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TRADE IN SAIGA ANTELOPE HORNS AND OTHER PARTS: AN OVERVIEW OF RECENT GLOBAL TRADE TRENDS AND CONSERVATION ASPECTS WITH A FOCUS ON MARKET DEMAND IN SOUTH-EAST ASIA

The attached information document has been submitted by TRAFFIC International.

Trade in Saiga Antelope Horns and Other Parts: an Overview of Recent Global Trade Trends and Conservation Aspects with a Focus on Market Demand in South-east Asia

Project report to the CITES Secretariat
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EXECUTIVE SUMMARY

The Saiga Antelope *Saiga tatarica* inhabits the semi-arid deserts of Central Asia; it is found in Kazakhstan, Mongolia, the Russian Federation and in parts of Turkmenistan and Uzbekistan. The species has been hunted for its horns, meat and hides for several centuries and there are records of historic exports of Saiga horns to China in the 18th century. By the early 20th century, hunting had reduced Saiga Antelopes to near-extinction but, following a ban on hunting, the populations recovered and commercial hunting of Saiga Antelopes was resumed in the 1950s and continued until the late 1990s. However, the situation changed dramatically with the collapse of the Soviet Union in the early 1990s and resulted in a sharp increase in poaching of Saiga Antelopes throughout the species's range. Over the last 10 years the population has shown an observed decline of over 90%, mainly owing to poaching of and illegal trade in Saiga horns and other products, such as meat. The horns, which are only borne by the males, were the main target of poachers and are traded to East and South-east Asia, where they are used in traditional Asian medicine. The selective hunting of males has resulted in a skewed sex ratio and reproductive collapse. The global population of the nominate subspecies, *S. t. tatarica*, is now estimated to be at around 56 300–61 300 animals, down from 1 250 000 in the mid-1970s.

China is the largest importer of Saiga Antelope horns. However, South-east Asia is also known to have a large demand for Saiga Antelope horns for use in traditional medicines and to play an important role as a trading or transit region for Saiga horns. Since 2002, the Saiga Antelope has been listed as *Critically Endangered* in the IUCN Red List of Threatened Species and has been listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1995. It is also listed in Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals (CMS).

The aim of this project, which was commissioned by the CITES Secretariat, was to compile up-to-date information on current trade in Saiga products and derivatives, focusing on some key areas. These key areas included analysing global trade in Saiga parts and derivatives, undertaking market research in Malaysia and Singapore, compiling information on the population status, levels of poaching and trade in Kazakhstan, the Russian Federation and Uzbekistan, and providing information on the availability and management of stockpiles of Saiga parts in some important consumer States, such as China. More general information on the demand, availability and recent trade trends in Saiga horns in China has been recently compiled by the Wildlife Conservation Society on behalf of the CITES Secretariat and therefore this report only focused on the management of Saiga horn stocks in China.

The information used in this report was compiled from literature references and interviews with Saiga experts and government officials, market surveys in Malaysia and Singapore, and an analysis of global trade figures for Saiga parts and derivatives, as recorded in the CITES trade database.

Analysis of global trade in Saiga horns reported, 1995–2004

In the period 1995–2004, CITES Parties reported in total exports and re-exports of 87 449 kg of Saiga horns and 10 940 horns. This is equivalent to around 518 000 to 931 500 horns or 259 000 to 465 750 male Saiga Antelopes. Of the 87 449 kg of horns, 38 813 kg were reported as direct exports and 48 636 kg of horns were reported as re-exports. The most important (re-)exporter was Kazakhstan (31 323 kg, all exports), followed by the Russian Federation (16 870 kg, consisting of 7360 kg of Saiga horn re-exported from Kazakhstan and 9510 kg exported) and Singapore (15 581 kg, all re-exported). Annual trade volumes fluctuated over the 10-year period with a peak of 19 120 kg of horns exported in 2001. Following 2001, trade levels decreased steadily, from 12 101 kg in 2002, to 8306 kg of horns in 2004.

The largest importers of Saiga horn were China (34 851 kg), Singapore (17 186 kg) and Japan (13 312 kg). Countries and territories such as Singapore, Hong Kong and Malaysia play important roles as re-exporters, re-exporting amounts similar to that of reported imports. Singapore appears to be the main hub of Saiga Antelope horn trade in South-east Asia, importing the majority of Saiga horns from the Russian Federation and Hong Kong and re-exporting mainly to China, Hong Kong and Malaysia. Hong Kong plays a similar role in East Asia and imported the majority of Saiga Antelope horn from Singapore and Malaysia and re-exported the majority to Singapore and Japan.

In addition to the horns, CITES Parties also reported various other products derived from Saiga Antelopes. For example, over two million derivatives containing Saiga Antelope have been reported in trade 1995–2004. China is the biggest exporter of Saiga Antelope horn derivatives and exported 1.8 million derivatives 1995–2004, of which the large majority (>98%) was exported to Japan. One hundred and forty specimens of Saiga Antelope reported as trophies and 193 live specimens were traded 1995–2004. The Russian Federation exported the large majority of both categories (131 trophies and 170 live specimens).

Both Kazakhstan and the Russian Federation have continued to export specimens of Saiga Antelopes since 2001, despite recommendations from the CITES Standing Committee to suspend imports from these two countries until they had complied with recommendations made by the Standing Committee in 2001.

Status of Saiga Antelopes, poaching and illegal trade in Kazakhstan, the Russian Federation and Uzbekistan

In the Russian Federation, Kazakhstan and Uzbekistan poaching remains the basic threat to the species and is the main cause of the dramatic declines observed since the mid-1990s. Numbers of all five populations of Saiga Antelope have dramatically decreased since the mid-1970s. Currently the total number of Saiga Antelopes is estimated at around 56 300 to 61 300 individuals, down from approximately 1 250 000 individuals in the mid-1970s. There are some indications that one or two of the populations may recently have been stabilizing in numbers, however it is too early to confirm these indications.

The Betpak-Dala population has been the population most affected by poaching in the 1990s, probably owing to its location in a relatively populated area closest to Almaty, and consequently is the population with the largest decreases. However, the Ustiurt population is the site with the most intense current poaching pressure. This is due to the population currently being larger and denser than in Betpak-Dala, where the population is too low to support large-scale commercial hunting. Owing to the selective hunting of male antelopes for their horns, the sex ratio of populations has been significantly skewed and has been as low as 5.7% of the population being adult males only for the Ustiurt population and 12.7% of adult males in the North-western Precaspian population.

Despite the efforts of governmental bodies, illegal hunting of Saiga Antelopes is still extensive. This indicates that the system of purchasing and subsequent illegal export of horn abroad not only persists, but also is well organized and a profitable business. In Kazakhstan, the Russian Federation and Uzbekistan, the areas inhabited by the Saiga Antelopes are located in economically deprived regions. Illegal hunting often serves as an important source of income, from the sale of Saiga horns for subsequent export to Asia, and the sale of Saiga meat for local consumption. The meat is also used for subsistence. Some populations are at such low levels that commercial hunting for the horns is no longer profitable. In these areas, Saiga Antelopes are mostly hunted for meat for subsistence use or local sale. Some Saiga meat is also exported, for example from Uzbekistan to Kazakhstan where higher prices can be obtained.

Prices for Saiga horn have increased considerably since the mid-1990s. In the early 2000s, Saiga horns were purchased from local people for as much as USD180 per kg in Kazakhstan and the Russian Federation and for up to USD120 per kg in Uzbekistan (compared to USD30 per kg paid in 1994 to local people, as described by Chan *et al.*, 1995). Such high prices certainly stimulate poaching. One carcass of a Saiga Antelope costs approximately USD11.5–13.5 in the Russian Federation and in Uzbekistan the price varies from USD8 to USD16. In Uzbekistan, prices of Saiga meat are approximately 1.5–2 times lower that that of beef.

In Kazakhstan, in 1995 official stockpiles of Saiga Antelope totaled 3500 to 4000 kg and in the Russian Federation some 1500 kg. Today, according to the information obtained, neither country has official stockpiles of Saiga Antelope horns. Since 1995, Kazakhstan exported, according to CITES annual report data, 31 323 kg of horns and the Russian Federation (re-)exported 16 870 kg (including 9510 kg of horns re-exported from Kazakhstan), which is equivalent to around 279 400 to 507 300 horns or 139 700 to 253 650 male Saiga Antelopes.

There are indications that government officials are involved in the illegal hunting of and trade in Saiga Antelope products and that they co-operate with poachers. Enforcement of existing regulations and laws seems insufficient and government officials tasked with the control of poaching activities in the Saiga range areas are underpaid and not sufficiently equipped.

Availability of Saiga horns in Malaysia and Singapore

Saiga Antelope horn and products made thereof are readily available in Malaysia and Singapore. A total of 162 shops were surveyed and only two of these did not offer Saiga Antelope horns or products made from these. A total of 4054 horns were observed during the surveys and an additional, although unquantified, volume of Saiga horn ribbons (shavings) and processed products. The surveys found a wider variety of processed products containing Saiga Antelope horn in Singapore and a larger stock of raw horns compared to Malaysia.

The average prices for one liang (= 37.5g) of Saiga Antelope horn were USD31.8 in Malaysia and USD32.9 in Singapore. This is equivalent to USD848 per kg and USD877 per kg, respectively. Prices for Saiga Antelope have increased compared to previous years and are expected to continue to increase in the future.

There are indications that Saiga Antelope horns are illegally exported from Malaysia and Singapore, although the volume and significance of this trade is unknown. However, given that one customer from China would buy up to ten horns at a time and take them out of the country, the actual number of horns being smuggled out of Malaysia and Singapore could be significant.

National regulations regarding the sale of protected wildlife for medicine are insufficient in Malaysia. Owing to loopholes in the law, horns that were illegally imported into the country cannot be seized. The Malaysian Government is now in the process of drafting new legislation (*International Trade in Endangered Species Bill 2006*) which will be used to implement CITES in Malaysia and to address such shortcomings.

In Singapore, Saiga Antelope horns that enter the country need a CITES permit from the Director-General of the Agri-food and Veterinary Services (AVA). However, unlike the situation in Peninsular Malaysia, it is illegal to sell Saiga Antelope horns that entered the country without the relevant CITES permits. The Government of Singapore has the authority to seize the horns and prosecute the trader, if the trader is found to sell horns that entered the country illegally.
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Based on the responses to questions on general awareness among traditional Chinese medicine (TCM) shops in Malaysia and Singapore, it is clear that the knowledge of the conservation status of the Saiga Antelope is low. The majority of consumers and TCM dealers in Malaysia and Singapore are unaware of the critical conservation status of the Saiga Antelope and the majority of dealers believed that Saiga Antelopes were farm-raised.

Stockpiles of Saiga horns in China

China is the largest importer and consumer of Saiga Antelope horns and has imported a total of 31 323 kg of Saiga horns since 1995. Annual consumption of Saiga horn in China is estimated at around 8500 and 9500 kg.

To date, China has conducted two surveys to evaluate the total volume of Saiga Antelope horn held in stocks in the country. One survey was conducted in 1994 and estimated the total stock of Saiga horn held in China at 155 500 kg by the end of that year. A second nationwide survey was undertaken by the Department of National Forestry Bureau Protection (2005–2006) and revealed that the total volume of Saiga horns in China was 55 000 kg by the end of August 2006. Taking into account an annual consumption of around 9000 kg per year, the current stocks are likely to last only for another six years if no further imports take place. Demand for Saiga Antelope horn is still high and not expected to decrease in the near future.

The Chinese General Administration of Customs reported 27 cases of illegal trade in Saiga Antelope horn 1999–2004. A total of 4000 to 5000 kg of Saiga Antelope horns (equivalent to 29 000 to 52 600 individual horns) was confiscated. The majority of these horns originated in Kazakhstan and the Russian Federation.

Based on these findings the following recommendations have been put forward:

Recommendations

Directed to the governments of Saiga Antelopes range States, in particular Kazakhstan, the Russian Federation and Uzbekistan

- Undertake demonstrable efforts to implement the Medium Term International work programme in support of the *CMS memorandum of understanding (MoU) concerning conservation measures for Saiga Antelopes* and its associated action plan, as adopted in September 2006 at the first meeting of the signatories to the MoU, held in Almaty, Kazakhstan.
- Strengthen national legislation pertaining to the (illegal) hunting, possession, purchase, sale, transport and trade of Saiga Antelopes and their parts and derivatives in Kazakhstan, the Russian Federation and Uzbekistan, and ensure that sanctions are sufficiently high to act as a disincentive for poaching and illegal trade and that offenders are prosecuted.
- *Directed to Kazakhstan and the Russian Federation*: Demonstrably comply with the recommendations made by the CITES Standing Committee in 2001 and increase efforts to improve overall compliance with CITES provisions.
- *Directed to the Russian Federation*: Sign the CMS MoU concerning conservation measures for Saiga Antelopes and start implementing it.
- Ensure that anti-poaching teams are sufficiently funded and equipped with the appropriate logistical support (mobile phones, motor vehicles, etc.) and have requisite expertise. Provide regular training and appropriate tools in local languages, outlining the legal provisions governing trade, smuggling techniques used and assisting with identification of Saiga parts and products in trade.
- Develop strict policies on the disposal of confiscated parts of Saiga Antelopes, including the logging of all seizures and registration of confiscated stock by the relevant authorities. In addition, records should be kept on the stock of Saiga Antelope horns that originate from natural mortality and these stocks, together with the stock of seized and confiscated horns, should be reported annually to the CITES Secretariat. Marking of horns held in these stocks should be considered in order to avoid these horns entering markets in Asia illegally and undetected.
- Learn from existing studies and projects that focus on improving understanding of the socio-economic aspects of poaching and illegal trade of Saiga Antelopes and support and conduct further studies on that subject in order to inform conservation and community-based projects that aim to develop incentives to stop poaching and illegal trade and improve local livelihoods.
- Assess available options and criteria, as well as conservation risks and benefits, of using managed hunting of Saiga Antelopes (including trophy hunting) as a possible mechanism to generate funding to support conservation efforts and benefit local communities, if populations have recovered to a level that would allow such uses and if all CITES conditions have been complied with.

