

CONSERVATION AND UTILIZATION OF
THE MONGOLIAN ARGALI (*Ovis ammon ammon*)
- A SOCIO-ECONOMIC SUCCESS -

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ABSTRACT

The largest and heaviest sheep trophies in the world have been picked-up heads originating from the highest massif in the Mongolian High-Altai, Khukhtsyrh. This area, as indeed the entire Altai range down to the Gobi desert, has been for decades submitted to heavy seasonal grazing by domestic sheep and goats, as well as by horses, camels and yaks. Competition between argali and domestic stock for available grazing has been severe, as well as for access to water in the Gobi Altai. Furthermore, some poaching was carried out by herders with old military rifles originally meant for defense of stock against wolves. Safaris for sheep and ibex (as well as for maral stags, roe deer and bear in the taiga areas) were providing annually over a million dollars in foreign exchange. It was, however, apparent that the resource was diminishing.

Six years ago, the International Foundation for the Conservation of Game (IGF), under the impulse of its Founder-President, Weatherby-award winner H.I.H. Prince ABDORREZA, signed with the Government of the Mongolian People's Republic an agreement providing technical support towards game conservation and development. Its first objective was the creation of the Khukhtsyrh Game Reserve, covering 70,000 hectares, from which all domestic stock would be phased out over a 5-year period. Game counts of argali, Siberian ibex, snow-leopard, wolves, etc. have been carried out and vegetation inventoried and monitored by a number of scientific expeditions, sponsored by the Foundation, made up of Polish scientists, in collaboration with the Mongolian Hunters Association. The Reserve is being opened up this year for the first time to a selected few sport-hunters.

Recovery of sheep and ibex populations has been spectacular. Eight different snow-leopards inhabit the Reserve. It is expected that this area, un hunted now for ten years, will yield a succession of world record sport-hunted trophies.

INTRODUCTION

Following a visit in the early 1970s by the Founder-President of the International Foundation for the Conservation of Game (IGF), H.I.H. Prince Abdorreza, the attention of the Government of the Mongolian People's Republic was drawn to the fact that heavy competition for grazing and for drinking water was taking place between wild sheep of the Altai Mountains and the domestic animals which traditionally make up the basis of the Mongolian rural economy.

It was quite obvious already that the ratio of domestic livestock (goats, sheep, horses and yaks) to wild sheep (Ovis ammon ammon, Linnaeus 1758) was at least 50 to 1 over the greater part of the Mongolian Altai, that heavy competition existed for pasture between domestic and wild animals, that the wild sheep could only come to wintering ranges at night, particularly in the dry Gobi Altai area and that in general the wild sheep were probably under stress from human disturbance. Some poaching was also taking place, particularly with old military rifles used by the shepherds to defend their livestock against attack by wolves.

The argali are the largest species of wild sheep in the world. An adult male getting to be as big as a pony and reaching weights between 4 and 500 pounds.

It was pointed out by H.I.H. Prince Abdorreza that conservation of this species was not only important per se, but also that the financial return in hard currency, which the Government of the MPR was getting from tourist safaris, already amounting to more than 1 million dollars per year, would be seriously jeopardized if the argali were not available for hunting. The other game species which was attracting tourists to Mongolia was the ibex (Capra sibirica - Meyer 1794); but it was of secondary importance.

Following this intervention, the Parliament of the **Mongolian People's Republic** decreed in 1977 the creation of a reserve in the High Altai for the conservation and management of the argali and of course of the High Altai ecosystems and other species of wildlife. These species are mainly the Siberian ibex (Capra sibirica), the snow leopard (Panthera uncia), the wolf, fox, marmot (Marmota bobak), hare (Lepus tolai), rock partridge (Alectoris graeca), eagles as well as a variety of bird species (see Appendix I).

FORMAL AGREEMENT

A formal agreement was signed between the Government of the Mongolian People's Republic, represented by the Vice-Minister for Forestry and Woodworking Industries, President of the Mongolian Hunters Association, Mr. N. Gombojav, and the Foundation on September 14, 1978. This agreement specified that:

" ... the Khukhtsyrh Reserve, created in the western part of the High Altai, longitude east 90°53' to 91°18' and latitude north 47°40' to 48°05', covering an area of nearly 70,000 hectares would gradually be fully available for wildlife, grazing by domestic livestock being phased out entirely over a period of 5 years, i.e. to be terminated at the latest in 1983."

