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SAIGA NEWS

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Mongolian Saiga female © B. Buuveibaatar

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Contents

Editorial team: China: Guihong Zhang (guihongzhang@foxmail.com), Qulong Education Ltd & Professor Zhigang Jiang (zhigangjiang@vip.sina.com), Institute of Zoology, Chinese Academy of Sciences. **Kazakhstan:** Dr. Yu.A. Grachev & Professor A. Bekenov, Institute of Zoology (teriologi@mail.ru), Alyona Krivisheeva, ACBK (alyona.krivosheyeva@acbk.kz). **Mongolia:** Dr. B. Lkhagvasuren (lkhagvazeer@gmail.com), Institute of General and Experimental Biology, B. Chimeddorj, (chimeddorj@wwf.mn), WWF-Mongolia. **Russia:** Professor Yu. Arylov, Centre for Wild Animals of the Republic of Kalmykia (saiga-center@mail.ru) & Dr. A. Lushchekina, Institute of Ecology & Evolution (saigak@hotmail.com). **Uzbekistan:** E. Bykova [Executive Editor] &. Dr. A. Esipov, Institute of gene pool of plants and animals (esipov@xnet.uz). **UK:** Professor E.J. Milner-Gulland [Advisory Editor], Oxford University (ej.milner-gulland@zoo.ox.ac.uk) & Dr. David Mallon [Reviewer], IUCN Antelope Specialist Group, d.mallon@zoo.co.uk. Graphic design by Alfia Ganieva, (alfiya_71@mail.ru).

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Special Feature

The 100th anniversary of the Protected Areas system in Russia and neighbouring countries

Despite all the economic and political challenges that were taking place 100 years ago, the Russian Government decided to establish the first nature reserve in the Russian Empire; Barguzinsky Reserve on the shores of Lake Baikal. This reserve aimed to restore a population of sable. This event launched a series of actions aimed at creating a uniform, scientifically grounded, system of specially protected areas in Russia. Between 1922, when the Union of Soviet Socialist Republics (USSR) was formed, and 1991 when the country disintegrated, the same system pertained in all the Soviet republics.

Nowadays, each of the former Soviet republics has its own laws and Protected Area system. However, the foundations of these systems were laid in the late 19th-early 20th century, based on work by outstanding Russian and Soviet scientists and naturalists, including I. P. Borodin, G. F. Morozov, G. A. Kozhevnikov, V. P. Semenov-Tyan-Shansky and A. N. Formozov. According to the Convention on Biological Diversity, Protected Areas form the cornerstone of in situ nature conservation, enabling ecosystems to be conserved and viable populations of species to be maintained and restored in their natural environment. By the early 1990s the USSR's network of specially protected areas comprised around 200 strict reserves (zapovedniks), 23 national parks (natsionalny park) and over 3,000 wildlife preserves (zakazniks). This system was rather different to that adopted in other countries, with Zapovedniks being closed to most uses with the aim of maintaining as pristine an environment as possible, with scientific research as a key aim. Zakazniks tended to allow some human uses, but were flexible designations that could even move seasonally to protect migratory species (including saigas). Although the independent countries of the former USSR have altered and extended their Protected Area legislation, the core philosophy still owes much to the vision of the system's founders.

A summary of the current status of Protected Areas in the saiga range

KAZAKHSTAN

The Republic of Kazakhstan has 113 protected areas, but saigas are found in just five of them:

The Irgiz-Turgay State Nature Reserve (Fig. 1-1), with an area of 764,000 ha, was established in Irgiz District in 2007 in order to conserve and restore a range of ecological communities, protect the seasonal habitats and migration routes of saigas from the Betpakdala population, and conserve the unique marshes and lakes of the Irgiz-Turgay wetland system.

The Altyn-Dala State Nature Reserve (Fig. 1-2) was established in 2012 on an area of 490,000 ha in order to conserve the unique steppe ecosystems of Central Kazakhstan. The reserve is located in the closed basin of the Turgay and Uly-Jalanshik rivers and covers the key calving, wintering, migration and aggregation areas of the Betpakdala saiga population. Sarykopa, the region's largest system of freshwater lakes, which is regarded as an Important Bird Area, also lies within the reserve.

The Korgaljyn State Nature Reserve (Fig. 1-3), with an area of 543,000 ha, was established in 1968 in the central part of Kazakhstan's steppe zone. Most of its territory is occupied by the marshes and water bodies of Lakes Korgaljyn and Tengiz. 260,000 ha of pristine steppe west of Lake Tengiz were added to the territory in 2008, to protect saigas, particularly in

Special Feature (cont)

the traditional calving areas of part of the Betpakdala population.

The Naurzum State Nature Reserve (Fig. 1-4), with an area of 191,000 ha, was established in 1966. It is in the centre of the belt of Eurasian steppes on the Turgay Plateau, Northern Kazakhstan. Its aim was to monitor typical, rare and unique natural steppe communities and conserve them in their natural state. Saigas are found in the Reserve between May and September.

The Barsakelmes State Reserve (Fig. 1-5) was established in an area of around 17,000 ha in 1939. In 2016 it was renamed Barsakelmes State Biosphere Reserve and extended to 407,132 ha through the addition of the Kaskakulan section, a previously submerged area, and the creation of buffer and transition zones. This is the only reserve in the former Soviet Union that features extreme ecological conditions and lies within the zone of a global ecological catastrophe - the shrinkage of the Aral Sea. The most valuable animals within the reserve are ungulates, and particularly an isolated group of saigas. As the Aral Sea shrank, Barsakelmes Island became a peninsula, and its saigas were able to migrate to the eastern shore of the lake to access sources of fresh water.

TURKMENISTAN

Currently, there are 9 State Nature Reserves and 16 wildlife preserves in Turkmenistan. The Kaplankyr State Nature Reserve (fig. 1-6) was established in 1979, and its current area comprises around 282,000 ha, a plateau-like clay-rich elevated region in Southern Ustyurt, at the junction of northern and southern deserts, not far from the border with Uzbekistan and Kazakhstan. It contains the Sarykamysh (fig. 1-7) and Shasenem (fig. 1-8) State Wildlife Preserves (zakazniks). Formerly saigas from the Ustyurt population, which came from Uzbekistan in particularly cold winters,

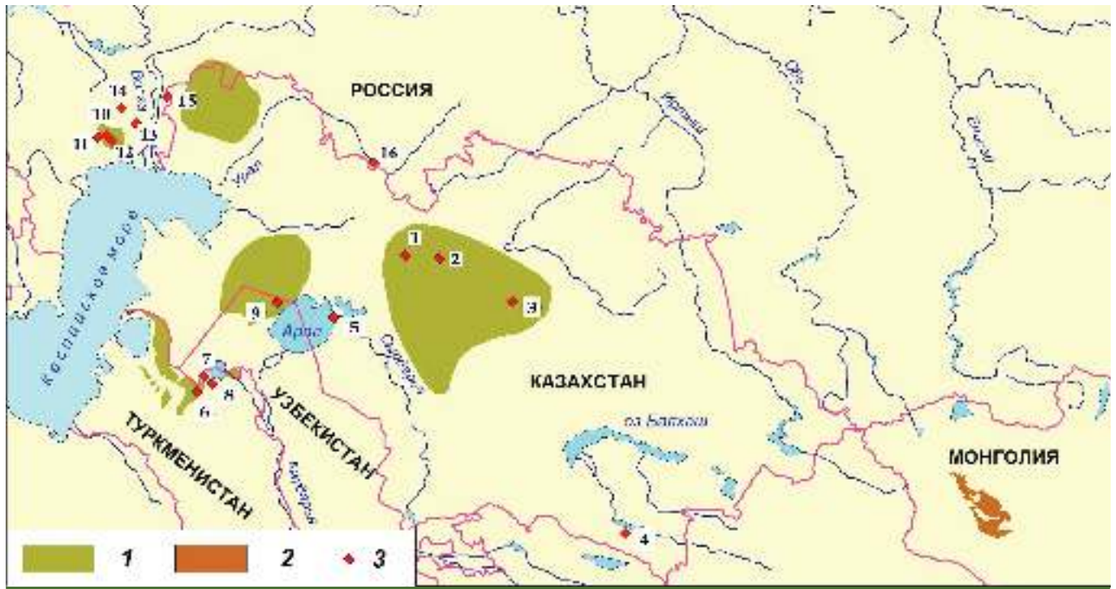


Figure. The Protected Areas in the saiga range.
1 – Saiga tatarica, 2 – Saiga tatarica mongolica, 3 – Protected areas

used to be recorded in the reserve. A report submitted by Turkmenistan to the CMS Secretariat in 2015 says that individual saigas still visit the area between December and March.