Directed to the governments of importing and consuming countries of Saiga Antelopes, in particular China, Malaysia and Singapore

- Determine, through comprehensive surveys, the volume of Saiga Antelope horn and horn parts kept in stock and ensure that all Saiga horn and parts kept in stock (by government and traders) are registered with the relevant government authorities, and maintain a central database that will be regularly updated based on reported records by traders and other stockpile owners and assist assessment of overall consumption of Saiga horn use and monitoring of stockpiles.
- Restrict the number and varieties of patent medicines that are allowed to contain Saiga Antelope horn and to be produced by manufacturing companies, building upon experiences of the Chinese Government with regard to medicine containing musk deer. This has to be done in close co-operation with medicine manufacturers and TCM communities in order to ensure that the objectives and aims for such a restriction are fully understood and supported. In close collaboration with the TCM community and manufacturers, assess the feasibility of restricting the use of Saiga Antelope horns to treatment only of the most important medical conditions, in order to reduce overall consumption of horns.
- Adopt a labelling system for products containing Saiga Antelope horn, in order to try and prevent illegally sourced Saiga horn from entering legal markets. Examine markets selling medicinals nationwide, in order to identify and punish illegal trade and use of Saiga Antelope horn.
- Undertake further research on the use of alternative and appropriate substitutes for Saiga Antelope horn, taking into account possible conservation impacts of using such alternatives and learning from experiences made in promoting

alternatives for other species such as Tigers, rhinoceroses, bears, etc. Promote among TCM traders and users the use and acceptance of substitutes for Saiga Antelope horns already available for certain conditions, in order to reduce the consumption of Saiga Antelope horn where possible.

Directed to both Saiga Antelope range and consumer States, with a focus on Kazakhstan, the Russian Federation, Uzbekistan, Mongolia and China, Malaysia and Singapore, and other stakeholders such as the CITES Secretariat, the Secretariat of the CMS, NGOs and scientific institutions

- Strengthen law enforcement and the control of illegal cross-border trade by providing training and improving co-operation and information exchange among the relevant law enforcement authorities, focusing on cross-border smuggling and trade at China's northern borders with Kazakhstan, the Russian Federation and Mongolia, and trade leaving Malaysia and Singapore.
- Strengthen the research and expertise on raising Saiga Antelopes in captivity, based on experiences from China and the Russian Federation, with the aim of using these populations, where appropriate, to enhance wild populations, taking into account the genetic distinctiveness of the different populations and following strict guidelines for their re-introduction.
- Undertake targeted public awareness campaigns to educate the consumers and TCM dealers in China, Malaysia and Singapore on the conservation status of Saiga Antelopes. The use of Saiga Antelope horn for illnesses that can be easily treated by other types of medicines, should be discouraged where possible. The co-operation and support of NGOs should be sought for developing and undertaking these campaigns. This should also be carefully planned through consultation with TCM practitioners and producers.
- Explore possible funding sources for supporting Saiga Antelope conservation, management and trade regulation through establishing links between stakeholders of the Asian medicine industry with in-situ conservation projects in Saiga Antelope range States.

INTRODUCTION AND PROJECT BACKGROUND

The Saiga Antelope *Saiga tatarica* is a nomadic herding species that inhabits the steppes and semi-desert regions of south-eastern Europe and Central Asia to Mongolia. The Saiga Antelope is the size of a domestic goat and the males have horns, which are an unusual translucent amber. However the species's most striking feature is the protuberant nose, which swells in rutting males. There are two subspecies. The nominate species, *Saiga tatarica tatarica*, is found at one location in the Russian Federation and three areas in Kazakhstan. Some herds from one of the populations within Kazakhstan migrate to Uzbekistan and sometimes also to Turkmenistan during the winter. Each of these populations is distinct and there is little intermingling of the populations. A distinctive subspecies, *Saiga tatarica mongolica*, occurs in Mongolia and can be differentiated from the nominate subspecies by the smaller head and smaller horns. Until the early 1960s, there was also a population of *Saiga tatarica* in China.

The populations of Saiga Antelopes have shown an observed decline of over 90% over the last 10 years (Milner-Gulland *et al.,* 2003). The global population of *Saiga .tatarica tatarica* is now estimated to be at around 56 300–61 300 animals, down from 1 250 000 in the mid-1970s (CMS/SA-1/5/Add.1, 2006). The population of *S. t. mongolica* is estimated at only 1200 individuals. Most of the population is found in Kazakhstan (where there has been a decline from 1 000 000 to around 45 000) (IUCN, 2006, CMS/SA-1/5/Add.1, 2006). This steep decline in numbers is primarily the result of poaching and illegal trade in Saiga horns and meat. The horns are borne by the male antelopes only and are used in traditional Asian medicine (Chan *et al.*, 1995). This has caused the males to be hunted more intensively, resulting in skewed sex ratios and reproductive collapse (Milner-Gulland *et al.,* 2003). Since 2002, the Saiga Antelope has been listed as *Critically Endangered* on the *IUCN Red List of Threatened Species* (IUCN, 2002) and has been listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1995. It is also listed in Appendix II of the Convention on the Conservation of Migratory Species (CMS or Bonn Convention).

China is the largest importer of Saiga Antelope horns. However, South-east Asia is also known to have a large demand for Saiga Antelope horns for use in traditional medicines and to play an important role as a trading or transit region for Saiga horns. However, to date little information on the role of South-east Asia has been available. As the Wildlife Conservation Society (WCS) recently compiled, on behalf of the CITES Secretariat, a report summarizing information on the demand, availability and recent trade trends in Saiga horns in China, this report focuses on markets in South-east Asia. South-east Asia is considered as one of the priority regions for further investigation and action and this is why two countries in the region, Malaysia and Singapore, were chosen for this project as places for which to undertake an analysis of trade data and in which to conduct market surveys. Information on the status of Saiga Antelopes, their poaching and trade in the three main range States, i.e. Kazakhstan, the Russian Federation and Uzbekistan is also provided.

This project was conducted from June to December 2006. The main activities of the project were to:

Undertake research on the current trade in Saiga products and derivatives, focusing fieldwork on a limited number of key markets in Asia:

- Analyse relevant trade data and carry out market surveys of Saiga products in Malaysia and Singapore, provide information on the existence and management of stockpiles, undertake desk-top research, interview professional traders and other stakeholders, collect information on controls of legal and illegal trade and commerce, etc.;
- Compile available information on the size and management of stockpiles of Saiga parts and derivatives held in Kazakhstan and, if possible, in China, and provide information on current controls and trade from these stocks;
- Compile available information on the levels of consumption of, and trade in, Saiga meat in Kazakhstan and the Russian Federation;
- Formulate recommendations to, *inter alia*, improve trade management, control over the use of Saiga specimens, and address stockpiles and consumption patterns.

METHODOLOGY

Trade data analysis

Trade data analysis is based on trade reported by CITES Parties for the years 1995 to 2004, recorded in and downloaded from the CITES trade database hosted by UNEP-WCMC. The data were downloaded in September 2006. Owing to differences in the trade reported between individual trading partners (importers and exporters), comparative tabulations were used for trade data analysis, which allowed the analysis of trade routes. In cases where data differed between reported imports and reported (re-)exports, only the higher value was considered. Owing to this methodology and the use of comparative tabulations, it is possible that the total global trade has been slightly over-estimated, as a result of double-counting of trade records entered separately in the CITES trade database but that in fact refer to the same shipments (UNEP-WCMC, 2004).

Information on Kazakhstan, the Russian Federation and Uzbekistan

The information on Saiga populations was obtained from literature references and interviews with Saiga experts. An important reference source was the 'overview report' compiled by the IUCN/SSC Antelope Specialist Group for the CMS Secretariat in preparation for the MoU meeting held in Almaty, Kazakhstan, in September 2006. The information on hunting and trade in Kazakhstan, the Russian Federation and Uzbekistan was compiled through literature research and through data collection, interviews and surveys that took place from July to October 2006. The following data sources and methods were used:

- Interviews with Saiga specialists from environmental and hunting authorities in Kazakhstan, the Russian Federation and Uzbekistan;
- Collection of data from scientific and grey literature and the Internet;
- Collection of information through interviews in Kalmykia and Astrakhan Oblast and from Uzbekistan;

Market surveys in Malaysia and Singapore

Six cities/localities in Malaysia and two localities in Singapore were chosen for this survey. All traditional Chinese medicine (TCM) shops encountered in these localities were surveyed, whenever possible. In Malaysia, surveys were undertaken in Selangor, Penang, Johor, Perak and the Federal Territory of Kuala Lumpur. In total, 111 shops in six cities in Malaysia were visited: 13 in Puchong and Petaling Jaya, Selangor; 11 in Kuala Lumpur; 25 in Ipoh, Perak; 35 in Johor Bahru, Johor; and 27 in Georgetown, Penang. In Singapore, 51 TCM shops were surveyed. Forty-nine shops were in Chinatown area and two in Geylang.

The surveys in Malaysia were carried out in April, July and August 2006 and the surveys in Singapore in August 2006.

Although seven forms of Saiga Antelope horn were documented in the report *From Steppe to Store: The Trade in Saiga Antelope Horn* (Chan *et al.,* 1995) published in 1995, this survey only recorded the availability of processed products and two forms of Saiga Antelope horn: ribbons (shavings cut longitudinally along the horn) and whole horns. None of other forms, such as chips, slices and bone cores, were seen for sale during the survey. It must be noted that whole horns were not further differentiated into horns with the bone core or without the bone core. Horn ribbons were only recorded as present or absent. Whenever possible, note was made where Saiga Antelope horn was listed as an ingredient or part of the name in processed products.

The number or weight of whole horns seen in the shops was recorded, together with the number or weight of horns that dealers claimed to have. The surveys were based on a standard set of questions (see **Annex I**), which were posed to the TCM dealers. The questions in Annex I were asked whenever possible, but depending on the attitude of the shopowner. Therefore, throughout the report, specific questions will have different numbers of shops (n) as respondents.

Saiga Antelope horns are usually sold in the Chinese measure of *liang* in Malaysia and Singapore. One *liang* is equivalent to 37.5 g.

Currencies

Currencies given are local with US dollar (USD) conversions, made using the following rates: KZT1 = USD0.00779, RUB1 = USD0.038, UZS1 = USD0.0008, SGD1 = USD0.63 and MYR1 = USD0.27.

OVERVIEW OF THE CONSERVATION STATUS OF SAIGA ANTELOPES IN KAZAKHSTAN, THE RUSSIAN FEDERATION AND UZBEKISTAN

Saiga Antelopes occur in five populations: the North-West Precaspian, Ural, Ustiurt, Betpak-Dala (all *Saiga tatarica tatarica*) and Mongolia (*S. t. mongolica*). A sixth population, *S. t. tatarica* in north-west China, was extinct by the 1960s. **Figure 1** shows the current range of Saiga Antelopes and the respective range areas of the five populations.

Figure 1: Current range of Saiga Antelopes, showing the approximate range areas of each population

Notes: 1 = North-West Precaspian population, 2 = Ural population, 3 = Ustiurt population, 4 = Betpak-Dala population, 5 = Mongolia population (*S. t. mongolica*)

Source: Milner-Gulland *et al.* (2001).

The Saiga Antelope has been hunted for its meat, horns and hides probably since prehistoric times. In the first half of the 19th century hundreds of thousands of horns were exported to China and by the early 20th century, hunting had reduced Saiga Antelopes to near-extinction (Bekenov *et al.*, 1998). The northern boundary of the Saiga Antelope's geographical range shifted noticeably southwards and the range and population had decreased in all areas (Sludskii, 1955). Following a ban on hunting, imposed in the early 20th century, populations recovered from the 1930s until the 1990s. However, the situation changed dramatically with the break-up of the Soviet Union and over the last 10 years the population has shown a decline of over 90%. The global population of *Saiga tatarica tatarica* is now estimated to be at around 56 300–61 300 animals, down from 1 250 000 in the mid-1970s. The Mongolian population is currently estimated to number 1200 individuals, with a decreasing trend.

However, the extensive area of distribution, large differences between seasonal ranges, the Saiga's nomadic way of life, and natural population fluctuations make accurate population estimates difficult to obtain and often lead to obscure population trends. The effective population size is in all cases smaller than the quoted figures owing to skewed sex ratios resulting from over-hunting of males for their horns. Some recent estimates indicate encouraging increases, but

the extent to which these reflect real population growth, or sampling bias caused by changes in census methodology, or underlying Saiga distribution and behaviour is currently not clear (IUCN, 2006).

