Khushoot oasis area that was different from the photographed male (Fig. 5). Based on the size and frequency of the footprints, we assumed that the adult male bear occupies this area and that the other male was just passing through. We found only footprints, fresh faeces and urine in the other oasis areas.

We found two different sizes of fresh footprint in Shar Khuls oasis. We concluded that there are two Gobi Bears, one adult and one juvenile bear based on size of footprint. We estimated that in Shar Khuls region there are at least five bears (1 in Khushoot oasis, 2 in Shar Khuls oasis and 2 in Tsagaan Burgas and Tsagaan Tokhoin oasis). In years of drought, some of these oases dry up completely.

2004 Survey (Tsagaan Bogd mountain)
Dominant plant species in the oasis area

Phragmites communis, Triglochin maritimum, *Juncus bufonius*, *Achnatherum splendens*, *Carex enervis*, *Leymus selanicus* occur in oases in the trans-Altai. Gobi Bear prefers to live in oases and the previously mentioned plant species are important for bedding and also food. *Phragmites*

Table 1. Hind footprint measurements of animals within the five oasis areas

Locality	Hind footprint		Place found	Age of footprint
	Length cm	Width cm		
Shar Khuls	19	11	shingle, dry river bed	new
	16	09	shingle, dry river bed	new
Tsagaan Burgas	19,5	11,5	Sandy river bed	new
Tsagaan Tohoi	19	11,5	Shingle	new
	18	11,5	Shingle	new
Ulzii Bilgeh	18,5	11	white salt soil	recent
Khoeshuut	20	13	white salt soil	new
	18	9,5	sand, shingle, river bed	new

Fig. 5. Gobi Bear footprint found in Khushoot oasis area

communis, a large shrub, occurs in every oasis and is important for shelter during the hot summer and the bears eat other smaller plants associated with this species. Gobi Bear feeds on a variety of invertebrates which inhabit this plant community. The main summer diet of the Gobi Bear is the fruit of *Nitraria roborovskii* but this is a scarce species in the oases. Planting of this species might be beneficial as part of a Gobi Bear management programme.

Fig. 6. Tsagaan Bogd mountain

Diet

Rangers have noted that bear faeces often contain fly larvae and because Gobi Bear sometimes feed on carcass remains left by wolf and snow leopard. Coexistence with wolf and snow leopard helps to maintain the existence of the Gobi Bear.

In the Shar Ders oasis there was evidence of Gobi Bear eating *Rheum nanum* (Fig 7). This species is distributed on northern hill slopes and near dry river beds. Areas where the bears had been digging were randomly distributed. The signs were lots of small hollows 40-50cm deep and 50-60cm wide where the animals have been digging at the plant root. We observed that the Gobi Bear only eats the main roots of this plant and not the branches and foliage. Zeskhu, a former ranger observed that Gobi Bear eat these particular plant roots (*Rheum nanum*) at the end of summer and in the autumn.

According to these digging areas, bears seem to prefer more elevated areas away from water sources in the autumn. Therefore it might be more efficient to search for Gobi Bear in summer and autumn where this plant is distributed.

We also found some faeces containing insect carapaces together with *Rheum nanum* plant root

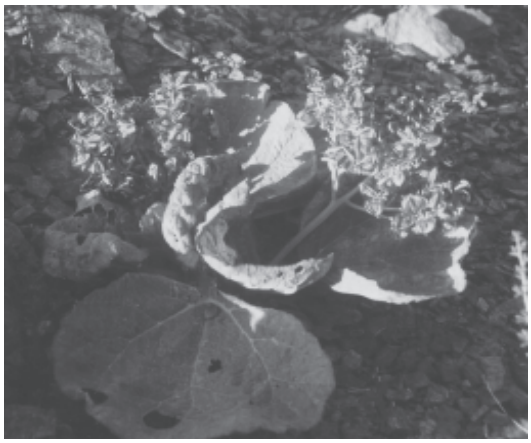

Fig. 7. Favourite food source, *Rheum nanum*

remains. More frequently we found faeces around the oases and dry river beds and in areas where *Rheum nanum* occurs.

The bear seen in Fig. 8 was photographed in Mukhar Zadgai oasis using an automatically triggered camera.