UZBEKISTAN

The system of protected areas in Uzbekistan comprised 9 state nature reserves, 2 national parks and 9 wildlife preserves. A new reserve type, the Saigachy Landscape Reserve (fig. 1-9), was established in Karakalpakstan on an area of 848,000 ha in 2016. The location was selected based on local natural conditions, which are best habitats in the area for saigas and some other rare animal and plant species of the Ustyurt Plateau. The reserve includes both the traditional migration routes of the Ustyurt saiga population and some of their breeding areas.

RUSSIA

Currently, there are over 12,000 protected areas in Russia, of various kinds, from federal to provincial. Of the federal protected areas there are 103 state nature reserves, 47 national parks and 67 wildlife preserves. Some of the protected areas are primarily aimed at saiga conservation.

The Cherniye Zemli State Nature Biosphere Reserve (fig. 1-10) was established in 1990. Its main sector, Stepnoy, with an area of almost 100,000 ha, is situated in the Caspian Depression, between the Kuma and Volga Rivers. In 2009 the reserve took on the management of three federal wildlife preserves, Makletinsky (fig. 1-11), Sarpinsky (fig. 1-12) and Kharbinsky (fig. 1-13), of which Makletinsky is in the current range of the pre-Caspian saiga population. However, the other two, Sarpinsky and Kharbinsky, are further north, in an area which saigas no longer visit.

The Stepnoy State Wildlife Preserve (zakaznik) (fig. 1-14), currently about 109,000 ha, was founded in 2000 in order to conserve the natural feather-grass steppe ecosystem and a number of rare species of plants and animals (particularly saigas). It is located in Limansky District, Astrakhan province, close enough to the Cherniye Zemli reserve to provide a buffer against potential trespassers at the eastern border of Cherniye Zemli. This means that the two reserves together provide an integrated saiga conservation area.

The Bogdinsko-Baskunchaksky State Nature Reserve (fig. 1-15), of approximately 19,000ha, was founded in 1997 in order to conserve the little-disturbed semi-desert communities around Lake Baskunchak, one of Russia's largest closed saltwater bodies. It also encompasses Mount Big Bogdo (149.6 m above sea level), the highest point of the Caspian Depression. The saigas of the Volga-Ural population occasionally visit this reserve from Kazakhstan. Previously, the area around Lake Baskunchak was within saiga range and on a migration route.

The Orenburg State Nature Reserve (fig. 1-16), 40,000 ha in size, was established in 1989 in order to conserve and restore unique steppe landscapes. Only one of its five sections, Aschisay Steppe, 7,200 ha in size, is currently reported to receive occasional visits from saigas from the Betpakdala population.

Saigas from Kazakhstan's Volga-Ural population sometimes visit areas of Astrakhan, Volgograd and Saratov provinces on the left bank of the Volga River, but unfortunately there is no protected area in this region.

Special Feature (cont)

Educational activities on Protected Areas

RUSSIA

Vladimir Putin, President of the Russian Federation, decreed 2017 to be the Year of Protected Areas. Amongst other things, this resulted in the "Zapovedniki" Centre for Ecology and Education initiating the All-Russia Lesson on protected areas, with the support of a number of other organisations. The Lesson lasts for 45 minutes and is targeted at children of various ages. It teaches them about their country's wildlife and the system of protected areas that is meant to conserve its diversity.

Protected areas which contain saigas also took part in this activity. Teachers and researchers from the Bogdinsko-Beskuchansky Reserve held an extracurricular event called 'The Bogdinsko-Beskuchansky Reserve, a Gem of Astrakhan', which consisted of a colourful presentation, poems, songs and a competition. The children learnt that the Bogdinsko-Beskuchansky Reserve is a unique place visited occasionally by guests from Kazakhstan – saigas - and that it is vital to conserve the area for future generations. Staff from

Staff from Cherniye Zemli Reserve gave reserve lessons in Chernozemelsky and Yashkulsky Districts of the Republic of Kalmykia © http://zapovednik-chernyezemli.ru

A reserve lesson given by researchers from the Stepnoy Wildlife Reserve at a secondary school in Promyslovsky © http://www.ifaw.org/russia/urok

Cherniye Zemli Reserve also gave a series of lessons in schools near their reserve, including competitions, films and souvenirs. Stepnoi reserve similarly gave a presentation to their local schoolchildren about the diversity of fauna and flora in their reserve and the hard work that rangers do to protect that fragile and vulnerable corner of Astrakhan province. Saigas were the main subject of the lecture, which emphasised how the younger generation – the schoolchildren themselves – would have to take up the cause of conservation in their native land. The children also learnt about the Saiga Conservation Alliance and its activities in Russia and elsewhere. The lesson culminated in a short quiz, with prizes donated by the International Fund for Animal Welfare.

UZBEKISTAN

The initiative of Russian scientists encouraged their colleagues in Uzbekistan. Over 2,000 people, young and old, from the city of Nukus and the villages of Jaslyk, Karakalpak and Kirkkiz, took part in events celebrating protected areas in Uzbekistan and around the world. It was a real challenge for teachers, as they not only had to master new material,

Open lesson on botany focussed on Uzbekistan's reserves © SCA

but also to think about how they should integrate protected areas into each of their subjects in the most interesting and accessible way.

The Day of Protected Areas began in Nukus. Some of the children visited the Lower Amudarya Biosphere Reserve to explore its riparian forest (tugai) ecosystem and its main inhabitant, the Bukhara red deer, and learn about the work of rangers and researchers. Those who had been lucky enough to participate in the expedition then shared their impressions with their classmates. The event climaxed with a grand show, followed by a screening of the film The Saigas of the Ustyurt Plateau: The Right to Live.

Schools in the villages of Jaslyk, Karakalpakstan and Kirkkiz then picked up the baton. During Physical Education

Day of Protected Areas in Karakalpakia village © SCA

lessons, children chose the role of some rare animal, which then had to get to its reserve through a series of obstacles. In music lessons the children became one of the characters in a puppet show, defeating poachers and saving a saiga baby, then taking it to a reserve, its new safe and cosy home. In school No. 56 in Karakalpakstan, an ecotheatre and flash mob by members of the My i Mir (We and the World) steppe club added to the festival. In Kirkkiz the steppe clubs also focussed on saigas for their performance and competitions. The children saw a film about Chatkal Reserve in the mountains

Puppet show about Saigachy reserve at the music lesson in Jaslyk village. SCA

above Tashkent, and asked questions of researchers and reserve staff.

A team of ecologists' visit to a kindergarten was a highlight. This is where a new initiative called Ana Saygak (Mama Saiga) is being developed. This time they presented a happy fairytale, in which little saigas made friends with good children and together defeated poachers, saved the saigas' mother and arrived in Saigachy Reserve to enjoy a new life.

So, the Day of Protected Areas events and lessons are over in Russia and Uzbekistan. All the schools have returned to their routines. However, a caring attitude towards wildlife, and a feeling

Updates

of involvement in the common cause of conservation of vulnerable and unique ecosystems, have been planted in the soul of each participant. We hope educational events such as these will become an ongoing tradition.

Anna Luschekina, Elena Bykova and Natalia Shivaldova Saiga Conservation Alliance and Ekomaktab Ecological Resource Centre, ebykova67@mail.ru

Participants in the "Mama Saiga" initiative with their young charges from Jaslyk village's nursery. © SCA

Mongolian Saiga PPR Virus Outbreak: WCS's response

Enkhtuvshin Shiilegdamba, Wildlife Conservation Society, eshiilegdamba@wcs.org

A saiga mass mortality event is still continuing in the Great Lakes Depression of western Mongolia. According to the latest government reports it's believed that over 5,000 saigas have died since December 2016 in the Durgun steppe, Khuisiin Gobi and Sharga Gobi of Khovd and Gobi-Altai Provinces of Mongolia, bordered by the Altai Mountains and China. The most recent pre-outbreak population estimate for the Mongolian saiga, a unique subspecies, was around 10,000, so this event represents a significant loss of the population. The cause is a livestock virus known as PPR or Peste des Petits Ruminants. The disease was first detected in goats and sheep in the saiga range area in August 2016, and subsequently spilled over into the wildlife [see the articles by B. Chimeddorj & B. Buuveibaatar and R. Kock in this issue for more details].

A WCS response team, including WCS Mongolia Program Director Dr. Enkhtuvshin Shiilegdamba, biologists Dr. Buuveibaatar Bayarbaatar, Ariunbaatar Barkhasbaatar, Dr. Batkhuyag Sandag from the Veterinary and Animal Breeding Agency and State Central Veterinary Laboratory virologist Dr. Munkhduuren Shatar, carried out field missions along with the FAO/OIE Crisis Management Center and Animal Health team. This consisted of Dr. Richard Kock from the Royal Veterinary College, UK, and Dr. Bolortuya Puversuren, a local epidemiological consultant. The team aimed to rapidly assess the situation and collect samples from dead saiga. They conducted necropsies on fresh saiga carcasses and evaluated sick saigas, confirming the PPR diagnosis and providing recommendations on data collection and immediate control measures.