Table 1 shows the latest estimated population numbers for the five populations and compares these to the average population numbers 2001n2005. This information is based on data compiled by the IUCN/SSC Antelope Specialist Group for the first meeting of the signatories to the CMS MoU concerning conservation measures for Saiga Antelopes that was held in Kazakhstan in September 2006.

Table 1

Populations of Saiga Antelopes

Population	**Average No. 2001-2005**	**Proportion of 1980s populations**	**Latest estimate**	**Postulated trend**
NW Precaspian (RU)	15 000–20 000	13%	15–20 000	Stable/increasing
Ural (KZ; RU)	8300	7%	9 800	Stable
Ustiurt (KZ; TM; UZ)	16 600	9%	14 700	Decreasing
Betpak-Dala (KZ)	8500	2%	16 800	Increasing
Mongolia (*S. t. mongolica*)	-	-	1200	Decreasing
Total (*S. t. tatarica* only)	48 400–53 400	-	56 300–61 300	-

Source: CMS/SA-1/5/Add.1 (2006).

The following sections summarize available information on the current population status of Saiga Antelopes in the three main range States: Kazakhstan, the Russian Federation and Uzbekistan.

Saiga populations and their current status in Kazakhstan

There are three populations of Saiga in Kazakhstan: the Betpak-Dala (central Kazakhstan), Ustiurt (west of the Aral Sea) and Ural (western Kazakhstan) population. The Ustiurt population is a transboundary population, with herds moving into Uzbekistan and occasionally into Turkmenistan in winter. The Ural population is shared with the Russian Federation and specimens of this population are encountered in the steppes on the eastern bank of the Volga River (Bekenov *et al.*, 1998).

The Betpak-Dala population is the population that has been most affected by poaching in the 1990s, probably owing to its location in a relatively populated area, close to Almaty, and consequently it is the population with the largest decreases (see **Table 2** and **Table 3**). However, the Ustiurt population is on the site with the most intense current poaching pressure. This is because the population is currently larger and more dense than the Betpak-Dala population, which is too low to support large-scale commercial hunting anymore (CMS/SA-1/5/Add.1, 2006).

Table 2

Numbers of the three Saiga populations in Kazakhstan, 1991–2005

Year	Betpak-Dala	Ustiurt	Ural	Total
1991	357 000	232 000	236 000	**825 000**
1992	375 000	254 000	298 000	**927 000**
1993	510 000	216 000	250 000	**976 000**
1994	282 000	254 000	274 000	**810 000**
1995	212 000	No census	No census	-
1996	248 000	107 000*	No census	-
1997	No census	No census	No census	-
1998	60 000*	246 000	104 000	-
1999	32 000*	100 000*	84 000	-
2000	-	116 000	17 500	-
2001	10-15 000	58 000	9000	**ca 80 000**
2002	No census	No census	No census	
2003	1807*	12 858	6 542	**21 207***
2004	6900	15 025	8 850	**30 775**
2005	9943	19 621	10 052	**39 616**
2006	16 800	17 700	12 800	**47 300**

Note: * incomplete census and hence total figure is an underestimate of total population

Source: Iu.A. Grachev and A.B. Bekenov, Institute of Zoology of Kazakhstan, *in litt*., 2006 and Anon. (2006).

Table 3

Share of adult males (at the age of 11 months and older) in the three Saiga populations in Kazakhstan

Population	Date of observation	No. of animals	No. of adult males	% of adult males
Ural:	April 2004	956	130	13.6
	November 2005	3326	298	8.9
Ustiurt:	April 2004	3657	208	5.7
	November 2005	439	22	5.0
Betpak-Dala:	April 2004	3079	165	5.3
	October 2005	215	11	5.1

Source: Iu. A. Grachev and A.B. Bekenov, Institute of Zoology of Kazakhstan, *in litt.*, 2006.

The reduction in the number of males (see **Table 3**) has coincided with a reduction in the juvenile:female ratio in the population, which may be a result of the failure of females to conceive, as was observed in the Russian Federation (Milner-Gulland *et al.*, 2003). There is also a reduced twinning rate: in the Ustiurt population in 2004 only 35% of females delivered two calves and 28% in 2005, compared to around 65% in Soviet times (Iu. A. Grachev and A.B. Bekenov, Institute of Zoology, Kazakhstan, *in litt.*, 2006). This is potentially a consequence of over-hunting having changed the age structure of the population, because first-year females usually give birth to singletons rather than twins (E.J. Milner-Gulland, Imperial College of London, pers. comm., 2006).

Since 2005, the numbers of Saiga Antelopes in Kazakhstan seem to have stabilized. However, there are doubts as to whether the numbers are in fact increasing, any indication of this being more likely to be attributed to more thorough censuses undertaken in recent years (V. Ukrainskiy, former Director of *Okhotzooprom* and professor of the National Academy of Agriculture in Kazakhstan, *in litt.*, 2006). In addition, the recorded increase in the years 2003 to 2006 is biologically not feasible and more likely to be the result of undercounting in 2003 (D. Mallon, IUCN/SSC Antelope Specialist Group, *in litt.*, 2006). The total number of the Saiga Antelopes in the Republic of Kazakhstan is presently estimated to be 47 300 (see **Table 2**).

Saiga populations and their current status in the Russian Federation

There are two populations of *Saiga tatarica tatarica* in the territory of the Russian Federation: the North-west Precaspian population, occurring on the western bank of the Volga River, and the Ural population, shared by the Russian Federation and Kazakhstan.

The main Saiga population in the Russian Federation is the North-west Precaspian population that covers two administrative regions of the Russian Federation: the Autonomous Republic of Kalmykia and Astrakhan Oblast (province). Over the past 10 years (1996–2006), the numbers of Saiga Antelopes in the North-west Precaspian region have undergone more than a 15-fold decline. At present the numbers of this population are estimated at around 16 000 individuals. This is based on census results reported by *Rosselkhoznadzor* (Federal Service for Veterinary and Phytosanitary Control) of the Republic of Kalmykia, together with the *Centrokhotkontrol* Federal State Department (Control Information and Analytical Centre of Game Animals and their Environment); data provided by the research department of *Chernye Zemli* State Biosphere Zapovednik (nature reserve); reports of experts from *Stepnoy* zakaznik (nature refuge), Astrakhan Oblast; and data of the project executor. **Table 7** shows the population trends for the last 10 years.

Table 4

Numbers of Saiga Antelopes in the North-west Precaspian for the years 1997 to 2006 (in thousands)

1997	1998	1999	2000	2001	2002	2003 [1]	2004	2005 [2]	2006 [2]
259.4	150.0	50.0	24.0	18.0	19.5	9.0	17.6	14-16	14-16

Note: 1 = (aerial survey conducted in part of the territory); 2 = based on experts estimates

The data presented in **Table 4** indicate an 18.5-fold decrease of the Saiga population in the North-west Precaspian region over the last 10 years. The most dramatic decline occurred from 1998 to 2000 and 1998 appeared to be the most crucial year for the population. Such dramatic declines have evidently resulted in the subsequent shrinkage of the area occupied by the population (see **Figure 2**) as well as a decrease in the number of animals in individual herds. The latter phenomenon, in turn, negatively affects the Saiga numbers, since small herds are generally more vulnerable to wolf predation. The core part of the population occupies an even smaller territory.

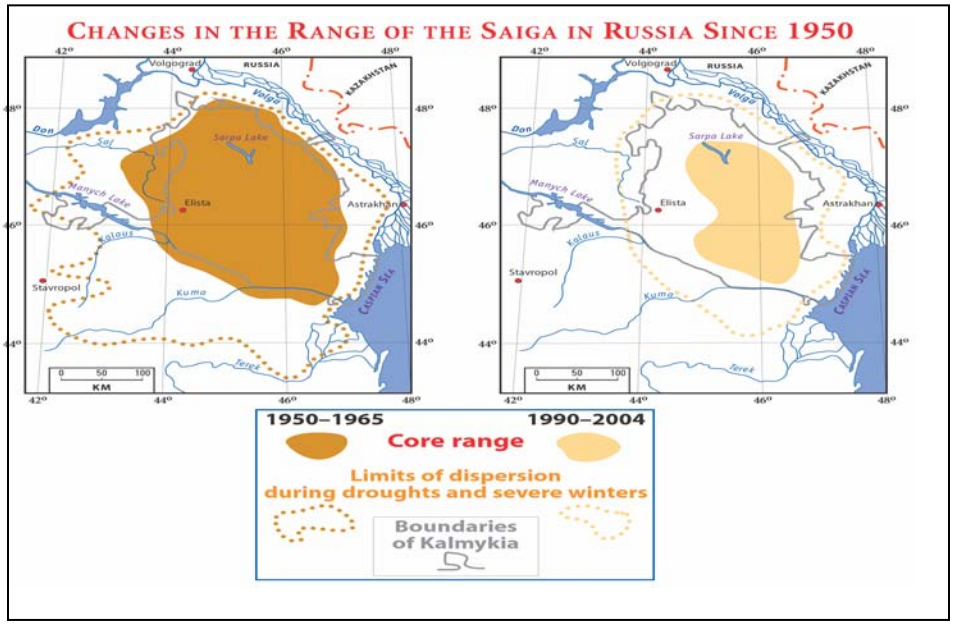


Figure 2: Changes in Saiga Antelope range in Kalmykia from 1950–1965 to 1990–2004

Source: Lushchekina and Struchkov (2002).

The sex ratio among newly born Saiga Antelopes is approximately 1:1 (Sokolov and Zhirnov, 1998). However, later on, the share of males gradually decreases and adult (mature) males comprise only about one quarter of the population. Poaching is aimed mostly at adult males, which results in a considerable decrease of their numbers in the population and negatively affects its sex ratio. Illegal hunting for adult Saiga males was very extensive in the 1990s. According to

assessment of the sex and age structure of the population, it comprised only 24% males in 1991, 8% in 1992 and 10% in 1994. The decline in number of males was followed by a decrease in number of offspring in subsequent years. **Table 5** contains data on the number and percentage of mature males in the North-west Precaspian population prior to the rutting period and during the rutting period.

Table 5

Number of adult males (at the age of 11 months and older) in the North-west Precaspian population

Date of observation	No. of animals	No. of adult males	% of adult males
November 1998	1038	36	3.5%
August 2000	2663	93	3.5%
November 2000	683	6	0.9%
August 2001	2068	169	8.2%
November 2001	1428	43	3%
August 2002	2235	24	1.1%
November 2002	No data	No data	No data
August 2003	4737	496	10.5%
November 2003	2895	268	9.3%
August 2004	3059	314	10.3%
November 2004	No data	No data	No data
August 2005	946	83	8.8%
November 2005	2345	128	5.5%
August 2006	5823	737	12.7%

Source: B.I. Ubushaev, Hunting Management Authority of the Republic of Kalmykia, *in litt.,* 2006.

Saiga populations and their current status in Uzbekistan

The transboundary Ustiurt population that is shared with Kazakhstan, moves into Uzbekistan in the winter months. There is little information on the population status and general situation of Saiga in Uzbekistan and in fact no population studies have been carried out in Uzbekistan in recent years. In 2000 and 2001, autumn surveys were performed in anticipation of enabling hunting, however the results of these surveys revealed Saiga numbers to be smaller than expected. Since 2002, hunting of Saiga Antelopes has been banned and Uzbekistan intends to prolong the ban until 2010.

In 2003, Saiga was listed in Appendix I of the Red Data Book of the Republic of Uzbekistan and the species was classified as Vulnerable but, according to some experts, the species qualifies for being listed as Critically Endangered (Kreutzberg-Mukhina, 2004).

OVERVIEW OF REPORTED INTERNATIONAL TRADE IN SAIGA PRODUCTS

The following trade data analysis is based on trade data (imports, exports and re-exports) reported by CITES Parties in their annual reports to the CITES Secretariat. Trade in specimens of Saiga Antelopes is reported in different terms and quantities, which complicates trade data analysis. For example, trade may be reported in number of horns, kgs of horns, horn pieces, horn carvings, horn scraps, etc. A considerable amount of trade is reported in "derivatives" containing Saiga Antelopes, however it is impossible to quantify the volume of Saiga horn contained in these products. Therefore, the following trade data analysis focuses on the trade reported in kgs of horns, although information on trade reported in other terms and units is also considered.

Overview of global trade in Saiga horns reported 1995–2004

CITES Parties reported exports and re-exports of 87 449 kg of Saiga horns and 10 940 horns, 1995–2004. Based on the assumption that one Saiga horn weighs 95–172.5 g (Chan *et al.*, 1995), this is equivalent to around 518 000 to 931 500 horns or 259 000 to 465 750 male Saiga Antelopes.

Of the 87 449 kg of horns, 38 813 kg were reported as direct exports and 48 636 kg of horns were reported as re-exports. The most important (re-)exporter was Kazakhstan (31 323 kg, all exports), followed by the Russian Federation (16 870 kg, consisting of 7360 kg of Saiga horn re-exported from Kazakhstan and 9510 kg exported) and Singapore (15 581 kg, all re-exported) (see **Table 6**).