Fig. 8. Bear photographed in Mukhar Zadgai oasis

An old Gobi Bear den was found amongst the *Phragmites* grass in Altan Tevsh oasis area (N42^{0}52'053", E 098^{0}52'161"). The size of this den was 180cm in diameter, the hollow where the female had been lying was 88cm in diameter and the depth of the hollow was 31cm. The total depth of the den was 40cm. The bear used the *Phragmites* as bedding. This was an old den that had been used for the previous 17 years and so was very compressed.

Another den was found in a cave. This den looked more recently used since there were more recent plants (*Ephedra przwalski, Caragana leucophloeai* and *Sympegma regelii*) on the floor. The cave location was N42^{0}53'798", E 098^{0}53'142" alt.1673m.

We did not find any foot prints by Shar Ders

Table 2. Hind leg footprint size in Mukhar Zadgai oasis (Tsagaan Bogd mountain)

GPS- coordinate	date, time	Hind footprint		Place found
		Length, cm	Width, cm	
N 42^{0}53'075", E 098^{0}49'150"	29.03.04, 14:18	21.5	13	shingle, near water
N 42^{0}53'614", E 098^{0}49'853	29.03.04, 14:30	22	13	shingle, dry river bed
N 42^{0}54'314", E 098^{0}50'359	31.03.04, 15:40	21	13	shingle, dry river bed
N 42^{0}56'376", E 098^{0}50'036	03.04.04, 15:20	19	11	shingle, dry river bed
N 42^{0}58'651", E 098^{0}50'457	03.04.04	19.5	12	shingle, dry river bed

Table 3. Hind leg footprint size in Altan Tevsh oasis (Tsagaan Bogd mountain

GPS- coordinate	date, time	Hind footprint		Place found
		Length, cm	Width, cm	
Not recorded	30.03.04, 10:17	16	11	shingle, near water
Not recorded	31.03.04, 17:42	20	13	shingle, dry river bed
Not recorded	31.03.04, 18:30	21	13	shingle, dry river bed

Table 4. Footprint size of Gobi Bear in Hatuu Bulag and Shar Ders Oasis

GPS- coordinate	Date, time	Hind footprint		Place found
		Length, cm	Width, cm	
N 42^{0}53'180", E 098^{0}54'734"	30.03.04, 9:15	20	12	shingle, near water
N 42^{0}53'795", E 098^{0}53'248	02.04.04, 10:20	20	12	gravel, dry river bed
N 42^{0}52'977", E 098^{0}51'181"	31.03.04, 14:40	21	13	gravel, dry river bed

Fig 9. Old den found amongst Phragmites grass

Fig 10. Cave den

oasis but we found compressed areas where animals have been resting.

In 1987, 4 bears were seen by Zeskhu in Khukh Ders oasis. In the last 3 years ranger Davaadagva occasionally saw Gobi Bear with print size 22:13 in Kukh Ders oasis. In the harsh winter of 2002 the herders from Shinejinst soum spent the winter in this area and so the bears were thought to remain away from here. This year we did not see any bears in this oasis area probably because of disturbance.

Survey 15-20 April

From 15-20 April 2004 rangers from Great Gobi 'A' SPA conducted a repeat survey in Atas Ingis area. They found one footprint in Baruun Tooroin oasis, one in Bogts Tsagaan Ders oasis, and another one in Zuun Tooroin mountain. Therefore we thought there were 3 individuals in this area

Conclusion

One bear was seen by the Khushoot oasis in Shar Khuls mountain area and we found two different sized footprints in Tsagaan Tohoi. In a later survey by rangers (15-20 April) one individual was found in Khushoot, 2 in Shar Khuls and footprints of 2 individuals in Tsagaan oasis and Tsagaan Tohoi. Altogether there are at least five Gobi Bears existing in this area.

One Gobi Bear was seen in Mukhar Zadgai oasis of Tsagaan Bogd mountain; 2 different footprints in Altan Tevsh oasis and one footprint in Khatuu Bulag oasis were found. We think there are at least 4 individuals existing in this area.

Based on the results of these surveys conducted in March and April, we conclude that there are at least 12 male or non-pregnant females living in Great Gobi Strictly Protected Area A. At the time the surveys were conducted, breeding females would be in their dens with young. We expect to find more females with young during the next survey to be conducted in June.

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