The WCS team is continuing to work on the saiga PPR outbreak, and the latest major initiatives include an "International Experts Meeting on Addressing PPR Virus Outbreak in Mongolian Saiga and Livestock", providing recommendations to the Mongolian Government for further activities that are critical to controlling and eradicating this disease in livestock and wildlife in Mongolia.

This meeting was supported by FAO/OIE, the US Embassy in Mongolia, USGS, USFWS and WCS and organized by the Ministry of Environment and Tourism and the Ministry of Food, Agriculture and Light Industry on May 29- 31, 2017. Thereafter, Western 4 province and State Central Veterinary Laboratory (SCVL) experts were invited to a week of training on gross necropsy in the field, characterization and documentation of the gross necropsy findings, and how to do basic laboratory analysis of samples in the field. This training was funded by the Trust for Mutual Understanding. Bronx zoo pathologists Charlotte pathologists Charlotte Hollinger and Ania Tomaszewicz provided the technical training.

With support recently secured from Morris Animal Foundation, Saiga Conservation Alliance and the FAO/OIE, WCS is planning to survey wild ungulate populations in Western Mongolia, including saiga antelopes, Goitered gazelle, Siberian Ibex and Argali. We will collar animals and collect samples from these individuals to detect immunity against PPR in saiga

Meeting participants at the "International Experts Meeting on Addressing PPR Virus Outbreak in Mongolian Saiga and Livestock". © WCS Mongolia

Wildlife Pathology Necropsy Training for the State Central Veterinary Laboratory and veterinary lab professionals from the saiga range. © WCS Mongolia

populations. This willdetermine where and how the disease is spreading so that interventions, such as livestock vaccination, can be targeted to stop the spread of the disease and minimize the impacts on wild ungulate populations. The PPR virus most likely spilled over from infections in domestic sheep and goats. WCS and partners (FAO/OIE, Ministry of Environment and Tourism, Ministry of Food, Agriculture and Light Industry, WWF, Institute of General and Experimental Biology) are working to design effective control strategies for both livestock and wildlife to eradicate PPR, and prevent serious long term socio-economic and biodiversity consequences. Increased investment in saiga antelope and habitat protection will also be needed to ensure that the remaining saiga population can recover after this devastating setback. Therefore WCS continues to look for other donors and support to prevent the extinction of this critical subspecies and support efforts towards PPR eradication in Mongolia by 2025.

Updates (cont)

Local herders feel strong antipathy towards saigas

Buyanaa Chimeddorj, WWF-Mongolia, chimeddorj@wwf.mn

Thousands of Mongolian saigas have died due to PPR and only 4961 individuals are left alive. Although the outbreak has started to wane, a new challenge has emerged – local herders feel a strong antipathy towards saigas. The poor animal had a reputation of being the cause of pasture overgrazing and now it's blamed for spreading this infectious disease. Herders have become cautious, as they assume that contaminated saigas could infect domestic livestock. The majority of herders are feeling ever-increasing hate towards this animal. "They do not have any value for herders' lives, despite their status as an endangered endemic species. There is no benefit to protecting them. On the contrary, they destroy our limited pasture resources and now start to contaminate our livestock. We just cannot love and appreciate the existence of saigas" said a herder.

While human-wildlife conflict already exists for the snow leopards due to their predation on livestock, now we face another conflict, between herders and saiga antelopes. A new communications and advocacy strategy is needed, as well as tools tailored to this specific target audience, in order to address this conflict.

The Saiga Saga: Mongolian Edition

Munib Khanyari, Bristol University, munib@ncf-india.org

Largely a semi-arid environment, the Gobi seems at first to be an inhospitable place. However, as I sat with my colleagues and local rangers that had come to monitor saiga calving in our camp in Shargiin Gobiin, Western Mongolia, with chirping birds and skittering lizards, the place couldn't feel more alive.

During the rutting season, a PPR (Peste des petites ruminants) outbreak, transferred from livestock, decimated 54% of the saiga population. The calving in June 2017 could perhaps be crucial to sustain this thinning population. We were here with two missions; to monitor saiga calving, and to collect samples to see if they have developed PPR antibodies in reaction to the outbreak. Finding saiga babies can be a challenging task. For four days we spotted none. As our vehicle traversed the steppe, we spotted a few saiga carcasses – a grim reminder of the plague.

The saiga calf monitoring team taking a break in the Darvi soum near the Saiga calving grounds in Shargiin Gobi © Munib Khanyari

As the fifth day passed without sighting calves, we were starting to despair. Two local vets had told us that, following the PPR outbreak in livestock in September 2016, many female sheep and goats had aborted their pregnancies. Was the same happening to saigas?

As we sat under the baking Gobi sun, we spotted a group. Excitingly, a female was accompanied by two smaller saigas. Suddenly, they sat down and disappeared. This was the moment! Upon reaching the site, we found twins! The team was ecstatic to finally spot calves. However, one of them weighed 2.2 kg, the lowest recorded for a Mongolian saiga calf. A normal Mongolia Saiga baby weighs around 3 kg. Was the plague responsible?

Over the next 4 days, we spent over 10 hours a day searching. The calves remained elusive. In these bleak times, teamwork was crucial. Upon sighting what seemed to be a distant suckling female, as we scanned from atop a hill, Buyanbaatar, a local ranger, fixed the spotting scope with her in his gaze. Buuvei, another ranger, and I sat in the car, switching on our walkie-talkies. Buyanbaatar guided us and we found a tiny calf.

In the end, we only found 9 calves, a pair of twins and some singletons, many fewer than our projected 40 (the number found in previous monitoring expeditions). Some were a few days old and extremely hard to catch! Maybe the saiga did lose their pregnancies or were not mated due to PPR. We could only speculate!

As we sat in the Darvi soum (provincial capital), on our way back to Ulaanbaatar, we reminisced about the steppe. This year's calf monitoring had been tough; filled with gusty desert winds, long hours of scanning and only 9 calves. Nonetheless, we were happy to get blood samples from each, which were to be tested

One of the nine saiga calves that were spotted during the calving. Notice the impressive camouflage. © Munib Khanyari

in the Veterinary lab in Ulaanbaatar for presence of PPR antibodies and Pasteurella (in 2015 in Kazakhstan saigas died from pasteurellosis, when the commensal Pasteurella bacteria turned virulent). Additionally, we collected information on saiga group sizes and structure and the proportion of pregnant females, to see if trends in these were affected by the plague. We also collected teeth from dead individuals for aging.

Upon reaching Ulaanbaatar we learnt of ibex deaths near our field site. Many of the nearly 20 dead animals had been diagnosed with PPR. Has the disease slipped into the mountain ungulates? I contemplated this and simultaneously thought of the saiga. Against all the odds, this creature which once lived with the mammoths, has survived in one of the most hostile environments on Earth. With that thought I rested my head and believed that the last chapter of this long story that is the saiga, isn't definitely written yet!

Updates (cont)

Saiga aerial survey results for Kazakhstan in 2017

Yuri Grachev, Institute of Zoology, Science Committee, Ministry of Education and Science of the Republic of Kazakhstan teriologi@mail.ru

The aerial survey of saigas in Kazakhstan was commissioned by the Forestry and Wildlife Committee, Ministry of Agriculture of the Republic of Kazakhstan and carried out between 11th and 30th April 2017. Researchers from the Institute of Zoology, Okhotzooprom, the regional forestry and wildlife inspectorates and the Altyn-Dala, Irgiz-Turgay and Korgalgy State Reserves took part in the monitoring.

The total number of saigas in Kazakhstan is 152,600 individuals, with 51,700 in Betpakdala, 2,700 in Ustyurt and 98,200 in the Ural population. By comparison with 2016, the Betpakdala population has increased by 42.8%, the Ustyurt population by 42.1% and the Ural population by 39.8%. The total number of saigas in Kazakhstan has grown by 40.9% compared to 2016.

Monitoring the situation in the Betpakdala and Ural saiga populations in Kazakhstan during the calving period in 2016-17

Albert Salemgareev & Steffen Zuther, ACBK, albert.salemgareev@acbk.kz, steffen.zuther@acbk.kz

Since 2008 specialists from the Association for the Conservation of Biodiversity of Kazakhstan (ACBK) have been monitoring saigas in their calving areas as part of the Altyn Dala Conservation Initiative, with a special emphasis put on the Betpakdala and Ural populations in 2016 and 2017.