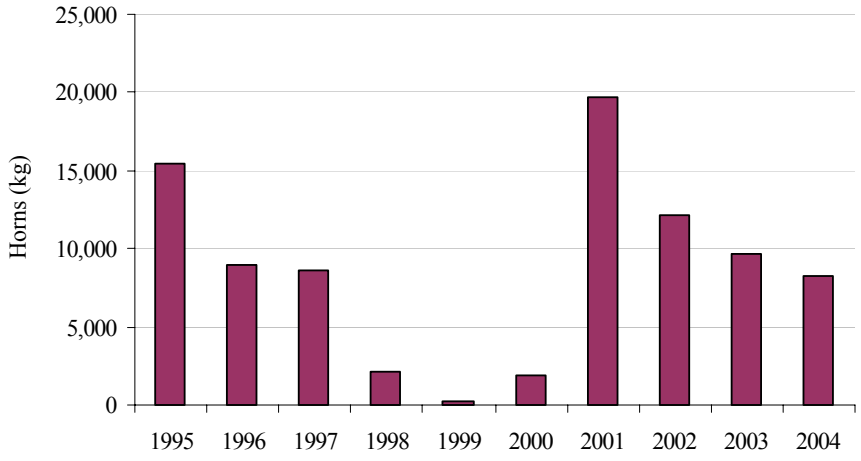
Table 6

Exporters and re-exporters of Saiga horn (kg) 1995–2004

(Re-)exporter	Quantity (kg)	Origin
Kazakhstan	31 323	All reported as exports
Russian Federation	16 870	7260 kg reported as re-exports from Kazakhstan and 9510 kg reported as direct exports
Singapore	15 581	All reported as re-exports
Hong Kong	11 316	All reported as re-exports
China	7803	All reported all as exports
Malaysia	3556	All reported as re-exports
Japan	1000	All reported as re-exports
Total	87 449	48 756 kg reported as direct exports and 38 693 kg reported as re-exports

Source: CITES trade data derived from the UNEP-WCMC CITES Trade Database, 2006.

Annual trade volumes fluctuated over the 10-year period with a peak of 19 120 kg of horns exported in 2001 (19 000 kg of it from Kazakhstan which were reported as exports to China) (see **Figure 3**). Following 2001, trade levels decreased steadily from 12 101 kg in 2002, to 8306 kg of horns in 2004. It is important to note that Kazakhstan reported exports of Saiga horn in 2002 and 2003, despite the CITES Secretariat's *Notification 2001/043* of 9 July 2001 recommending



suspension of imports of Saiga horn from Kazakhstan and the Russian Federation (see **Box 1** below).

Figure 3: Reported exports of Saiga Antelope horns 1995–2004

Source: CITES trade data derived from the UNEP-WCMC CITES Trade Database, 2006.

The most significant importers of Saiga horn (in terms of kilogrammes) were China (34 851 kg), Singapore (17 186 kg) and Japan (13 312 kg) (see **Table 7**). When comparing reported volumes of imports and re-exports for some of the countries it becomes obvious that locations such as Singapore, Hong Kong and Malaysia play important roles as re-exporters, re-exporting amounts similar to their reported imports.

Table 7

Top five importers of Saiga horns (kg), 1995–2004

Importer	Horns (kg)	% global trade
China	34 851	40%
Singapore	17 186	20%
Japan	13 312	15%
Hong Kong	11 205	13%
Malaysia	3 390	4%

Source: CITES trade data derived from the UNEP-WCMC CITES Trade Database, 2006.

Main trade routes and key players in the trade in Saiga Antelope horns

East Asia and South-east Asia are known to be the two most important importer and consumer regions of Saiga Antelope horns, mainly owing to their need for the horn for use in traditional medicines. The main trade routes for Saiga horn are shown in Figure 4. These data are largely based on trade data (comparative tabulations) reported by CITES Parties 2000–2004.

According to this analysis:

- Kazakhstan is the main source country for Saiga Antelope horns, followed by the Russian Federation. Kazakhstan exported 31 323kg of horns and the Russian Federation exported 16 870kg of horns during the period 1995–2004. The majority of the exports from Kazakhstan (26 500 kg of horns) was imported by China, whereas the majority of the exports from the Russian Federation went to Singapore (9660kg of horns).
- China is the largest importer and consumer of Saiga Antelopes horns and imported 34 851kg of horns during the period 1995–2004. The majority of these came from Kazakhstan (26 500 kg of horns).
- Singapore appears to be the main hub of the Saiga Antelope horn trade in South-east Asia, importing horns from the Russian Federation and Hong Kong and re-exporting mainly to China, Hong Kong and Malaysia.
- Hong Kong, like Singapore in South-east Asia, appears to play a similar role in East Asia. Hong Kong imported the majority of Saiga Antelope horn from Singapore and Malaysia and re-exported the majority to Singapore and Japan.

BOX 1

Imports from Kazakhstan and the Russian Federation suspended since 2001

In June 2001, the CITES Standing Committee recommended all Parties to suspend all imports of specimens of Saiga Antelope from the Kazakhstan and the Russian Federation until these two range countries had complied with certain recommendations including the implementation of a regional conservation strategy for the species. However, these two Parties did not comply with these recommendations and both Parties have continued to export specimens of Saiga Antelope since 2001.

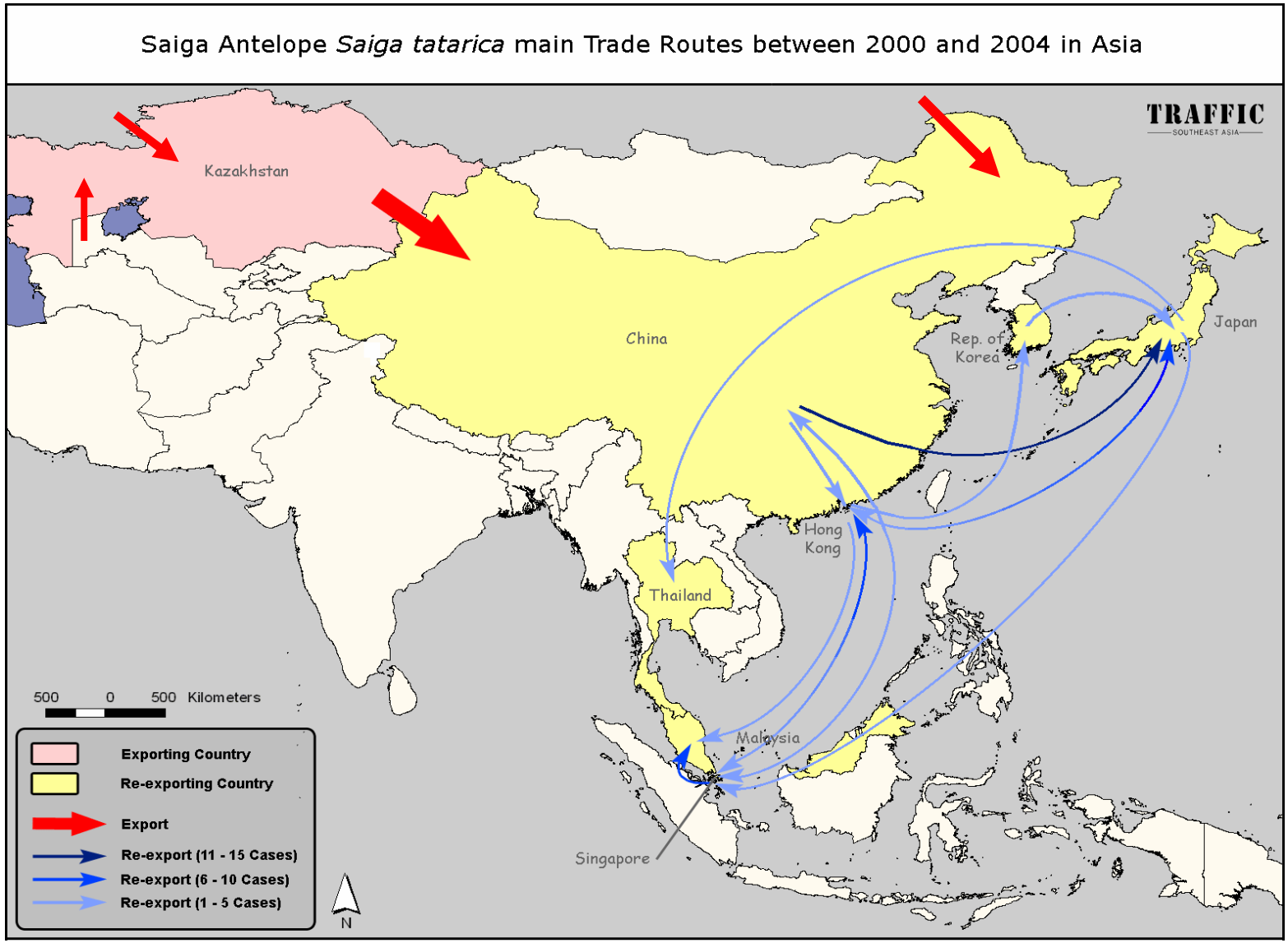


Figure 4: Main trade routes of Saiga horn in Asia (information for the map is based on reported CITES trade data and additional information on illegal trade routes)

Reported trade in Saiga Antelope specimens other than horns

In addition to horns, CITES Parties also reported trade in various other forms of Saiga specimen. Owing to the variety of terms and units used, it is complicated quantifying and analyzing this trade. **Table 8** shows the total quantities and terms of all specimens of Saiga Antelope in trade reported by CITES Parties.

Most noteworthy may be the trade in **derivatives** that is reported in various units such as bags, bottles, boxes, cartons etc. In total, over two million derivatives containing Saiga Antelopes have been reported in trade during the period 1995–2004. China is the biggest exporter of Saiga Antelope horn derivatives and exported 1.8 million derivatives in this period, of which the large majority (>98%) was exported to Japan.

Table 8

Overview of terms and quantities used by CITES Parties when reporting trade in Saiga Antelopes, 1995–2004. Based on comparative tabulations of trade reported by importers and exporters.

Term	Unit	Quantity	Term	Unit	Quantity
Bodies		1	Horn products	kg	142
bone pieces		7	Horn products		389
Bones	kg	300	Horn scraps	kg	200
Bones		30	Horns	kg	87 449
Derivatives	bags	497 387	Horns		10 940
Derivatives	bottles	7	Live		193
Derivatives	boxes	23 290	Powder	kg	10
Derivatives	cartons	6805	Skeletons		4
Derivatives	g	6669	Skins		10
Derivatives	kg	4893	Skulls		12
Derivatives		2 193 107	Specimens	ml	6000
horn carvings	kg	20	Specimens		3333
horn carvings		6607	Teeth		2000
horn pieces		171	Trophies		140

Source: CITES trade data derived from the UNEP-WCMC CITES Trade Database, 2006.

A total of 140 specimens of Saiga Antelope reported as **trophies** were traded during the period 1995–2004. The Russian Federation exported the large majority of these, in total 131 Saiga Antelope trophies. Of these, the majority was imported by the Member States of the EU (including Austria, Belgium, Denmark, Italy and Germany) and the USA.

One hundred and ninety-three **live specimens** of Saiga Antelope were traded 1995–2004. One hundred and seventy of these were exported by the Russian Federation and two live specimens were exported in 2004, i.e. after the Standing Committee's recommendation to suspend trade in all specimens of Saiga Antelope from the Russian Federation (see **Box 1** above).

CURRENT LEVELS OF POACHING AND ILLEGAL TRADE IN SAIGA PRODUCTS IN KAZAKHSTAN, THE RUSSIAN FEDERATION AND UZBEKISTAN

Poaching as a social phenomenon existed throughout the Soviet Union. Extensive hunting for Saiga Antelopes was formerly widely practised by local people inhabiting the Eurasian steppes and semi-deserts. Being gregarious species forming large concentrations within restricted territories, Saiga Antelopes have always been desirable and relatively easy game for hunters (Sokolov and Zhirnov, 1998).

Saiga Antelopes were not only hunted for their meat and hides, but also for their horns, which were traded to countries of South and Eastern Asia, where they are used for medicinal purposes. In the mid-19th century, hundreds of thousands of pairs of Saiga horns were exported from the Russian Empire to China (Silantiev, 1898).

Saiga horns were purchased for high prices according to Pallas (1793) and hunting of Saiga Antelopes was one of the most profitable sources of income for the local people inhabiting the steppes of what is today Kazakhstan and the Russian Federation. Saiga Antelopes were hunted using different techniques, which often resulted in mass death of the animals.

By the early 20th century, hunting had reduced the Saiga Antelope to near-extinction (Bekenov *et al.*, 1998). In 1919, a ban on commercial hunting was established, however it only started to take effect by the late 1920s and hunting continued until then. The prices of Saiga horns increased 10- to 15-fold during this period and illegal trade to China was flourishing. However, by the 1930s populations started to recover and commercial hunting of Saiga Antelopes was resumed in the 1950s and continued until the late 1990s. During the years 1972 to 1977, up to 500 000 animals were hunted a year and, in 1993, the legal export reached a peak of 60 t (Bekenov *et al.*, 1998).

The economic depression that followed the collapse of the Soviet Union in the early 1990s, the consequent decline in the standard of living and the lack of finances to support wildlife inspectors, resulted in a dramatic increase in the levels of poaching of Saiga Antelopes throughout the species's range. The horns were the main targets of poachers, which resulted in the selective removal of males and a significant decrease in males in the overall population

The following chapters summarize available information on the current levels of poaching and trade in Saiga Antelopes in the three main range States of the species.