The Mongolian Government would participate in scientific expeditions in the reserve, hire a director and a number of game-guards and protect the wildlife until such time as a controlled harvest could be carried out within the framework of a management plan.

The Foundation would provide, through collaboration with the Polish Hunting Association, the University of Cracow and the Agriculture Academy of Lublin, the scientific personnel necessary for this work and for training of Mongolian counterparts (see Appendix II).

This Agreement was solemnly signed in Ulan-Bator in both russian and english languages.

DESCRIPTION OF THE RESERVE

The Khukhtsyrh Reserve lies in the northwestern part of the MPR and is named after the highest peak within the reserve, which culminates at 4,318 meters; perennial snow occurs on Khukhtsyrh as well as on two other summits within the Reserve. The reserve is situated within semi-desert and alpine biomes with plant formations typical for them. Mountains are completely devoid of forests. Peaks and tops of ridges are rocky with only sparse tufts of grasses. Slopes are covered with dwarf shrubs of Caragana spp. and dry grasses. It is only in valleys, along streams, where single trees of poplar (Populus laurifolia) and shrubs of willows (Salix spp.) are to be found. There are to be found, within the reserve, along with small water reservoirs, particularly in its northern portion, rather numerous, permanent and temporary streams. There is "sheep habitat" and there is "goat habitat" (Clark 1970). Both types of habitat are to be found in Khukhtsyrh reserve.

Sheep habitat consists of grassy areas that are not too steep. These are usually found on the sunny side of the mountains, on the lofty open slopes with nearby outcrops of rocks which provide for a quick getaway in case of a surprise attack. Sheep habitat covers the central part of the reserve (see Fig. 1). Mountain ranges along the western boundary of the reserve and in the southern tip are inaccessible for sheep during winter, while the eastern part is intensively penetrated by humans with herds of their domestic animals. Argali, similar to bighorns in North America (Deforge 1976) are imposed to stress through man's impact. Stress appears to be the major limiting factor in the argali's struggle for survival. The adaptations of the wild sheep have been highly successful, evolving basically outside the influence of man. This ice age mammal has become very specialized. It is this specialization and man that are testing its survival today.

Goat habitat, on the other hand, is on the rougher, more precipitous slopes, which are also backed by rocky outcrops. Here wild goats find the coarser vegetation which they seem to prefer, leaving the shorter, sweet grass to the sheep. The southern portion of the reserve provides a prime habitat for wild goats.



Fig. 1: Location of Khukhtsyrh Reserve in the Mongolian People's Republic

RESEARCH PROGRAM

FIRST EXPEDITION - Early 1979

Research was immediately undertaken that same winter by a first expedition of eleven persons carried out in early February 1979, under the leadership of Prof. Dr. Ing. Jerzy Krupka, whose nomination by the Foundation as coordinator of the project had been accepted by the Mongolian authorities. The aims of this first expedition were to carry out:

- a) a preliminary inventory of game animals within the reserve during winter;
- b) to evaluate the degree of human presence and number of livestock animals.

This first expedition on horseback and on foot covered a number of survey routes which, assuming a 5 kilometer visibility on each side, covered nearly 70% of the reserve area.

Duplication of surveys along the same route on consecutive days revealed considerable variations in the number of animals observed. This is due to the fact that, although average herd size is 15-30 for both argali and ibex, single herds of more than one hundred animals were sighted, and the crossing of a hilltop by one such herd would change the result considerably. Furthermore, it is obvious that the animals are quite mobile. It is current knowledge, confirmed from many sources, that the argali sheep in particular, ewes with lambs as well as rams, can, in this country, where there are no fences, travel easily up to 100 kilometers from their usual ground. This would be specially true, of course in the presence of human disturbance. The expedition documented through visual observations 242 argalis and 748 ibex, which gave a conservative estimate of 400 sheep and 1200 goats respectively.

However, the local people, including the newly nominated Director of the reserve, estimated that the reserve held normally about 1,000 argalis and 3,000 ibex. This difference in population estimates may be due to the rough nature of the ground, which effects visibility considerably.

The observed sex-ratio for argali was 100 ♂ 120 ♀ and for ibex 100 ♂ 200 ♀. The productivity was good, being 34,3% lambs to each adult ewe and of 81,7% kids per adult female goat.

The ratio between argali and ibex numbers was 1 to 3, which is reasonably close to that observed by Bannikov (1954) in the Gobi Altai.