In 2016 the saigas of the Ural population were calving at the border between Janybek and Kaztalov Districts of West Kazakhstan province, where we recorded two large aggregations between 7th and 17th May. During 90km of transect surveys, we ear-tagged 320 saiga calves. Saigas from the Betpakdala population were calving in the Irgiz Turgay State Nature Reserve between 5th and 12th May. Around 200 saiga calves were eartagged on a transect 65 km long; the average weight of a calf (irrespective of sex) was 3.16 kg.

In 2017 we also monitored the calving areas of the Ural population, on 28 transects totalling 142 km. During the survey we examined 950 new-born calves and eartagged 663. Calving took place in two areas 35 km apart.

An eartagged newly born saiga
© Albert Salemgareev

Although in 2017 the spring arrived late in the northern regions of Kazakhstan, Betpakdala's saigas had finished calving by 12th May. This year, the saigas did not form large calving aggregations but gathered into different-sized groups scattered across the calving area, the largest of which was recorded in the Irgiz Turgay Reserve and consisted of 4,000 individuals.

A calving aggregation of female saigas
© Albert Salemgareev

To summarise, calving was successful in both the Ural and Betpakdala populations in 2016 and 2017.

The research team included experts from the following organisations: ACBK; Okhotzooprom; Research Institute for Biological Safety Problems, Ministry of Education and Science; National Reference Centre for Veterinary Medicine, Ministry of Agriculture; Institute of Zoology, Ministry of Education and Science; Royal Veterinary College (UK); Frankfurt Zoological Society (Germany).

For details please go to: ***http://www.acbk.kz/ru and http://www.acbk.kz/ru***

A national information campaign against trade in saiga horns in Kazakhstan

Danara Jarbolova & Mukhit Suttibayev, Association for the Conservation of Biodiversity of Kazakhstan, danara.zharbolova@acbk.kz, mukhit.suttibayev@acbk.kz

For two months between November 2016 and January 2017 the Association for the Conservation of Biodiversity of Kazakhstan (ACBK) conducted a large-scale information campaign against illegal trade in saiga horns. The campaign's main goal was to prevent the distribution of announcements by buyers of saiga horns, warn people about criminal penalties for buying/selling saiga horns and attract public attention to the problem of saiga conservation. The campaign was initiated by ACBK and supported by the Nature Protection Police (Ministry of Internal Affairs), Forestry and Wildlife Committee (Ministry of Agriculture) and Okhotzooprom.

We created webpages on Facebook and Vkontakte social networks as platforms for exchanging information

An information sticker about the illegality of buying/selling saiga horns, designed by ACBK

Updates (cont)

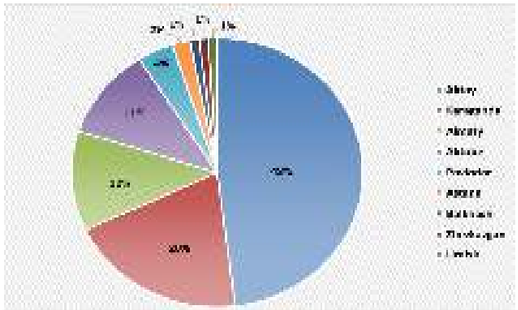


Figure 1. The number of illegal announcements about buying/selling saiga horns in different cities of Kazakhstan

and discussing wildlife conservation issues, with a special emphasis on saigas. The pages attracted 686 subscribers (667 on Facebook and 19 on Vkontakte). Social network users uploaded photographs of announcements about buying/selling saiga horns from their communities. In addition, a hotline for posting photographs of similar advertisements was created in WhatsApp. Volunteers and law enforcement agents designed and distributed 5,000 stickers in a number of Kazakhstan's cities (Astana, Almaty, Aktobe, Karaganda, Aktau, Uralsk, Atyrau and Kyzylorda), informing people about the illegality of saiga trading.

Over the course of the campaign over 200 announcements were detected in 7 provinces (Fig. 1). The largest number of advertisements was recorded in Mangistau, Karaganda, Almaty and Aktobe provinces. This resulted in the detection of 24 telephone numbers for saiga horn buyers and 19 websites where buying/selling of saiga horns was taking place. Letters were sent to the administrators of all these websites informing them about the illegal character of this type of activity, upon which the announcements were immediately removed from 11 of these sites. Analysis of the telephone numbers showed that most of the saiga horn buyers and sellers were from the cities of Karaganda and Almaty (Fig. 2).

All the data collected was forwarded to the Nature Protection Police and Forestry and Wildlife Committee. The Ministry of Internal Affairs is now carrying out investigations based on the information received. Thus, this campaign informed people across Kazakhstan about the illegality of buying/selling saiga products and attracted the public's attention to the problems of poaching control and conservation of this globally endangered antelope species.

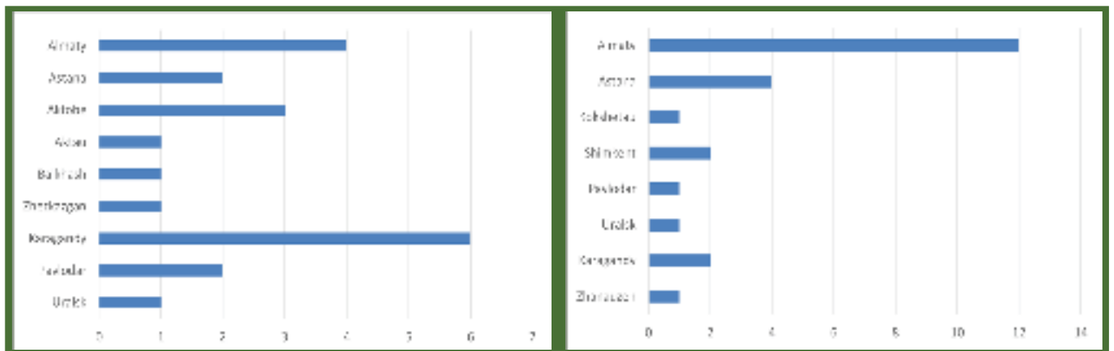


Figure 2. The distribution of saiga horns buyers across Kazakhstan, based on an analysis of advertisements in a) the cities and b) the internet.

Dogs to control the illegal trade in animal products

Alyona Krivosheyeva, Association for the Conservation of Biodiversity of Kazakhstan, alyona.krivosheyeva@acbk.kz

Kanat Aliyev and a Belgian Shepherd Dog nicknamed "Kichik" © ACBK

Between 10th April and 5th July 2017 the Forestry and Wildlife Committee (Ministry of Agriculture of the Republic of Kazakhstan), Association for the Conservation of Biodiversity of Kazakhstan and Dog Training Centre (State Revenue Committee, Ministry of Finance of the Republic of Kazakhstan) implemented a joint project aimed at training dogs to assist in nature conservation. The project's primary goal was to help to detect smuggling of animal products across the border of the Republic of Kazakhstan. Other goals include raising law enforcement agencies' awareness of the Convention on International Trade in Endangered Species (CITES). Eight dogs of three breeds – Belgian Shepherd, Labrador Retriever and Springer Spaniel – were trained at the Dog Training Centre to smell narcotic drugs, saiga horns, steppe tortoises and saker falcons. These species were chosen based on data from law enforcement agencies and the mass media on the levels of illegal trafficking of these species and their derivates in Kazakhstan and over the border.

Experts from Makor K9, USA, will join the Kazakh team to test the trained dogs' conformity with international requirements and quality standards.

Later the dogs will be assigned to various customs and border checkpoints within Kazakhstan and at the country's borders with Uzbekistan and Kyrgyzstan. On 5 July 2017 an official ceremony was held to mark the end of the training course.

Training of dogs to recognize a hidden smell - paper smelling of saiga horns © ACBK

Updates (cont)

An interagency conference on controlling the illegal trafficking of wildlife and its derivatives to and from the Republic of Kazakhstan were held. The conference was attended by representatives of the State Revenue Committee, Forestry and Wildlife Committee, Border Service, regional nature conservation prosecution agencies, Nature Protection Police, Okhotzooprom and a range of scientific organisations.

A specialist team formed in Kazakhstan to study and conserve the Ustyurt saiga

***Alyona Krivosheyeva*, Association for the Conservation of Biodiversity of Kazakhstan, alyona.krivosheyeva@acbk.kz**

Rangers being taught to use GPS © ACBK

The project was implemented as part of the Altyn Dala Conservation Initiative, with the financial support of international partners, including the US Fish and Wildlife service and Fauna and Flora International.

Currently, the Ustyurt population of saigas is the smallest and therefore the most vulnerable in the world. This encouraged the Association for the Conservation of Biodiversity of Kazakhstan to form a Saiga Monitoring and Conservation Team to work on the Ustyurt Plateau, as part of the Altyn Dala Conservation Initiative. For the next three years, the team will work on three principal topics: monitoring Ustyurt's saigas (detecting calving areas, collecting data on sex and age composition, assessing the animals' health, analysing threats and so on); raising local people's ecological knowledge and education; assisting governmental organisations in poaching control. To ensure success, ACBK has signed cooperation agreements with Okhotzooprom and the Aktyubinsk regional forestry and wildlife inspectorate.