Poaching of and illegal trade in Saiga Antelopes in Kazakhstan

Since 1954, licensed hunting of Saiga Antelopes for commercial purposes has been allowed in Kazakhstan and was supervised first by the "game procurement organization" and later by specialized State-run hunting organizations (Bekenov *et al.*, 1998). Since 1989, the hunting union *Okhotzooprom*, which is a component of the Committee on Forestry and Hunting of the Ministry of Agriculture, has had exclusive rights over the hunting and commercial exploitation of Saiga Antelopes.

In September 2005, harvesting or capture of Saiga Antelopes from the wild, as well as collection, purchase or selling of their horns and other products was prohibited and will remain so until 2011 (*Order of the Committee No. 206* from 22 September 2005) (N. Khadirkeyev, CITES Management Authority of Kazakhstan, *in litt.*, 2006). *Okhotzooprom* is responsible for the enforcement of these regulations and for the control of illegal hunting of Saiga Antelopes. Under its auspices, six stations located in the main regions inhabited by Saiga Antelopes have been established. In addition, eight mobile teams of inspectors (a total of 55 persons), together with representatives of the *oblast* (regional) departments and officials from the Ministry of Interior are responsible for year-round protection and monitoring of the Betpak-Dala, Ustiurt and Ural Saiga populations (Anon. 2006).

Table 9 gives an overview of detected cases of poaching and the number of confiscated specimens, 2004–2006. It should be noted that this table only records the "significant cases" and is hence not a comprehensive list of all Saiga specimens confiscated during this period (Mr Mussabaeyev, Forestry and Hunting Committee of Kazakhstan, pers. comm., September 2006).

Table 9

Reported cases of illegal hunting for Saiga Antelopes in Kazakhstan, 2004–2006

Year	Number of cases of poaching	Number of poachers detained	Number of confiscated items	
			Carcasses	Horns
2004	10	17	47	-
2005	32	39	39	40
2006	5	43	24	505

Source: Anon., 2006.

Disposal of confiscated specimens and availability of stocks of Saiga specimens

There are no official guidelines on the disposal of confiscated Saiga products and, according to the CITES Management Authority of Kazakhstan (N. Khadirkeyev, *in litt.*, 2006), there are currently no stocks of Saiga horns in Kazakhstan. In 1995, official stockpiles of Saiga Antelope horn in Kazakhstan totalled 3500 to 4000 kg (Chan *et al.*, 1995).

Use of Saiga Antelopes and trade routes

Kazakhstan reported the export of 19 000 kg of Saiga horns to China in 2001, 3000 kg in 2002 and 7500 kg in 2003. Official documents indicate that all of these horns originated from confiscated horns and horns of dead animals collected in the wild. These exports took place despite a recommendation from the CITES Standing Committee to suspend imports of Saiga specimens from Kazakhstan and the Russian Federation from 2001. Recently, Kazakhstan has declared a voluntary moratorium on all exports of Saiga horns (Anon., 2006).

However, Saiga horns are still being illegally exported from Kazakhstan to China according to TRAFFIC sources. Whereas in previous years (1999 to 2001) the horns were normally transported to Beijing via Moscow, they are nowadays exported directly to Urumchi in China, which has become the main entry point for a variety of goods exported (legally and illegally) from Kazakhstan to China. There are no reliable estimates on the actual volume of this illegal trade to China, however some estimate it to be hundreds of kilogrammes of Saiga horns per year. In addition, there are concerns that the inspectors of the mobile teams of the *Okhotzooprom* are involved in the illegal trade of Saiga horns to China (A. Artykpaev, pers. comm., 2006). Saiga meat is also used and often available at roadside cafes and small restaurants. Saiga goulash, for example, is served for KZT45–50 (USD0.3–0.4) per serving.

Poaching of and illegal trade in Saiga Antelopes in the Russian Federation

Uncontrolled hunting in the late 19th and early 20th centuries led to drastic declines of Saiga Antelopes in the North-western Caspian Region and, by 1920, the total population was estimated at no more than a few thousand individuals (Bannikov *et al.*, 1961). A complete ban on hunting allowed populations to recover and regulated commercial hunting was started again in the 1950s. Regulated hunting, by that time, was mainly for meat and continued throughout the Soviet period. Harvest levels peaked in the years 1956 to 1960 and 1976 to 1980, when the average yearly harvest exceeded 100 000 Saiga Antelopes per year (Chan *et al.*, 1995). From 1987 to 1989 and from 1992 to 1996, the commercial hunt of Saiga Antelopes was prohibited and only harvest for 'scientific purposes' was allowed. In 1988, the reported legal harvest of Saiga Antelopes was 383 animals only and in 1992 a total of 1169 Saiga Antelopes was reported legally harvested (Rudenko and Semashko, 2000). In 1990, commercial harvest was re-started and a harvest quota of 30 000 animals was established. However, only 12 000 animals were taken in that year. Following this, commercial hunting was banned again until 1996 when a harvest quota of 20 000 animals was established and 14 000 individuals were harvested.

Since 1997, the commercial hunting of Saiga Antelopes has been prohibited, however the harvest of Saiga Antelopes for scientific purposes, which can only be undertaken by the *Centrokhotcontrol*, the Scientific Institute for the Monitoring and Management of Game species of the Ministry of Agriculture, is still allowed (A. Maximuk, Vice-Director, *Centrokhotcontrol*, Ministry of Agriculture of the Russian Federation, pers. comm., 2006). However, a collapse in funding and infrastructure for Saiga management, combined with disintegrating rural economies, has led to uncontrolled large-scale poaching for meat and horns (Milner-Gulland *et al.*, 2001).

While in the 1970s and 1980s the animals were hunted by poachers, primarily at night, from the early 1990s hunting took mostly during the day and usually from 8 a.m. to 10 a.m.. This made locating and capturing poachers more difficult for inspectors because poachers are able to detect inspector teams during daytime more easily.

According to the information collected for this report, there is a number of teams of illegal hunters active in Kalmykia at present. They are well equipped and have modern means of communication at their disposal. Poaching is most intense around the villages of Utta, Khulkhuta, Chilgir, Molodezhnyi and Artezian of the Yashkulskiy and Chernozemelskiy districts. These villages are located near so-called *sagi*, flat depressions lacking any vegetation. Saiga Antelopes are easy prey in such terrain, because they can be chased by motor-bikes. The poaching methods employed are often commercial in nature and are well-organized: some poachers use professional traps that were formerly used by the *Kalmytzkiy* State Procurement Enterprise during the period when commercial hunting for Saiga Antelopes was still allowed in the Republic. The use of this special trap enables the poachers to catch around 10 to 50 animals per day (A. Lushchekina, Russian Academy of Science, *in litt*., 2006).

According to cautious estimates, around 2000 individuals have been illegally caught each year during the period 2000–2005 (Khludnev, pers. comm., 2006). **Table 10** shows reported cases of poaching of Saiga Antelopes in the Republic of Kalmykia 1985–2003. It should be noted that these data are not comprehensive and represent only a portion of the actual cases of poaching in the Republic. The majority of cases of Saiga poaching remain either undetected or are not officially recorded owing to shortages in funding and equipment such as motorbikes, mobile phones, etc.

Table 10

Reported cases of illegal hunting of Saiga Antelopes in Kalmykia, 1985–2003

Years	Number of violations	Number of animals hunted	Number of commenced legal proceedings	Number of persons committed for trial
1985	113	75	11	31
1986	170	96	17	41
1987	138	132	16	35
1988	111	45	3	11
1989	87	30	2	4
1990	138	82	3	8
1991	168	325	8	22
1992	97	62	5	12
1993	48	45	4	7
1994	43	49	4	5
1995	34	48	8	15
1996	59	38	1	2
1997	80	222	20	39
1998	138	129	6	15
1999	144	184	16	23
2000	101	78	19	19
2001	156	230	43	27
2002	170	196	24	0
2003	156	204	40	2

Source: B.I. Ubushaev, Hunting Authority of the Republic of Kalmykia

The data presented in **Table 10** indicate that the number of violations in the period of the most extensive poaching in Kalmykia (1992–1997) was 2.5 to three times smaller than the number of violations reported during the Soviet period (before 1992). In more recent years (2001–2003), around 160 to 170 violations have been reported each year, which is comparable to the numbers of violations reported during the Soviet period. However, the number of hunted animals in each case has increased considerably and has been around 200 animals in recent years, compared to an average of 75 animals during the period 1985–1991. The number of legal proceedings initiated has also increased noticeably, but the number of poachers committed for trial decreased at the same time.

Disposal of confiscated specimens and availability of stocks of Saiga specimens

There are no officially registered stocks of Saiga horns in the Russian Federation and there are also no official records on the number of confiscated horns (V. Melnikov, Head of the Division of Hunting Resources, Ministry of Agriculture of the Russian Federation, pers. comm., 2006). Based on interviews made with officials of the Division of Hunting Resources, it is assumed that confiscated horns have been sold and thereby have served as a source of 'extra income' for the officials of the Department of *Rosselkhoznadzor* in the Republic of Kalmykia. In 1995, 1500 kg of horns were reported as official stockpiles of Saiga horn in Kalmykia (Chan *et al.*, 1995).

The use of Saiga Antelopes in the Russian Federation and trade routes

In the 1980s, Saiga Antelopes were primarily hunted for their meat which was sold locally or used by the hunters themselves. Since 1989, the main motive for Saiga poaching has shifted and has become the procurement of horns (A. Lushchekina, Russian Academy of Science, *in litt*., 2006). The carcasses are usually left on site. In Kharabalinskiy district, Astrakhan Oblast, a pit with about 50 Saiga Antelope carcasses without horns was found in 2000.

Information collected for this report through interviews revealed that, since 2000, Saiga Antelope carcasses have no longer been abandoned and Saiga meat has been sold more actively and has been available in many villages in Kalmykia, in particular at roadsides. Regular drivers say that they are often approached by people offering Saiga meat. In addition, bags with processed Saiga meat are regularly transported in the luggage compartment of buses traveling from Elista to Astrakhan. Each bag contains around 10 kg of meat. Dishes containing Saiga meat are available in the majority of restaurants and cafés along this route. Saiga meat is sold locally at around RUB300–350 (USD11.5–13.5) per carcass; it is also traded to the nearby villages and towns, such as Elista, the capital of the Republic of Kalmykia, Volgograd and Astrakhan (A. Lushchekina, Russian Academy of Science, *in litt*., 2006).

According to interviews conducted with officials of the Russian hunting authorities, Saiga meat is also unofficially sold to the employees of governmental organizations in Elista and is available in clinics, hospitals, research institutions, etc. In 2004, Saiga meat was sold openly outside the offices of the Hunting Department of Kalmykia. Interviews with local residents in Kalmykia confirmed that in recent years Saiga Antelopes have been hunted primarily for their meat. In a survey undertaken by the Centre for Ecological Projects of the Kalmyk Republic among villagers and shepherds, 65% of respondents acknowledged that they had hunted Saiga Antelopes for meat and thereby avoided killing their own livestock.

There are at least two places in Elista where Saiga horns are traded. From here they are normally transported to Moscow from where they are exported to South and/or East Asia. The average price for Saiga horns was stable for a long time at around RUB2600 (USD99) per kg. However, in recent years the prices have increased and are now twice as high (A. Lushchekina, Russian Academy of Science, *in litt*., 2006). While in the early 1990s a kilogramme contained five to six horns, in recent years one kilogramme has contained 10 to 14 horns, which is the result of the fact that the majority of animals hunted are young males with smaller horns.

Poaching of and illegal trade in Saiga products in Uzbekistan

In Uzbekistan, Saiga Antelopes occur only on the Ustiurt plateau and in the territory of the Autonomous Republic of Karakalpakia. Poaching of Saiga Antelopes has been intense in recent years and the Ustiurt population has been reported to be declining (Mr. V. Cha, Head of the Security Department of *Okhotzooprom* of Kazakhstan, *in litt.*, 2006).

The hunting and trade of Saiga Antelopes has been prohibited since 2002. Penalties for hunting a Saiga illegally are UZS80 000 (approximately USD65) for Uzbekistan citizens and UZS750 000 (approximately USD600) for foreigners. If five or more Saiga Antelopes are shot, this can be considered a criminal offence for which a sentence of imprisonment for three to five years can be imposed. However, poaching of Saiga Antelopes has been intense in recent years and, according to official reports, not a single poacher has been detained over the last six years, even though legislation provides for a reward of up to 30% of the penalty sum (E. Bykova and A. Espinov, Academy of Science of Uzbekistan, *in litt.*, 2006).

In Uzbekistan, Saiga horns have been in demand since the late 1980s, with the highest demand in the middle of the 1990s. By the early 1990s, the carcasses of killed Saiga Antelopes were being discarded and only the horns taken. According to interviews undertaken in the village of Jaslyk, up to 100 motorcyclists went hunting at the same time, each killing a minimum of 10 Saiga Antelopes per hunt. The villagers of Raushan, situated in the vicinity of the Ustiurt plateau, joined in poaching activities. Today, poaching is still a main threat to the Ustiurt population of Saiga Antelopes.

There are no reliable figures on the number of Saiga Antelopes poached per year, however there are indications that poaching levels have decreased over the last few years (E. Bykova and A. Espinov, Academy of Science of Uzbekistan, *in litt.*, 2006). This decrease is likely to be the result of reduced numbers of Saiga Antelopes, and primarily adult males, which make poaching less profitable.