DOMESTIC LIVESTOCK

The expedition, while travelling its various routes, observed the presence of 20 shepherd's yurtas, which probably translates into approximately 20,000 domestic animals. These consist mainly of sheep and goats, but also horses and yaks were present in the area. Furthermore, a number of kazakh cabins, which provide for winter living quarters and winter grazing, were also observed.

It was ascertained during a later expedition that the number of domestic animals present during summer was, during the 2 months of July and August at the start of our agreement with the MPR Government, 50,000 domestic animals. On the other hand, the winter grazing, which means actually pretty much year-round grazing by the kazakh tribes up in the north of the reserve out of their permanent cabins, would probably amount to no more than 10,000 domestic animals at the start of the project.

SECOND EXPEDITION - Summer 1979

A second expedition was mounted to count the game animals in the reserve during summer, after the period of reproduction. The area surveyed calculated along the same standards as before was about 65%. The number of argali observed was 667 with a lamb to ewe percentage of 75.4%. The number of ibex was 539 only with a productivity of 56.1%. The expedition furthermore observed several packs of wolves and obtained evidence of four different snow leopard in the southern part of the reserve, where the prime ibex habitat is located.

OTHER EXPEDITIONS

Other expeditions were then organized in July and August 1980, September and October 1981, October and December 1982, September to December 1983 and June and July 1984.

As early as summer 1980, guards had been employed by the Government and were living permanently in the yurtas positioned at the main accesses to the reserve. A fence had been built across the main access valley to the reserve from the east, the boundaries marked and the number of domestic animals grazing in the reserve in summer had been reduced from 50,000 to 17,000.

It was in July-August 1980 that the Polish-Mongol mission made the first inventory of the flora of the reserve. The expedition identified the floristic composition of the argali's and the ibex's habitats and estimated the biomass produced in the different areas - mountain tops, mountain side with south and north exposures and fertile moist depressions. Biomass produced was respectively from 0.75, 1.10, 2.24 and 3.41 tons per hectare. Strong exposure to sunshine on the southerly oriented slopes increased evapotranspiration, and resulted in only half the primary production of northerly exposed slopes; furthermore grasses on south-facing slopes were mostly Leimus sp. (0.2 tons per hectare) whereas ibex habitat facing north was predominantly covered by Festuca sp. (1.3 tons per hectare). Of the more than 30 species of plants identified, only 5 were common to both exposures. By 1981, domestic stock had been further reduced and the expedition could only observe 10 yurtas. Furthermore, any poaching of argali or ibex which may have been carried out before was now definitely controlled after confiscation of the military type rifles in the area. Also, vehicles, motorcycles and other equipment had been supplied for the guards. By 1982, all yurtas had been permanently taken out of the Reserve, and no more grazing by domestic livestock was taking place.

FINAL MISSION - JUNE/JULY 1984

The winter of 1983 was very severe in that part of the world and temperatures of -50°C have been observed. Reports have been obtained of great

losses to domestic stock in the areas surrounding the Reserve and it was expected that a certain higher amount of natural mortality would be found after that severe winter among game species. Indeed, the expedition found the bodies of 57 dead ibex, 4 dead argalis and also one snow leopard. It was observed that in both ibex and argalis, some of those deaths could be attributed to scabies, which may of course have occurred due to fragile conditions of the animals, during the hard winter. However, the expedition documented visually 171 argalis and 978 ibex. The recruitment observed was slightly lower than in 1979, but still over 60% for the argali.

The expedition also, on this occasion, discovered a certain number of caves exposed on the southern slopes, in the south part of the reserve where the ibex gave birth to their young. These caves would protect the female ibex from the attack of eagles. During this expedition, time was made to study the diurnal activity of the ibex. These animals were spending daily about 5 hours feeding, drank once a day in early or mid-morning, and spent the rest of the time resting (3 hours) or moving about. It was also noted, on this occasion, that both argali and ibex could be approached much closer than five years previously, i.e. to a distance of 150 to 200 meters.

It is obvious, however, that since the observed number of argalis and ibex seems rather stable over the last three years, and since the recruitment each year is shown to be quite large, that there must be a rather large emigration out of the reserve into the neighbouring territories. This supports the theory of the mobility of argalis and shows that the Khukhtsyrh Reserve, even though it is of large size, is certainly not a closed ecosystem as far as these sheep are concerned. The buffer zone will have to be surveyed as well. Also methods of finding out to which extent the Khukhtsyrh Reserve is acting as a reservoir must be established to ascertain the production of argalis which then emigrate to the rest of the Altai Range.