The team consists of five people, each of whom has a particular responsibility. They have been trained in saiga monitoring and conservation and provided with the necessary equipment, such as cars, cameras, GPS and other things. The project was sponsored largely by Fauna and Flora International (FFI).

Training courses for the Ustyurt Saiga Monitoring and Conservation Team ©ACBK

Saiga Day-2017

Celebrating Saiga Day shortly before the appearance of baby saigas has become a good tradition. This international ecological holiday, which takes place in all saiga range countries, aims to develop love for, and a caring attitude towards, wildlife in general and saiga antelopes in particular, among both the young and older generations.

Saiga Day in Kalmykia

Yury Arylov, Kalmyk State University, saiga-center@mail.ru

This year the celebration of Saiga Day in Kalmykia was divided into two stages; the first part was held in Yashkul' District on 10th April and the second part in Chernozemelsky District on 26th April. Both districts are core saiga habitat, where females aggregate year after year for calving. This is the period when our beautiful steppe awakens and tulips, irises and other plants begin blossoming, while wild animals and birds rear babies and hatch eggs. Baby saigas inform the world of their arrival by making gentle sounds that spread across the steppe. Life is restarting!!!

Saiga Day in Adyk village © Zh. Anzheniva

In Yashkul' District, Saiga Day has traditionally been organised at Khaglysheva School in Yashkul' and features over 100 participants, including members of Living Heritage (Yashkul village), Bamb Tsetsg (Adyk village) and Elvg-Delvg Erdikhi (Erdniyevsky village) steppe clubs, students from the villages of Utta and Khulkhuta, officials, researchers and staff of the Student Centre for Ecology and Biology, Elista Education Administration, Cherniye Zemli Reserve, the Institute for Ecology and Evolution (Academy of Sciences of the Russian Federation) and students from Moscow Intellectual School.

O. Ochirova, Director of Yashkul School, and Ye. A. Samtanova, Head of the Zhivoye Naslediye ecology club, delivered welcoming speeches, in which they stressed the importance of this holiday for the whole of Russia. Then the Idris ensemble went on stage. The performers used dance to tell the audience about the saiga's fate and that the animal's salvation was in our hands. Young ecologists took part in an ecological adventure game called 'The World of Sacred Wildlife', in teams called 'tigers', 'wolves', 'foxes', 'owls' and 'saigas'. The game included ecological theatre, a poetry contest on the theme 'The Saigas of My Native Land', and games called 'The Erudite Person' and 'Dance with Us.' The 'saiga' team won, followed by the owls in second place and the tigers third. Prizegiving was followed by tea with traditional Kalmyk desserts. The final stage of the event consisted of planting 25 fruit tree seedlings in the school yard, and naming the area the 'Saiga Garden'.

Mergulchiyev Secondary School in Adyk, where the Bamb Tsetseg steppe club has

Updates (cont)

been based for the last few years, picked up the baton and hosted the second phase of Saiga Day. The participants included grade 5 to 8 children from the school, members of the Ecologist club from Manjiyev Secondary School in Komsomolsk, the Young Ecologist club from the House of Children's Art in Chernozemelsky District and students from a secondary school in Sarul. V. Kh. Banjayev, Director of the hosting school, and Ye. Kh. Tsorkhayeva, Head of the Bamb Tsetsg club, greeted the children and their parents. Afterwards there was a prize-giving and an ecological adventure game. Finally, the children planted trees in schoolyards in the villages of Adyk and Erdniyevsky.

Planting fruit tree seedlings in Yashkul' village © Yury Arylov

Find more details at ***https://vesti-kalmykia.ru, https://zapvednik-chernyezemli.ru, https://vkalmykii.com***

Saiga Day in Uzbekistan

Kristina Kuzmicheva, Ekomaktab Ecological Resource Centre, k.kristya_88@mail.ru

\Saiga Day has been celebrated in Karakalpakstan for several years. It aims to improve people's attitudes towards the wildlife of their native land. In 2017, Saiga Day began with a marathon, dedicated to saiga protection, to attract the attention of the republic's wildlife protection and conservation law enforcement authorities to the growing level of poaching in the Aral Sea area.

The gala concert in Jaslyk village. © SCA

Starting on 1 May in Nukus, the marathon continued in the villages of Kirkkiz, Jaslyk and Karakalpakstan, all situated near the Saigachy Reserve in Kungrad District. Around 1,000 people of different ages took part in the marathon, with the message that saigas should be given a chance to survive. According to the participants, the event united them and allowed them to perceive how saigas feel on their long trips and how important it is to ensure the protection of these eternal travellers, particularly during the migration period. The awards ceremony was followed by a series of concerts. The concert in Nukus featured Karakalpak pop stars, the dance group Progress from the Centre for Education and Development and children from steppe clubs in Nukus and the villages of Kirkkiz, Jaslyk and Karakalpakstan. The children took part in a conservation advocacy contest, aiming to convince others

of the necessity of protecting saigas. The concert was closed by the Saiga Hymn performed by its author Koblan Yedenbayev, who made a symbolic gesture of passing the singing baton to the younger generation.

Shortly before Saiga Day, the villages of Jaslyk and Karakalpakstan hosted the semi-finals and finals of the Saiga Cup football and volleyball championships. This has already become a tradition, and featured adult teams from different mahallas (town blocks), railway workers, gas compressor station workers, school teachers and senior school students. Adults and children came together for a "King of Cleanliness" activity, collecting 800 sacks of plastic bags and other household rubbish. Later, at the awards ceremony, participants were given prizes, crowned King and Queen of Cleanliness, and thanked by the mahalla committees.

In every village, Saiga Day began with the Saiga Hymn. In schools No. 54 in Jaslyk and No. 56 in Karakalpakstan this was followed by the unveiling of saiga murals in school ecogardens, saiga poster competitions, displays of crafts from natural and recycled materials and theatre performances. In Karakalpakstan, after the prizegiving, everyone did a flash mob in costume. The youngest inhabitants of Jaslyk again

Saiga football cup in Karakalpakia village © SCA

Saiga marathon in Nukus city brought together people dedicated to saiga protection © SCA

joined in Saiga Day this year. The teachers of one of the kindergartens, members of a new group called Ana Saygak ('Mama Saiga'), told the children about saigas and then, together with their pupils, acted out a fairytale about a magic saiga. Dressed in wonderful costumes, the kids felt their roles (of a rich man and a poor man, a saiga and a beast) so deeply that they looked like real actors. The finale consisted of dances and a game called 'Saigas and the Hunter', after which the children went out into the garden and planted flowers which they will keep looking after. The youngest students of School No. 37 were active participants in the Kirkkiz event, joining in numerous arts and sports competitions. Parents are keen to join in next year as well.

The gala concert and awards ceremony in Jaslyk attracted around 500 spectators. The village council was one of the event's sponsors, awarding the Saiga Cup. Kuralay, a team of artists working in traditional Karakalpak embroidery, was a true gem of the festival. The girls organised a show to demonstrate their work and performed a traditional Karakalpak dance, dressed in beautiful skullcaps they had embroidered with their own hands. As in the village of Karakalpakstan, the celebration culminated in a general flash mob!

Media reports

Collared saigas to be released in Astrakhan province in Russia

Apart from the Saiga Conservation Alliance and Ekomaktab, the co-organizers of the event were the Karakalpak Department of the Ecological Movement of Uzbekistan and Institute of Natural Sciences (Karakalpak department of the Academy of Sciences of Uzbekistan). The celebration was supported by the Council of Ministers of the Republic of Karakalpakstan and Nukus Khokimiyat (City Hall), as well as by WCN, WWF Russia and the company Uz-Kor-Gaz Chemikal.

According to Vladimir Kalmykov, Director of the Stepnoi Reserve in Astrakhan province, Russia, five saiga males from the 'Saigak' breeding centre at the Astrakhan State Experimental Hunting Enterprise will be released into Stepnoi in late November 2017. This is one of 130 measures listed for action under the Year of Ecology in Astrakhan province. Another measure is the formation of a special team of rangers to protect saigas in the north-western pre-Caspian area and saigas entering Astrakhan province from the Volga-Ural population in Kazakhstan.

The Saigak Nursery was founded in 2003 and currently contains 31 saigas (9 males and 22 females). In 2013 the first two saigas were collared and released in Astrakhan province (see Saiga News 18). The satellite data confirmed that wild antelopes accepted the released saigas into their herd.