Use of Saiga Antelopes in Uzbekistan and trade routes

Local communities in Uzbekistan have traditionally used Saiga meat for domestic consumption. In addition to meat, Saiga skulls of large adult males have been used in spiritual rituals and placed in front of houses to protect their inhabitants from illnesses and curses (E. Bykova and A. Espinov, Academy of Science of Uzbekistan, *in litt.*, 2006). This tradition is still observed. In the early 1990s the demand for Saiga horns increased and since then Saiga Antelopes have been mainly hunted for their horns (see **Table 11**).

Table 11

Table to show uses of Saiga parts in Uzbekistan in the 1990s and early 2000s

Primary use of Saiga Antelopes	**Early 2000s mean percentage ± SE**	**N**	**1990s mean percentage ± SE**	**N**
Trade in horns	42.8%±2.98	73	88.5%±1.58	38
For local consumption	19.0%±2.66	30	47.2%±8.82	25
Trade in meat	62.5%±2.94	76	14.0%±2.54	18

Source: E. Bykova and A. Espinov, Academy of Science of Uzbekistan, *in litt.*, 2006.

Since 2003, and since the number of males in the overall population has drastically decreased, the situation has changed. Nowadays, local people mainly hunt Saiga Antelopes for meat, the majority of which is sold and around 20% used for local consumption. The horn trade still persists, but it is becoming less profitable owing to the low number of males (E. Bykova and A. Espinov, Academy of Science of Uzbekistan, *in litt.*, 2006).

Saiga meat is normally sold by hunters and only rarely by traders. Prices for Saiga meat vary depending on the season. They ranged from UZS800 (USD0.65) to UZS1500 (USD1.2) per kg in 2004. However, prices for Saiga meat increased recently and ranged from UZS2000 to UZS2500 (USD1.6–2) per kg in 2006 (E. Bykova and A. Espinov, Academy of Science of Uzbekistan, *in litt.*, 2006). The prices are generally higher in summer, when availability of Saiga meat is lower, and cheaper in winter, as supply increases during the mass migration of Saiga Antelopes. Costs for a whole carcass vary from UZS10 000 to UZS20 000 (USD8–16). In roadside restaurants (*chaikhona*) along the route from Kungrad to Beineu, dishes made with Saiga meat are openly sold year-round. In 2006, Saiga meat was sold as far afield as Urgench market, in Khorezm province (Uzbekistan), 600–700 km from Ustiurt plateau. Often Saiga meat is smuggled into Kazakhstan where the price is 30% higher than in Uzbekistan. Asked to specify a reason why people bought Saiga meat, the majority of respondents said they bought it because it was cheap. In Uzbekistan, prices for Saiga meat are approximately 1.5–2 times lower than that of beef.

Over the last few years, the price of horn has varied, ranging from UZS25 000 to UZS70 000 (USD20–60), sometimes reaching UZS100 000 (USD80) per kg. However, in 2006, prices had increased and horns were sold for UZS140 000–65 000 (USD120–130) per kg (E. Bykova and A. Espinov, Academy of Science of Uzbekistan, *in litt.*, 2006). Normally, three or five pairs of horns weigh one kilogramme (Fadeev and Sludsky, 1982; Bannikov *et al.*, 1961; Ishunin, 1987). However, owing to the selective shooting of adult males, more and more young males are hunted. According to the poachers, males aged three or more years are encountered only rarely. Therefore, one kilogramme can comprise as many as eight to 12 pairs of small horns. As a rule, horns are purchased by middlemen and traded to Kazakhstan and from there onto China. There are networks of traders positioned in Nukus, Kungrad, Khojeili and Tashkent.

AVAILABILITY OF SAIGA ANTELOPE HORNS IN MALAYSIA AND SINGAPORE

Availability of Saiga Antelope horns in Malaysia

Regulatory framework in Malaysia relating to the trade in Saiga Antelopes

Malaysia became a Party to CITES in 1978. Peninsular Malaysia does not have any specific laws to implement CITES, but most species listed in the CITES Appendices are covered under the *Protection of Wildlife Act 1972*, in the Act's Schedule I for "Totally Protected" species and Schedule II for "Protected" species. However, the Saiga Antelope does not fall under Schedule I or II and the sale of Saiga Antelope horns in Peninsular Malaysia is not subject to internal trade controls, although a CITES permit is required to import Saiga horns into Peninsular Malaysia. Owing to the lack of specific CITES-implementing legislation, horns that were illegally imported into the country cannot be seized. The Malaysian Government is now in the process of drafting new legislation (the International Trade in Endangered Species Bill 2006) which will be used to implement CITES in Malaysia and that will address such shortcomings.

Availability of Saiga Antelope horns in Malaysia

Malaysia consists of 13 States. However, only States with a large ethnic Chinese population were surveyed and those chosen for the surveys were Selangor, Penang, Federal Territory, Johor and Perak. In April, July and August 2006, 111 shops in six cities in Malaysia were visited: 13 in Puchong and Petaling Jaya, Selangor; 11 in Kuala Lumpur; 25 in Ipoh, Perak; 35 in Johor Bahru, Johor; and 27 in Georgetown, Penang. The surveys were based on a standard set of questions (see **Annex I**), which were posed to TCM sellers. TCM shops in each State were chosen if they were in commercial or residential areas with a large Chinese population.

Out of the 111 shops surveyed, 109 (98%) shops were found to have Saiga Antelope horn or its product for sale. Among them, 109 shops were found to have Saiga Antelope horn ribbons for sale, 68 had whole horns for sale and 23 shops offered only processed products containing Saiga horns[1]. In total, seven different processed products were found for sale, ranging from liquids to tea bags (see **Annex II**). There were only two shops with no Saiga Antelope horn or products made from it. A type of Saiga Antelope horn-grinding machine was seen in three shops. The machine is used to produce a Saiga Antelope horn drink by grinding Saiga Antelope horn with mineral water. Manufactured in Malaysia, this machine is a convenient tool for dealers and consumers as it eliminates the need for laborious boiling of ribbons of horn in water, which is the traditional method of using Saiga Antelope horn for medical purposes in Malaysia.

Number of Saiga products found for sale

A total of 827 Saiga Antelope horns were found in 68 shops. Johor recorded the highest numbers, with 217 horns. Two hundred and five horns were found during the survey in Selangor, 167 horns in Perak, 162 horns in Penang and 76 horns in the Federal Territory. Among the 827 horns found for sale, 76 horns were claimed to have been purchased in 2006, 314 horns in 2005 and 59 horns were claimed to be two years old or more. The year of purchase for the rest of the 378 horns is unknown. Two shops in Johor claimed to have additional horns (100 and 200 horns, respectively). These 300 horns were purchased in the 1990s when the price of Saiga Antelope horn was cheap, about MYR8–15 (USD2.16–4.05) per *liang*. If the number of horns found for sale in shops is added to the number of additional horns reported by the two shops in Johor, a total of 1127 Saiga Antelope horns were recorded from 68 shops in Malaysia during the survey.

Seventeen shops provided further information on the number of horns they sold per year. The total weight and number of horns, mostly in ribbon form, sold each year by these 17 shops was 150kg and around 500 horns. Based on the assumption that a pair of Saiga Antelope horns weighs on average about 190–345g (Chan *et al.*, 1995), one kilogramme of horn would be equivalent to six to10 horns and 150kg would be equivalent to 870–1580 horns. Therefore the total number of horns sold by these 17 shops per year is around 1370–2080 horns, or between 80 to 120 horns per shop.

Prices and trend

[1] The majority of the Saiga Antelope horns offered for sale in Malaysia are horns without base rings and only four shops visited had Saiga Antelope horns with rings. Shop owners in Malaysia usually remove the rings on the Saiga Antelope horn so that it is easier to scrape the horn.

Table 12 shows the minimum, maximum and average prices for Saiga horn per *liang* (= 37.5g) found in the 109 shops. The average price for one *liang* of Saiga Antelopes horn across all shops surveyed was MYR118 (USD32). This is equivalent to USD0.85 per g of Saiga horn or USD850 per kg. Shops in Johor Bahru, Johor, had the lowest average price for one *liang* of Saiga Antelope horn (MYR109 (USD29.5)), while a shop in Georgetown, Penang, had the lowest price among the 111 shops surveyed in Malaysia. Shops in Selangor had the highest average price.

Table 12

Prices for Saiga Antelope horn in Malaysia (prices per liang = 37.5g)

State in Malaysia	Max		Min		Average	
	MYR	USD	MYR	USD	MYR	USD
Selangor (n=7)	250	67.5	90.42	24.4	142.9	38.6
Federal Territory (n=10)	180	48.6	70	18.9	119	32.1
Kedah (n=21)	200	54	68	18.4	113.1	30.5
Johor (n=34)	250	67.5	68	18.4	109.2	29.5
Penang (n=20)	300	81	62	16.7	128	34.6
Average (n=92)	**300**	**81**	**62**	**16.7**	**117.8**	**31.8**

Note: MYR1 = USD0.27 (15 October 2006)

Table 13 shows average prices for Saiga horn in 2005 compared to average prices in 2006 and anticipated prices for purchases in the immediate future (the price that dealers expected to pay for their next order of Saiga Antelope horns). In 2005, the average price for one *liang* of Saiga Antelope horn recorded from 43 shops in Malaysia was about MYR80 (USD22). This is significantly cheaper than the average price offered in 2006. Furthermore, the expected average price for one *liang* of Saiga Antelope horn in the next purchase of stock was projected to be MYR133.5 (USD36.1), about MYR14.7 (USD4.3) more than the average price offered during the survey.

Table 13

Prices for Saiga Antelope horn in Malaysia 2005–2006 and projected prices for the next stock purchase (prices per liang = 37.5g)

State	2005 (average)			2006 (average)			Next purchase (average)		
	n	MYR	USD	N	MYR	USD	n	MYR	USD
Selangor	1	70	18.9	7	142.9	38.6	0	0	0
Federal Territory	0	0	0	10	119	32.1	1	130	35.1
Kedah	9	65.56	17.7	21	113.1	30.5	1	100	27
Johor	22	80.64	21.8	34	109.2	29.5	19	130.5	35.2
Penang	11	90.91	24.6	20	128	34.6	5	152	41
Average	**43**	**79.86**	**21.6**	**92**	**117.8**	**31.8**	**26**	**133.5**	**36.1**

Note: MYR1 = USD0.27 (15 October 2006).

Eighty of the 111 shop dealers were asked about the trend in Saiga Antelope horn prices. Seventy-nine said the price had increased and only one said that prices had decreased, when compared to the price before the Soviet Union collapsed. When 78 of the 79 shops were asked about the reasons for the increase in the price of Saiga Antelope horn, a variety of answers were given (multiple replies possible):

- Saiga Antelope horn is in short supply (56);
- trade in Saiga Antelope horn is banned (10);
- the population of Saiga Antelope is decreasing (8);
- trade in Saiga Antelope horn is under strict control (6);
- Saiga Antelope has become a protected species (6);
- Saiga Antelope has become extinct (4);
- demand in China has increased (2); and
- there is increasing local demand (2).

Country of origin

Sixty-three of the 111 shops visited during the surveys provided additional information on the possible country of origin of the Saiga Antelope horns they offered. Forty-seven shops said the origin of Saiga Antelope horn was Russia, while

17 shops said China (see **Figure 1**). Other shops claimed their supply was originally from New Zealand (1), Kazakhstan (1), Mongolia (1), Australia (1), and Myanmar (1). (Please note that one shop may give more then one answer). Furthermore, 73 shops were asked about the future availability of Saiga Antelope horn. Seventy shops said they could easily get more Saiga Antelope horn, while three shops said they could not get more because there supplies were exhausted, or because the trade in Saiga Antelope horns was banned.

Consumers

Staff in 74 shops were interviewed regarding the nationality of their customers. In addition to local customers, 17 shops said they had customers from Singapore, 11 shops claimed to have customers from Indonesia, and one person said he had sold Saiga Antelope horn products to customers from Taiwan, province of China.

Medical properties and substitutes

During the survey, staff in 75 shops were asked about the use of Saiga Antelope horn in TCM. Staff in 74 shops said it was used to reduce long-lasting and/or high fever, in 54 shops they said it had cooling properties, in five shops that it could detoxify/cool the liver and in four shops that it could prevent stroke. Some also claimed it could be used to hasten the recovery of chicken pox (four shops), reduce high blood pressure (two shops), cure sore throat (two shops), detoxify the body (two shops), cure measles (one shop) and strengthen nerve function (one shop).

When asked about the possible substitutes for Saiga Antelope horn, staff in 27 of 52 shops claimed nothing could replace Saiga Antelope horn, as not all its properties could be replaced. In the remaining 25 shops, substitutes proposed were pearl powder (nine shops); rhinoceros horn—although this was said to be impossible to obtain (five shops); buffalo horn (four shops); goat horn (four shops); and medicinal herbs (six shops).