HUNTING

In 1984, after total protection for ten years, it was decided with the agreement of the Mongolian Authorities, that a management plan, which would provide for a harvest of 5 to 10 argalis, and 10 to 20 ibex per year, could be implemented.

The enclosed picture (Fig. 2) is of a 62 inch ram taken by one of the four hunters who came to the Reserve that year.

In addition to those safaris, a group of U.S. tourists and bird-watchers came to the Reserve. The total income generated to the benefit of the Mongolian Government in this first year of operation amounted to more than 50,000 US dollars.

Here was the award for the Mongolian Government of having established this Reserve. Furthermore, its effect for repopulating the middle-Altai range with wildlife is not to be ignored and will have to be evaluated in the coming years.



Fig. 2: Large Argali trophy taken in 1984, after the Reserve was opened to limited hunting.

THE FUTURE FOR KHUKHTSYRH RESERVE

In the future, other expeditions will continue monitoring wildlife populations and vegetation. Studies will be undertaken on the feeding habits of the argalis and on the biology of the snow-leopard so that a nation-wide conservation strategy can be established for these species.

It must be mentioned, as a matter of information, that the success of the establishment of this reserve has prompted the Government of the MPR to ask the Foundation its support for the creation of another reserve ten times the size of Khukhtsyrh, but this time in the taiga area, i.e. in the southern boreal forest north of the capital city of Ulan-Bator. This area is completely unpopulated and there is at present no human exploitation of wildlife or of forests.

At the suggestion of the Foundation, the Mongolian Government has declared the southern part of that new reserve a National Park, which will be used for local as well as foreign tourism. The northern area which has a surface area of more than one-half million hectares will be used as a wildlife management area for controlled harvesting; a museum and wildlife biology research station will be established with the help of the Foundation's scientists.

ACKNOWLEDGEMENTS

I would like to express thanks to all the people who have contributed to this project, and particularly to the members of the Polish and Mongol expeditions. The data given in this report is **their** data and I would like them to get full credit for gathering it in conditions which were often indeed very difficult.

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APPENDIX I

LIST OF 64 BIRDS SPECIES DOCUMENTED FOR THE KHUKHTSYRH RESERVE

Milvus migrans Bodd., Buteo hemilasius Temm., Aquila chrysaetos L., Gypaetus barbatus L., Aegypius monachus L., Falco cherrug Gr., Falco tinnunculus L., Lagopus lagopus L., Lagopus mutus Mont., Tetraogallus altaicus, Alectoris chukar Gr., Perdix dauricas Pall., Eudromias morinellus, Tringa glareola L., Actitis hypoleucos L., Gallinago stenura, Gallinago solitaria, Columba rupestris Pall., Cuculus canorus L., Bubo bubo L., Otus scops L., Athene noctua Scop., Caprimulgus europaeus, Apus pacificus Lath., Upuna epops L., Ptyonoprogne rupestris, Delichon urbica L., Eremophila alpestris L., Anthus godlawskii Tacz., Anthus campestris L., Anthus spinoletta L., Motacilla citreola, Motacilla cinerea Tunst., Motacilla personata Gould., Lanius cristatus L., Pica pica L., Pyrhocorax pyrrhocorax L., Corvus corone L., Corvus corax L., Cinclus cinclus L., Prunella collaris Scop., Prunella himalayana Blyth., Prunella fulvescens Sever., Sylvia curruca L., Phylloscopus griseolus Blyth., Saxicola torquata L., Saxicola insignis Gray., Oenanthe oenanthe L., Oenanthe isabellina Temm. 50. Monticola saxatilis L., Phoenicurus ochruros Gm., Phoenicurus erythrogaster Guld., Tichodroma muraria L., Passer montanus L., Petronia petronia L., Montifringilla nivalis L., Leucosticte brandti Bonap., Leucosticte arctoa Pall., Bucanetes mongolicus Sw., Acanthis flavirostris L., Carpodacus erythrinus Pall., Carpodacus rubicilla Guld., Emberiza aureola Pall., Emberiza cia L.

APPENDIX II

LIST OF COOPERATING SCIENTISTS

A (From Poland): Prof. J. Krupka, Prof. R. Dzieciolowski, Dr. R. Dziedzic, Dr. A. Szaniawski, Dr. J. Zielinski, Mr. L. Drozd, Mr. J. Bojarski

B (From Mongolia): Ing. N. Gombojav, Ing. O. Towuu, Ing. Bouindilger, Ing. Tsyringotsho, Ing. Rincin, Mr. Altangerel, Mr. Badrah.