According to Kalmykov, the number of saigas in the north-western pre-Caspian population (Astrakhan province and the Republic of Kalmykia) does not exceed 4,500 individuals. However, recently the population decline has stopped and in 2016 an increase in the number of males was even recorded, which is a very positive sign. 'Our primary task now is to conserve saigas throughout its range in the north-western pre-Caspian area, mainly through eliminating poaching.

See more at: ***https://punkt-a.info/news, http://fresh-news.org/oshestvo, http://jilkin.ru/news***

The saiga in the Darwin Museum

Last year not a single violation of nature conservation regulations was recorded in the Stepnoy Reserve,' added Vladimir Kalmykov.

Between 4th April and 25th June 2017 an exhibition called 'Saiga - a relict antelope' took place in one of the halls of the State Darwin Museum in Moscow. This is the largest museum of natural sciences in Europe. Its goal was to draw people's attention to this unique animal and its status, and was organised by the International Fund for Animal Welfare (IFAW) as part of 'The Week of Wildlife Protection', an educational project for children and adults which the fund has been carrying out annually for over 25 years. The visitors familiarised themselves with the saiga, a wonderful ungulate species, saw original photographs and videos and enjoyed the works of young artists.

See more at http:***//www.darwinmuseum.ru***

Saiga male at a watering hole in the Stepnoi Reserve © Eugeny Polonsky

Articles

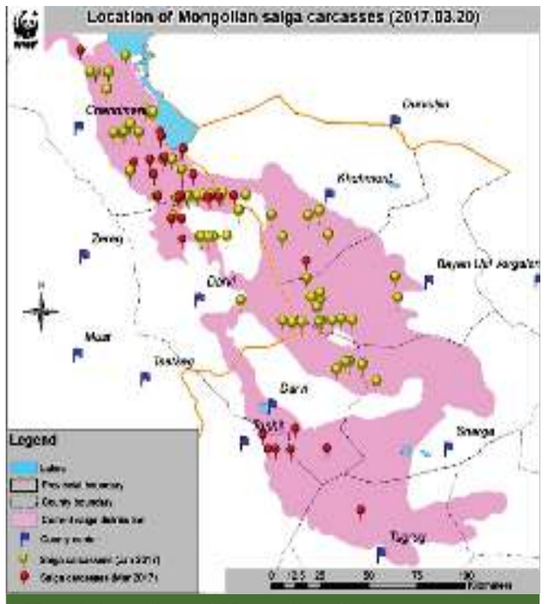
Situation analysis for the Mongolian saiga population, including the mass die-off due to an outbreak of goat plague

B .Chimeddorj[1] and B. Buuveibaatar[2]*
1 - Mongolia Program Office, World Wide Fund for Nature, Ulaanbaatar, Mongolia,
2 - Wildlife Conservation Society, Mongolia Program, Ulaanbaatar, Mongolia
**Corresponding author: Buyanaa Chimeddorj , chimeddorj@wwf.mn*

The Great Lakes Depression in western Mongolia is the last refuge of the Mongolian Saiga (Saiga tatarica mongolica), a distinct endemic subspecies. The subspecies now only inhabits the Shargiin Gobi, Khuisiin Gobi and Durgun valley, in the Great Lakes Depression of Western Mongolia (Amgalan et al., 2006). The total population size was 10,000 individuals in 2016, having increased over the past few years, after a population crash in the winter of 2001-2002, caused by a dzud (harsh winter), had left only 750 animals.

Sadly, the fate of the Mongolia saiga is currently again in jeopardy. An epidemic of peste-des-petits-ruminants (PPR), a viral disease of ruminants which can kill around 90% of infected animals, is currently ongoing. So far, the pathogen is spreading from the north-west to the south-east of the Mongolian saiga distribution and is already covering around 60-70% of the subspecies' range. Over 3,000 saigas were confirmed dead as of 6th February 2017. According to international experts, the mortality event is likely to continue in the coming months. The fact that the disease has not previously caused mass mortality of wild ungulates is surprising, and it may be that saiga antelopes are particularly vulnerable to the disease.

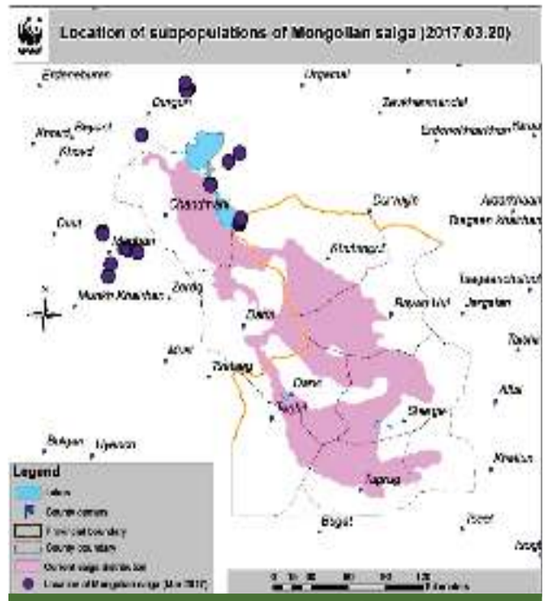
Figure 1. Population size of the Mongolian saiga over time



Map 1. Location of Mongolian Saiga carcasses

Assessment of the Mongolian Saiga's distribution, location and abundance was carried out from 13th to 20th March 2017. In order to compare the results with prior research findings, field research was conducted using the line transect method. The survey suggested that 4,961 saigas inhabited the saiga range (14,713 sq km) with a density of 0.34 heads per sq km. Compared to the survey in January 2017 (10,907 saigas estimated), the population has declined by 54.5% in the two months since the disease outbreak (Graph 1). During the March expedition, 65 carcasses were found, of which 43% were fresh, proving that individuals continue to perish (Map 1). Samples were taken from three saigas and three goitred gazelles and analysed by the State central veterinary laboratory; five of them tested positive for PPR virus. Although the intensity of mortality has reduced, this doesn't mean that the disease outbreak has halted, as virus was detected in the samples taken from Shargiin Gobi, which we had believed to be unaffected.

Since the saiga conservation programme started in 1998, its range has extended into the subspecies' historical range in Zavkhan region of Uvs province, Durvuljin region of Zavkhan province, Khukhmorit region of Gobi-Altai province and Durgun region of Khovd province. Field teams in these places estimated a total of 201 saiga individuals in fragmented sub-populations. These are not counted in the overall population estimate. No symptoms of PPR were discovered during the field research (Map 2).



Map 2. Location of the fragmented subpopulations of the Mongolian Saiga

Key recommendations:

Set up a quarantine area in the affected areas, increase control of irresponsible actions by livestock owners and enforce rules,

Produce a simple and comprehensive information flyer on the Mongolian saiga and disseminate it to households in the saiga's range,

Protect rutting and calving areas, identify areas to be protected and develop protection regimes,

Develop a strategy to save the Mongolian saiga through undertaking detailed DNA research on genetic capacity,

Develop an action plan to be implemented after the disease outbreak has abated. Re-introduction of the Mongolian saiga to its historical range should be particularly considered,

Create favourable conditions for predator populations to grow within the range of the Mongolian saiga; prohibit hunting of gray wolves, red foxes and corsac foxes for a certain period,

Enforce rules and regulations on appropriate pasture use.

Articles (cont)

Peste des Petits Ruminants in saiga antelopes

***Rickard Kock,* Royal Veterinary College, UK. rkock@rvc.ac.uk**

Peste des petits ruminants (PPR) is a devastating plague. The cause is a small virus which is highly infectious through being breathed in, causing damage to the respiratory and gastrointestinal systems of susceptible hoofed mammals. It is a disease predominantly of domestic sheep and goats but spills over into wildlife and has been reported to cause deaths in the mountain ungulates of Asia, like ibex and blue sheep. It has been spreading across Africa and Asia for several decades. There has been relatively little effective engagement from governments and the international donor community to stop it.

Dead male saiga in the Khuisen Gobi of Western Mongolia with a staff member from the State Central Veterinary Laboratory, Dr Mundkuuren. © Richard Kock

Despite warnings of the risk of PPR to saiga antelopes since 2014 (Kock et al 2014), its discovery in Mongolian livestock in September 2016 did not ring alarm bells about risks to saigas. When it was discovered in livestock, technical advisers from the UN's Food and Agriculture Organisation correctly recommended an emergency vaccination programme, which included 10.4 million sheep and goats. This was completed, but no preventative action was taken to protect wildlife. The vaccination campaign suppressed the disease but failed to stop the spread of the virus. It spilled into the small surviving population of Mongolian saiga (Saiga tatarica mongolica) in the Khuisen Gobi desert by 22nd December, 2016. Saigas were vulnerable because they were already squeezed into a restricted habitat competing with camels, horses, sheep and goats for limited pasture, the temperatures were below -30 degrees Celsius and snow was falling. They succumbed rapidly to the virus.