General awareness

Twelve of 24 shops asked said Saiga Antelopes were farm-raised, while eight shops knew that Saiga Antelopes were wild-caught. Four shop dealers said they did not know whether the antelopes were farmed-raised or wild-caught. Eight shops believed that the horns would grow back once they had been cut (see **Table 14**)

Table 14

General awareness of Saiga Antelopes in Malaysia

Questions **(n = number of shops that were interviewed)**	**Yes**	**No**	**Don't know**
Are Saiga Antelopes farm-raised? (n=24)	12	8	4
Can Saiga horns grow back once they are cut? (n=9)	8	0	1

Availability of Saiga Antelope horns in Singapore

Regulatory framework in Singapore relating to the trade in Saiga horns

Singapore became a Party to CITES in 1986. The CITES Management and Scientific Authority for Singapore is the Agri-food and Veterinary Services (AVA) and CITES is implemented under the *Endangered Species (Import and Export) Act 2006*. Saiga Antelope is listed as a scheduled species under this Act (which includes any readily recognizable part or derivative of the species). This means that any import, export and re-export of specimens of this species without a permit from the Director General of AVA will be an offence and liable on conviction to a fine not exceeding SGD50 000 for each scheduled species, or to imprisonment for a term not exceeding two years, or to both. In addition, any person who sells, offers, or exposes, or advertises for sale, or displays to the public specimens of species which have been imported without the requisite permit from the Director General is guilty of an offence and liable on conviction to a fine not exceeding SGD50 000 for each scheduled species, or to imprisonment for a term not exceeding two years, or to both.

Availability of Saiga products

In Singapore, 51 TCM shops were surveyed. Forty-nine shops were in the Chinatown area and two in Geylang. All 51 shops surveyed offered ribbons of Saiga Antelope horn for sale and 49 of the 51 shops also offered whole Saiga Antelope horns and 13 sold processed products. Twenty-two types of processed products were recorded during the survey, ranging from powders to syrups (see **Annex II**). Seventeen types of processed products were made in Singapore and another five were made in China. There were many Saiga Antelope horns with rings available in Singapore, but prices were more or less the same as for the horns without rings. One shop displayed a mounted Saiga Antelope head and another shop had two Saiga heads, but none was for sale. No Saiga Antelope horn-grinding machine was seen in Singapore.

Number of Saiga products found for sale

A total of 3227 horns was recorded in 49 of the 51 shops surveyed. Seventeen shops had 50 or more Saiga Antelope horns in stock and four had 300 or more horns. Of these four, three shops were owned by the same company and together they had an estimated total of 1600 Saiga Antelope horns on display. This company is one of the major importers of Saiga Antelope horns in Singapore and it also re-exports Saiga Antelope horns to China, Indonesia, Malaysia and the USA. Ninety-six of the 3227 horns found for sale were purchased in 2006, 146 horns in 2005 and 2642 were claimed to be older than two years. The date of purchase for 343 horns was unknown.

In addition to the 3227 horns found for sale, one shop claimed to have 30–40 kg (equivalent to around 180–400 horns) in stock that were purchased in 2005. Five other shops claimed to have 220 horns and 60–110 kg of horns (equivalent to 360–1100 horns). If all the horns found on sale in the 49 shops are added to those claimed to exist by these shops, the total number of Saiga Antelope horns recorded during the survey in Singapore is 3987–4947.

Price and trend

The average price for one *liang* of Saiga Antelope horn recorded during the survey in Singapore was SGD52.2 (USD32.9). This is equivalent to USD0.88 per g of Saiga Horn or USD880 per kg. The highest price was SGD140 (USD88.2) and the lowest was SGD25 (USD15.75) per *liang* (see **Table 15**). In 2005, the average price from eight shops was SGD45.10 (USD28.4) per *liang*, but the price dealers expected to have to pay for their next order of Saiga Antelope horn was SGD54.3 (USD34.2). The prices in 2005 and those projected for the next order of stock might not reflect the true price since the sample size was relatively low.

Table 15

Prices for Saiga Antelope horn in Singapore 2005–2006 and projected prices for the next stock purchase (prices per liang = 37.5g)

Country	2005 (average)			2006 (average)			Next purchase (average)		
	N	SGD	USD	N	SGD	USD	n	SGD	USD
Singapore	8	45.1	28.4	49	52.2	32.9	7	54.3	34.2

Note: SGD1 = USD0.63 (15 October 2006)

Forty-eight shops were asked about price trends for Saiga Antelope horn and all claimed the price was increasing. The reasons given by 46 shops were (multiple replies possible):

- Saiga Antelope horn is in short supply (27);
- trade in Saiga Antelope horn is banned (18);
- the population of Saiga Antelope is decreasing (2);
- trade in Saiga Antelope horn is under strict control (5);
- Saiga Antelope has become a protected species (9);
- demand in China has increased (3); and
- the cost of raising Saiga Antelopes in farms has increased (1).

Country of origin

Twenty-eight of 32 shops claimed that the origin of the Saiga Antelope horns they offered was Russia, while four shops said it was Siberia.

Consumers

Apart from selling Saiga Antelope products to locals, the majority of shops in Singapore also sold Saiga Antelope horns to foreign customers. Sixteen shops were asked about the nationality of their customers. Ten out of the 16 shops said that they had customers from both China and Indonesia, five only had customers from China and one had customers from Indonesia only. Most of the shops mentioned that locals would only buy Saiga Antelope ribbons, while most of the foreign customers buy whole horns. On many occasions, they said that foreign customers would buy up to 10 horns per purchase.

Medical properties and substitutes

During the survey, 31 shops were asked about the use of Saiga Antelope horn in Chinese medicines. Thirty said it was used to reduce long-lasting high fever, 28 shops said it had cooling properties, five said it could reduce the side effects of chemotherapy and four shops said it could detoxify/cool the liver and body. Others uses, such as preventing meningitis, lowering high blood pressure, curing measles, and reducing joint pain were mentioned once during the survey (multiple replies possible).

Twenty-three of 29 shops said there was no adequate substitute for Saiga Antelope horn. Three shops mentioned buffalo horn and herbs as possible substitutes.

General awareness

Staff in 23 of the 39 shops where the origin of Saiga Antelopes was questioned claimed they were farm-raised, in 15 shops staff said they were from the wild, and in one shop staff did not know (see **Table 16**).

Table 16

General awareness of Saiga Antelopes in Singapore

Questions **(n = number of shops that were interviewed)**	**Yes**	**No**	**Don't know**
Are Saiga Antelopes farm-raised? (n=39)	23	15	1
Can the horns of the Saiga Antelope grow back once they are cut? (n=6)	1	5	0

MANAGEMENT OF SAIGA HORN STOCKS HELD IN CHINA

It should be noted that this information on the use of Saiga horns in China focuses primarily on the availability and management of Saiga horn stocks in China and does not provide a general overview of the trade in and market for Saiga horns in China. Such information was recently compiled by the WCS on behalf of the CITES Secretariat and will be providing readers with a much more complete picture of the Saiga horn trade in China. Hence the information below should only be considered supplementary to the information from WCS.

The amount of Saiga horn used in China for medical purposes is dependent on imports. There was a relatively large stock of Saiga horn in the 1950s and 1960s in China of which the majority was imported from the Soviet Union. After that, import volumes declined rapidly until imports were completely suspended, which was mainly caused by the Sino-Soviet relationship, an increase in prices and over-stocking. Since 1995, imports of specimens of Saiga Antelopes have required a CITES import document which is issued by the Chinese Endangered Species Import and Export Management Office.

The storage of Saiga horns in China is administrated by the Chinese State Forestry Administration and the Chinese State Medical Administration, including the Ministry of Public Health, the State Food and Drug Administration and the State Administration of Traditional Chinese Medicine.

At present, only pharmaceutical companies or hospitals whose applications for production of officinal drugs containing Saiga horn have been approved by the Chinese State Medical Administration can apply for a licence to use Saiga Antelope horn. Once they are approved, the pharmaceutical companies or hospitals have to apply to the State Forestry Administration to be allowed to purchase or process Saiga horn and the suppliers of Saiga horn are responsible for proving the legitimacy of the sources of the horn.

AVAILABILITY OF SAIGA ANTELOPE HORN IN CHINA

Possible sources of Saiga horn stocks in China include imports that took place before 1995 (pre-Convention specimens), imports after Saiga Antelope was listed in Appendix II of CITES, and confiscated horns. In the mid-1990s, the Chinese Endangered Species Import and Export Management Office and related departments conducted a nationwide survey of the volume of Saiga horn held in stocks in China. The results showed that the total amount was 155 500 kg by the end of 1994 (Mr Xiaoping Lu, CITES Management Authority of China, pers. comm., 2006). A second nationwide survey was undertaken by the Department of National Forestry Bureau Protection during the period 2005–2006 and revealed that the total volume of Saiga horns in China was 55 000 kg by the end of August 2006.

The Chinese General Administration of Customs reported 27 cases of illegal trade in Saiga Antelope horn during the period 1999–2004. A total of 4000 to 5000 kg of Saiga Antelope horns (equivalent to 29 000 to 52 600 individual horns) was confiscated. The majority of these horns reportedly originated in Kazakhstan and Russia.

According to the Endangered Species Import and Export Management Office, a total of 32 850 kg of Saiga horn was imported by China, 1996–2004 (see **Table 17**).

Table 17
Volume and origin of Saiga horn (kg) imported by China

Year	Amount (kg)	(Re-)exporter
1996	1850	Hong Kong, re-exported from the Russian Federation
1997	500	Russian Federation, re-exported from Kazakhstan
1998	0	
1999	0	
2000	0	
2001	19 000	Kazakhstan
2002	0	
2003	7500	Kazakhstan
2004	4000	Singapore, re-exported from Kazakhstan
Total	**32 850**	

According to the investigation of the Chinese State forestry bureau, the annual consumption of Saiga Antelope horn in China is 8500 to 9500 kg. The majority of Saiga horn in China is available in the form of patent medicines (94%) and only 1.5% enters the market in the form of complete horn or horn chip (Yin Feng, China Wildlife Conservation Association, *in litt*., 2006). Around 4% of Saiga horns are re-exported, the majority to Japan (see **Table 18**).

Table 18

Volumes and destinations of Saiga horn (kg) re-exported by China, 1995–2005

Year	Amount (kg)	Destinations
1995	-	
1996	-	
1997	-	
1998	-	
1999	-	
2000	-	
2001	342.9	Japan
2001	37	USA
2002	7237.5	Japan
2003	65.8	Japan
2004	120.4	Japan
2005	-	
Total	**7803.6**	

Source: CITES Management Authority of China.

Since the end of the 1980s, State departments have stopped buying and re-stocking with Saiga horns, which were associated with a certain amount of financial investment and risk. Hence, companies interested in Saiga horns had to take over the costs of storage of stocks themselves. Because of this new situation, Chinese companies shifted to focus on using up existing stocks to meet domestic demand, in order to avoid over-stocking of this relatively costly product and in the interests of economic efficiency. Therefore, the amount of imported Saiga horn has decreased and domestic demand has been supplied with horns held in stock in China.

The Chinese Government is considering banning the export and re-export of Saiga Antelope horn and processed products claiming to contain Saiga Antelope horns (Mr Xiaoping Lu, CITES Management Authority of China, pers. comm., 2006). According to the Chinese Endangered Species Import and Export Management Office, China has exported most of processed Saiga Antelope horn products to Japan, Thailand, Malaysia, the Philippines, Hong Kong and the USA since 1990. Because Saiga horn is used only for important medical conditions and as a specific remedy, the Chinese Government is considering restricting the export of traditional patent medicine containing Saiga Antelope horns and thereby aiming to concentrate on satisfying domestic demand.

CONCLUSIONS

Poaching of and illegal trade in Saiga Antelopes remains the basic threat to the species and is the main cause of the dramatic declines observed since the mid-1990s. Numbers of all five populations of Saiga Antelope have dramatically decreased since the mid-1970s. Currently, the total number of Saiga Antelopes is estimated at around 56 300 to 61 300 individuals, down from approximately 1 250 000 individuals in the mid-1970s. There are some indications that one or two of the populations may recently have been stabilizing in numbers, however it is too early to confirm these indications.

The Betpak-Dala population is the population that has been most affected by poaching in the 1990s, probably the result of its location in a relatively populated area close to Almaty, and consequently it is the population with the largest decreases. However, the Ustiurt population is the site with the most intense poaching pressure currently. This is because the population is larger and denser than that in Betpak-Dala, where the population is too low to support large-scale commercial hunting anymore.

Owing to the selective hunting of male antelopes for their horns, the sex ratio of populations has been significantly skewed, to the point where only 5.7% of the population are adult males (Ustiurt population) and 12.7% are adult males (North-western Precaspian population).

Despite the efforts of governmental bodies, illegal hunting of Saiga Antelopes is still very extensive. This indicates that the system of purchasing and subsequent illegal export of horn not only persists, but is also well organized and profitable.

In Kazakhstan, the Russian Federation and Uzbekistan, the areas inhabited by Saiga Antelopes are located in economically deprived regions. Illegal hunting Saiga Antelopes and sale and export to Asia of their horns often serves as an important source of income, as does the sale of the Saiga meat for local consumption, the meat also being used for subsistence. Some Saiga Antelope populations are at such low levels that commercial hunting for horns is no longer profitable. In these areas, Saiga Antelopes are mostly hunted for meat for subsistence use or local sale. Some Saiga meat is also exported, for example from Uzbekistan to Kazakhstan, where higher prices can be obtained.