Saigas antelope being thrown into a pit and burned during the PPR epidemic in the Gobi © Richard Kock

The FAO took immediate action and commissioned a crisis management mission together with the World Organisation for Animal Health (OIE). The team was deployed in the field by 18th January, in an area two days drive from Ulaanbaatar. They reported a full-blown epidemic. By the end of January, clinical cases and deaths were reported across most of the saiga range, with half of the saiga population dead by April (about 5000 animals). The team confirmed that the majority of deaths were due to PPR, including for the first time PPR in wild Siberian ibex (Capra sibirica) and goitered gazelle (Gazella subguttorosa). The high mortality in saigas is concerning, showing that they are either very susceptible (unlike most African antelopes studied in free-ranging conditions) or perhaps they were nutritionally challenged and had lowered resistance to infection given their precarious habitat and extreme resource competition. This makes a double tragedy for the species, with over 200,000 lost in Kazakhstan as a result of haemorrhagic septicaemia in 2015.

Spill-over of PPR from livestock to wildlife confirms the urgent need for more joined-up management of diseases between livestock and wildlife. There is very little time being given to the serious threat that epidemic livestock disease poses to wild ungulates, already under huge pressure from grazing competition and poaching. This epidemic has driven this Mongolian subspecies close to the brink of extinction, and unlike the haemorrhagic septicaemia which killed saigas in Kazakhstan, PPR is highly preventable through control of livestock disease (particularly mass vaccination).

Starving saiga picked up during the epidemic © Richard Kock

FAO CMC Emergency mission to Khuisen Gobi January 2017 Back: Left to Right: Dr Buuveibaatar (WCS); Prof Kock, (Royal Vet College London); Dr Bolortuya (United Nations - FAO), Dr Enkhtuvshin (Wildlife Conservation Society); Mr Aruinbaatar (WCS), Dr Batkhuag (VABA – State Vets); Front: Left to Right: Mr. Tsend-Auysh (WCS); Mr. Oktyabri (FAO) and Mr. Batsaikhan (Saiga Protection Team Darvi Soum - WWF) © Dr Munkhduuren (State Central Vet Lab).

With only a few surviving unaffected saigas, with argali, ibex and goitered gazelle dying, and around two million Mongolian gazelles potentially susceptible to the disease, this matter is a national and international emergency. The Mongolian people are no strangers to hardship and they have a strong ethic for conservation. With collaboration and the right strategy, this issue could be resolved, but it will need strong political will, support from the international conservation community and donor funds.

Acknowledgements: The UN FAO CMC, Mongolian government and communities in Ulan Bataar and Altai Gobi, in particular the dedicated wildlife, veterinary and NGO staff; Wildlife Conservation Society and WWF, the Saiga Conservation Alliance, wildlife disease researchers and the Royal Veterinary College.

Articles (cont)

Historical range, extirpation and prospects for reintroduction of Saiga in China

*Shaopeng Cui[1,2], E. J. Milner-Gulland[3], Navinder J. Singh[4], Hongjun Chu[5], Chunwang Li[1,2], Jing Chen[1,2], and Zhigang Jiang[1,2]**

1 - Key Laboratory of Animal Ecology and Conservation Biology, Institute of Zoology, Chinese Academy of Sciences, Beijing, China; 2 - University of Chinese Academy of Sciences, Beijing, China; 3 - Department of Zoology, University of Oxford, Oxford, United Kingdom; 4 - Department of Wildlife, Fish and Environmental Studies, Swedish University of Agricultural Sciences, Umeå; 5 - College of Resources and Environment Sciences, Xinjiang University, Xinjiang, China

**Corresponding author: Zhigang Jiang, jiangzg@ioz.ac.cn*

Saigas were once widely distributed in northwest China. Records of the use of Saiga horns in traditional Chinese medicine prescriptions can be traced back 2,000 years. In the 1950s, Saiga populations declined rapidly to extinction in China due to overhunting, habitat reduction and blockage of migratory routes. In order to restore the species, in 1987 the Wuwei Endangered Wildlife Breeding Centre (WEWBC, now called Gansu Endangered Animal Protection Centre) was established in Gansu Province, China. Eleven adult saigas from San Diego Zoo and Berlin Taie Zoo were introduced to form the founder herd in 1988–1991, and one calf was added from the wild saiga population in Kalmykia in 1997. Currently, the population at WEWBC has increased to over 170 individuals. However, founder events, bottlenecks and inbreeding have resulted in low genetic diversity in this captive population, which, together with harsh winter conditions and epidemic disease, has led to large fluctuations in population size. The number of saigas at WEWBC once decreased by 77%, so only nine individuals survived in 2000.

So far no reintroduction of saigas to the wild has been undertaken. Before a reintroduction programme is planned and execution implemented, an assessment of historical distribution patterns and potential reintroduction

Figure 1 Historical distribution of saiga in China (solid black line). The hatched area represents the historical range of Mongolian Saiga. Notice that the WEWBC (Wuwei Endangered Wildlife Breeding Centre) is well outside the Saiga's range in China.

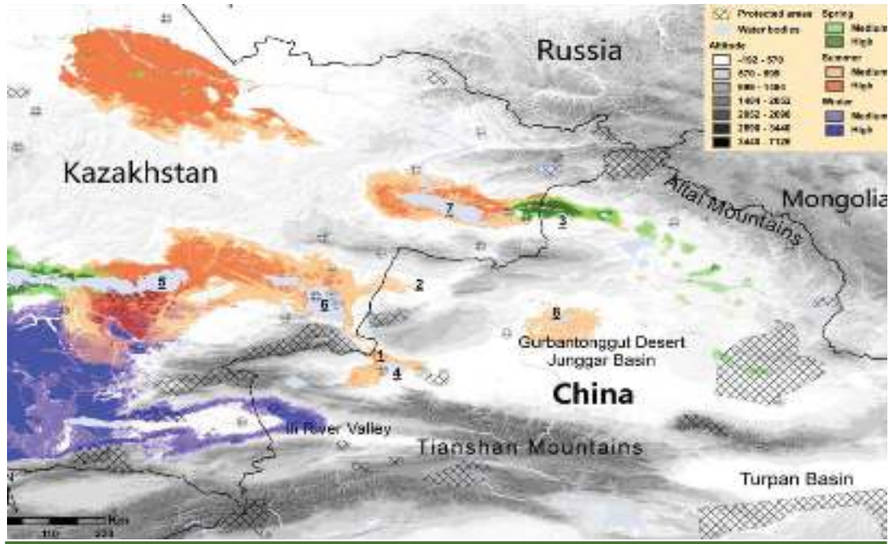


Figure 2 Predicted habitat suitability for Saiga in spring, summer and winter in China. The figure implies that a big challenge for reintroducing Saiga antelopes to China is non-overlapping seasonal ranges, which means the saiga needs a large habitat. The numbers indicate locations mentioned in this study: 1, Alashankou; 2, Tacheng; 3, Jimunai-Habahe; 4, Aibi Lake; 5, Balkhash Lake; 6, Alakol Lake; 7, Zaysan Lake; 8, Manas Lake.

sites is necessary. However, compared with other regions in Central Asia, virtually no study has explicitly examined the former saiga range in China or developed a timeline of its decline. Also, no studies have been done to determine how historical saiga populations moved seasonally between China and its neighbouring countries, and whether the current habitat conditions can sustain reintroduced populations. Moreover, it remains controversial which subspecies of saiga was historically distributed in China. Some studies have stated that the Mongolian saiga subspecies was found in China, either as the only subspecies, or alongside the nominate subspecies.

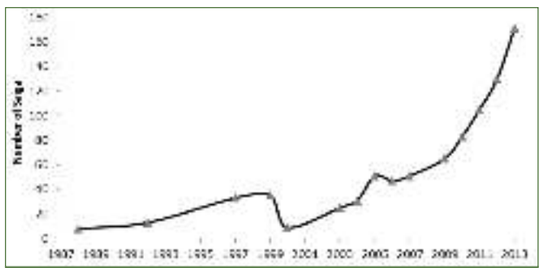


Figure 3 Changes in saiga population size over time in Wuwei Endangered Wildlife Breeding Center

In a paper published in Scientific Reports in 2017, we delineated the historical distribution and potential reintroduction areas of saigas in China, using a literature review, interviews and predictive modelling. We found a total of 28 historical records, which covered the time period from the end of the 19th century to the 1950s and only related to Saiga tatarica tatarica. Most of the seasonally suitable habitats for reintroduction predicted by Maxent® were non-overlapping; in particular the potential wintering range in the Ili river valley was isolated from the spring and

Articles (cont)

Saiga in the Wuwei Endangered Wildlife Breeding Centre (WEWBC, now called Gansu Endangered Animal Protection Centre) © Zhigang Jiang

summer areas by the Tianshan Mountains. Most of the bioclimatic variables were significantly different between the former saiga range in China and the current range of the Betpak-dala population. WEWBC was not in an ideal reintroduction area due to its low habitat suitability and the difference in environmental variables. Furthermore, we infer that two different movement patterns existed historically (regular migration versus nomadic wandering). Our results demonstrate the challenges of restoring a free-ranging, self-sustaining saiga population in China. We recommend setting up of additional breeding centres in the protected areas within the potential saiga range in northern Xinjiang, and developing a national action plan to provide a framework for the future recovery of the species.