Prices for Saiga horn have increased considerably since the mid-1990s. In the early 2000s, Saiga horns were purchased from local people for as much as USD180 per kg in Kazakhstan and the Russian Federation and for up to USD120 per kg in Uzbekistan (compared to USD30 per kg paid in 1994 to local people, as described by Chan *et al.,* 1995). Such high prices certainly stimulate poaching. One Saiga Antelope carcass costs approximately USD11.5–13.5 in the Russian Federation and in Uzbekistan the price varies between USD8 and USD16. In Uzbekistan, prices of Saiga meat are approximately 1.5–2 times lower than that of beef.

In Kazakhstan, in 1995, official stockpiles of Saiga Antelope totalled 3500 to 4000 kg and in the Russian Federation some 1500 kg (Chan *et al.*, 1995). Today, according to the information obtained, neither country has official stockpiles of Saiga Antelope horns. Since 1995, Kazakhstan has exported, according to CITES annual report data, 31 323 kg of horns and the Russian Federation has (re-)exported 16 870 kg (including 9510 kg of horns re-exported from Kazakhstan). Assuming that one horn weighs between 95 g and 172.5 g (Chan *et al.*, 1995), this is equivalent to around 279 400 to 507 300 horns or 139 700 to 253 650 male Saiga Antelopes.

Based on information compiled for this report there are indications that government officials in Kazakhstan and the Russian Federation are possibly involved in the illegal hunting of Saiga Antelopes and trade in their products and that they may co-operate with poachers. Enforcement of existing regulations and laws seems insufficient and government officials tasked with the control of poaching in the Saiga range areas are underpaid and not sufficiently equipped.

Saiga Antelope horn and products made of it are readily available in Malaysia and Singapore. A total of 162 TCM shops were surveyed and only two of these did not offer Saiga Antelope horns or products made from them. A total of 4054 horns were observed during the surveys and an additional, although unquantified, volume of Saiga horn ribbons and processed products. The surveys found a wider variety of processed products containing Saiga Antelope horn in Singapore and a larger stock of raw horns there compared to Malaysia. This may be because Singapore caters more for foreign customers, while Malaysia caters more for the local market.

The average prices for one *liang* of Saiga Antelope horn (= 37.5g) were USD31.8 in Malaysia and USD32.9 in Singapore. This is equivalent to USD848 per kg and USD877 per kg, respectively. Prices for Saiga Antelope horn have increased compared to previous years and are expected to continue to increase in the future.

There are indications that Saiga Antelope horns are illegally exported by individual buyers from Malaysia and Singapore, although the volume and significance of this trade is unknown. However, given that one customer from

China would buy up to 10 horns per transaction and take them out of the country, the actual number of horns being exported from Malaysia and Singapore without CITES permits could be significant.

Based on the responses to the questions on general awareness in TCM shops in Malaysia and Singapore, it is clear that knowledge of the conservation status of the Saiga Antelope is low. The majority of consumers and TCM dealers in Malaysia and Singapore were unaware of the critical conservation status of the species and the majority of dealers believed that Saiga Antelopes were farm-raised.

China is the largest importer and consumer of Saiga Antelope horns and has imported a total of 31 323 kg of the horns since 1995. To date, China has conducted two surveys to evaluate the total volume of Saiga Antelope horn held in stocks in China. One survey was conducted in 1994 and estimated the total stock of Saiga horn held in China at 155 500 kg, by the end 1994. A second nationwide survey was undertaken by the Department of National Forestry Bureau Protection for the period 2005–2006 and revealed that the total volume of Saiga horns in China was 55 000 kg by the end of August 2006. Taking into account an annual consumption of around 9000 kg per year, the current stocks are likely to last only for another six years or so depending on the volume of imports of Saiga horns from other countries. Demand for Saiga Antelope horn is still high and not expected to decrease in the near future. However, further information on the current demand and trade in Saiga horns in China will be available in the report compiled by WCS on behalf of the CITES Secretariat.

RECOMMENDATIONS

Ensuring the conservation of Saiga Antelopes while coping with the health care needs of a large number of Asian consumers seems an impossible task, in particular in the light of the current status of the Saiga Antelope, the catastrophic population declines observed in the past decade, the socio-economic situation in most of the regions where Saiga Antelopes occur and the persisting high demand for Saiga horns in Asian communities. Therefore, only solutions taking all of these aspects into consideration and taking into account lessons learnt from past experiences regarding the conservation, management and trade of Saiga Antelopes will have a chance to be effective and thereby contribute to the long-term survival of the Saiga Antelope. In order to achieve this it will also be important to learn from experiences made in managing and regulating trade in other species that are of commercial value owing to their role in Asian medicine and that have been subject to high poaching levels and illegal trade, such as musk deer, bears, Tiger, etc. Based on the results of this report, the following recommendations are offered:

Directed to the governments of Saiga Antelopes range States, in particular Kazakhstan, the Russian Federation and Uzbekistan

- Undertake demonstrable efforts to implement the Medium Term International work programme in support of the CMS memorandum of understanding (MoU) concerning conservation measures for Saiga Antelopes and its associated action plan, as adopted in September 2006 at the first meeting of the signatories to the MoU, held in Almaty, Kazakhstan.
- Strengthen national legislation pertaining to the (illegal) hunting, possession, purchase, sale, transport and trade of Saiga Antelopes and their parts and derivatives in Kazakhstan, the Russian Federation and Uzbekistan, and ensure that sanctions are sufficiently high to act as a disincentive for poaching and illegal trade and that offenders are prosecuted.
- Directed to Kazakhstan and the Russian Federation: Demonstrably comply with the recommendations made by the CITES Standing Committee in 2001 and increase efforts to improve overall compliance with CITES provisions.
- Directed to the Russian Federation: Sign the CMS MoU concerning conservation measures for Saiga Antelopes and start implementing it.
- Ensure that anti-poaching teams are sufficiently funded and equipped with the appropriate logistical support (mobile phones, motor vehicles, etc.) and have requisite expertise. Provide regular training and appropriate tools in local languages, outlining the legal provisions governing trade, smuggling techniques used and assisting with identification of Saiga parts and products in trade.
- Develop strict policies on the disposal of confiscated parts of Saiga Antelopes, including the logging of all seizures and registration of confiscated stock by the relevant authorities. In addition, records should be kept on the stock of Saiga Antelope horns that originate from natural mortality and these stocks, together with the stock of seized and confiscated horns, should be reported annually to the CITES Secretariat. Marking of horns held in these stocks should be considered in order to avoid these horns entering markets in Asia illegally and undetected.
- Learn from existing studies and projects that focus on improving understanding of the socio-economic aspects of poaching and illegal trade of Saiga Antelopes and support and conduct further studies on that subject in order to inform conservation and community-based projects that aim to develop incentives to stop poaching and illegal trade and improve local livelihoods.
- Assess available options and criteria, as well as conservation risks and benefits, of using managed hunting of Saiga Antelopes (including trophy hunting) as a possible mechanism to generate funding to support conservation efforts and benefit local communities, if populations have recovered to a level that would allow such uses and if all CITES conditions have been complied with.

Directed to the governments of importing and consuming countries of Saiga Antelopes, in particular China, Malaysia and Singapore

- Determine, through comprehensive surveys, the volume of Saiga Antelope horn and horn parts kept in stock and ensure that all Saiga horn and parts kept in stock (by government and traders) are registered with the relevant government authorities, and maintain a central database that will be regularly updated based on reported records by traders and other stockpile owners and assist assessment of overall consumption of Saiga horn use and monitoring of stockpiles.

- Restrict the number and varieties of patent medicines that are allowed to contain Saiga Antelope horn and to be produced by manufacturing companies, building upon experiences of the Chinese Government with regard to medicine containing musk deer. This has to be done in close co-operation with medicine manufacturers and TCM communities in order to ensure that the objectives and aims for such a restriction are fully understood and supported. In close collaboration with the TCM community and manufacturers, assess the feasibility of restricting the use of Saiga Antelope horns to treatment only of the most important medical conditions, in order to reduce overall consumption of horns.
- Adopt a labelling system for products containing Saiga Antelope horn, in order to try and prevent illegally sourced Saiga horn from entering legal markets. Examine markets selling medicinals nationwide, in order to identify and punish illegal trade and use of Saiga Antelope horn.
- Undertake further research on the use of alternative and appropriate substitutes for Saiga Antelope horn, taking into account possible conservation impacts of using such alternatives and learning from experiences made in promoting alternatives for other species such as Tigers, rhinoceroses, bears, etc. Promote among TCM traders and users the use and acceptance of substitutes for Saiga Antelope horns already available for certain conditions, in order to reduce the consumption of Saiga Antelope horn where possible.

Directed to both Saiga Antelope range and consumer States, with a focus on Kazakhstan, the Russian Federation, Uzbekistan, Mongolia and China, Malaysia and Singapore, and other stakeholders such as the CITES Secretariat, the Secretariat of the CMS, NGOs and scientific institutions

- Strengthen law enforcement and the control of illegal cross-border trade by providing training and improving co-operation and information exchange among the relevant law enforcement authorities, focusing on cross-border smuggling and trade at China's northern borders with Kazakhstan, the Russian Federation and Mongolia, and trade leaving Malaysia and Singapore.
- Strengthen the research and expertise on raising Saiga Antelopes in captivity, based on experiences from China and the Russian Federation, with the aim of using these populations, where appropriate, to enhance wild populations, taking into account the genetic distinctiveness of the different populations and following strict guidelines for their re-introduction.
- Undertake targeted public awareness campaigns to educate the consumers and TCM dealers in China, Malaysia and Singapore on the conservation status of Saiga Antelopes. The use of Saiga Antelope horn for illnesses that can be easily treated by other types of medicines, should be discouraged where possible. The co-operation and support of NGOs should be sought for developing and undertaking these campaigns. This should also be carefully planned through consultation with TCM practitioners and producers.
- Explore possible funding sources for supporting Saiga Antelope conservation, management and trade regulation through establishing links between stakeholders of the Asian medicine industry with in-situ conservation projects in Saiga Antelope range States.

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ANNEXES

Annex I: Questions for surveys in Malaysia and Singapore

Sources
- Find out where dealers are getting the horns from
- Find out if they are still getting horns, or if it is from old stock
- How difficult is it to get horns? Is it becoming more difficult? If so, why?
- Are their middlemen in Malaysia/Singapore, or do the dealers buy directly from China or other countries?

Stock piles
- Do any of the dealers have stock piles?
- Are there any stock piles in Malaysia/Singapore?
- If there are stock piles, are they new/old?
- Do dealers buy from stock piles?
- Do people still get stock piles?

Prices
- What are the current prices of the horns?
- What were prices five years ago?
- Are prices increasing/staying the same/decreasing? Why?

License
- Do the shops have permission to sell the horns?
- Do dealers think this trade is illegal or legal?

Methods
- How are the horns brought into Malaysia/Singapore?
- Are any taken out of these two countries? If yes, to where?
- Who buys the horns?
- What are the horns used for?
- How much is used per year on average in each shop?
- How much is sold to one customer on average?
- Any alternative for saiga horns?
- Who do TCM dealer buy their horn from?

General awareness
- Does selling Saiga antelope product need a license?
- Do you have a license to sell Saiga antelope product?
- Are Saiga antelopes farm raised or from the wild?
- Could Saiga's horns grow back once they are cut?

Annex II: Processed products recorded in Malaysia and Singapore:

Product name	Made in	Horn content
In Singapore:		
Ling Yang Qingre Keli	China	17.2mg/6g
Antelope Horn Cold/Fever Tablets	China	0.99mg/250mg
Lin Yan Yin Chiao Refined Cold & Fever Tablet	China	3.4mg/100mg
Lin Yan Yin Chiao Chieh Tu Pien	China	3.4mg/250mg
Ling Yang Ganmao Pian	China	3.4mg/260mg
Zhen Zhu Lin Yang Yin Qiao	Singapore	10%
Ling Yang Herbal Tea For Flu & Fever	Singapore	1.6mg/7g
Ling Yang Qingying Houtong Cha	Singapore	1.0mg/7g
Antelope's Horn Yinqiao Cold Capsules	Singapore	0.5mg/300mg
Specific Lin Yan Chiehtupien	Singapore	unknown
Specific Lin Yan Colds Fever Cooling Tea	Singapore	0.15g/6g
Antelope's Horn Common Cold Tablets	Singapore	3.4mg/250mg
Antelope's Horn Common Cold Tablets	Singapore	5mg/300mg
Yinqiao & Antelope's Horn Flu Tea	Singapore	30mg/3g
Antelope's Horn Flu Tea	Singapore	120mg/4g
(No English name)	Singapore	400mg/8g
Cornu Antelopis Pearl Cooling Syrup	Singapore	0.05g/60ml
Antelope Fever & Cold Cough Syrup	Singapore	0.01g/20ml
(No English name)	Singapore	0.02g/2g
Zhen Zhu Lin Yan Throat Tablet	Singapore	unknown
Saiga Antelope Horn Powder	Singapore	unknown
(No English name)	Singapore	unknown
In Malaysia:		
Lin Yong Chin Choo	unknown	unknown
Ling Yang Ubat Deman Liquid	Malaysia	unknown
Herb Cooling Herbal Tea	China	5mg/5g
Herbal Tea For Flu, Fever and Cough	Malaysia	18mg/6g
Lin Yong Brand Fever Mixture	Malaysia	unknown
Herbal Tea	Malaysia	24mg/8g
Ubat Air Menyejuk Badan Cap Linyang	Malaysia	13.4mg/350ml