Note: *You can access the full article published in the journal Scientific Reports at:* ***http://www.nature.com***

Conserving a small group of saigas within the Volga-Ural population in Atyrau province, Kazakhstan

Vladimir Terentyev[1], Mark Pestov[2]* Association for the Conservation of Biodiversity of Kazakhstan; 2 - "Dront" Centre for Ecology, Russia
Corresponding author: Mark Pestov, vipera@dront.ru

Over 50 years ago a hunting farm (game husbandry centre) was founded in an area of 50 ha on the northern shore of the Caspian Sea in Isatay District, Atyrau Province, Kazakhstan (fig. 1). The farm's northern boundary lies about 30 km south of the Atyrau-Astrakhan highway and is marked only with information signs. The territory is a plain covered mostly by wormwood, grass and glasswort, with large areas of reed and individual tamarisk shrubs recorded along the seashore and in depressions. Apart from saiga, the Centre is inhabited by other mammal species, such as boar, hare, wolf, fox, corsac fox and raccoon dog. The bird community consists mainly of aquatic and semi-aquatic species. However, no specific botanic or zoological research has been carried out in the area so far.

Unfortunately, poor technical equipment has never allowed the Centre to carry out a proper saiga census. Normally, staff roughly calculated saiga numbers using camels to approach the animals; the Centre is surrounded by numerous cattle farms, and its unfenced territory is frequented by sheep, horses and camels, which is why saigas were not alarmed by the camels' presence. A group of saigas (9 individuals) was observed on 5 December 1995. The largest number (around 350 individuals) was recorded in 2011, when the antelopes formed 8-9 small groups. The saiga population currently inhabiting the Centre is 30-40 individuals (estimated in May 2017). According to staff, for over 20 years these saigas have stayed within the territory, living compactly on a plot 16km long protruding wedge-like into the sea, with its northern border 25 km long.

Although this group of saigas lives 170 km south of the main habitat of the Volga-Ural population (fig. 1), they definitely live a settled life, which is supported by data from GPS collars placed on some of the antelopes. This was done by the Association for the Conservation of Biodiversity of Kazakhstan with the financial support of the North Caspian Operating Company in 2015 and 2016. Signals diminished in number over these two years due to wolf predation. Currently, stable signals are coming from only one individual a female collared in 2016.

The group is not completely isolated, as, according to Centre staff, in December 2008, 9 males from the main population came from the northern areas of the Volga-Ural interfluve to join the group. At the same time, such contacts are obviously quite rare. This is indirectly confirmed by the normal death rate among the saigas in the Centre in 2010-11, when the Volga-Ural population decreased catastrophically due to disease in the calving area.

In the distant future, saigas from this group, which is not engaged in long seasonal migrations, could become a valuable source of genetic diversity for reintroduction to other parts of the species' historical habitat, as well as for research on captive breeding.

The Centre's researchers believe that the favourable factors allowing the antelopes

to stay in this area include its location on a relatively isolated peninsula, the existence of the fresh-water Zaburun irrigation canal

flowing all along the shore, which saigas use for drinking, sufficient food, and the Centre's staff's good performance of their duties. They conscientiously protect the area, control the wolf population and regularly provide hay as supplementary feed in winter.

A saiga at the hunting farm in Atyrau province, February 2015 © Jasulan Kuzhekov

Until May 2013 only a few people knew about the saigas in the Centre, securing peace for the increasing population. Things changed for the worse when the provincial newspaper 'Ak Jayik' published an article, in which Asiltek Ispusinov, Director of Game Husbandry, shared his experience on saiga conservation. Poaching began in the area, facilitated by a network of dirt roads, and the population size dropped. December 2014 was fatal for the Centre's saigas; in one session poachers took most of the population. Unfortunately, the criminals were never found. The saiga's protection became much worse with the premature death of one of the Centre's best rangers, Gaynolla Izimovich Shaymuratov.

Currently, the Centre is facing financial challenges, which aggravate its problems with protection. To ensure proper protection, a series of urgent steps is needed, including the formation of two ranger groups enabling 24 hour protection, 4 vehicles and additional equipment such as GPSes, dashboard cameras, nightvision goggles, binoculars and camera traps. It is vital to erect observation towers to monitor the animals. These resources being available, we could

Updates (cont)

increase the group size to several hundred individuals and, in future, develop ecotourism in the area, for which it would be helpful to repair the Astrakhan-Arytau road.

In conclusion, we note that it is due to Asiltek Ispusinov's great efforts that saigas continue to live in this Centre. In recognition of his enthusiasm and devotion to his job he was elected head of the Society of Hunters and Fishermen of Atyrau Province. Under Asiltek Ispusinov's management, the Centre's workers are willing to continue doing their best to conserve their saigas; however, they need help and would be happy to collaborate with anyone concerned with studying, popularising and protection of saigas.

The role of international institutions in the restoration of saiga antelope populations

Irina Novak, biodiversity@tut.by Freiburg University, Germany

Introduction

Recent saiga conservation processes have been in place for over 20 years. Although the species is still categorised as critically endangered, there is no doubt that its state has considerably improved compared to the late 1990s. This is the result of numerous efforts that many people have invested in anti-poaching activities, development of the protected area network, implementation of conservation and educational projects, research and monitoring.

An important milestone in improving saiga population status was the entering into force of the Memorandum of Understanding concerning Conservation, Restoration and Sustainable Use of the Saiga Antelope (the Saiga MoU), which was signed by all range states and is coordinated by the Convention on Migratory Species. I explored the MoU's role in the restoration of saiga populations; the results may be useful for restoration of other migratory species.

Theoretical basis

The study is based on regime theory, which investigates the functioning of international institutions. It understands institutions as rules, law and norms that define "rules of the game". International institutions that are created to address a specific problem (like the saiga MoU) form an international regime. To put the provisions of an international regime into practice, additional mechanisms are developed, which influence the actions of national agencies, NGOs, scientific institutions, individual experts, etc.

Methods

I researched the saiga conservation process that unfolded between 1994 and 2016, by analysed the documents prepared for the meetings of signatories to the Saiga MoU, the documents produced by CMS, CITES and the IUCN, Saiga News articles, and publications in scientific journals. Interviews with saiga conservation were a key source of information.

Results

Several stages can be distinguished in the international actions for saiga conservation and restoration. The first stage was the late 1990s to 2002, focused on the formulation of the international regime's provisions. It led up to the international meeting for saiga conservation that was held from 5th to 10th May 2002 in Elista, the Republic of Kalmykia. (http://biodiversity.ru/programs/saigak/meeting.html). The period from 2002 to 2006 involved negotiations with the official representatives of the saiga range countries, culminating in the signing of the Saiga MoU and official formation of the international regime for saiga conservation. From 2006 until 2016 was a period of the regime's geographical and taxonomic extension as well as coordination between many cooperating organizations.

I next focussed on the three saiga populations in Kazakhstan; the Ural, Betpak-Dala and Ustiurt populations. The implementation of measures for their conservation can also be divided into several stages. The initial phase lasted from the 1990s until 2003, during which national hunting bans were introduced and NGOs started their first conservation projects. The next three years were a phase of transformation when the first national programme for saiga conservation was developed and the funding of anti-poaching activities increased. Simultaneously, the number of initiatives implemented by NGOs was growing and the Altyn Dala Conservation Initiative was formed (***ADCI http://acbk.kz/ru/pages/6339.html***). Thus, the approach to the problem changed significantly in that period, with active conservation measures starting.

The next period was approximately from 2007 to 2010. This was a time of growth and strengthening of the activities implemented by all involved actors, mostly aimed at fighting poaching as the main threat to the saiga. Since the early 2010s, however, additional threats have emerged; the mass mortality events of 2010-2013 and 2015 and the construction of linear infrastructure on the saiga's migratory routes, including the border fence between Kazakhstan and Uzbekistan. This period can be described as a phase of joint responses, as many actors jointly developed and implemented urgent responses to these problems.

Analysis

The development and elaboration of the international regime for saiga conservation enabled mechanisms to develop that became important components of the saiga conservation process. The CMS's Overview Report on the saiga's conservation status regularly presents updated information about the species' state throughout its range and its most urgent threats. The Medium-Term International Work Programme is agreed every five years based on the Overview Report. This Work Programme, in its turn, serves as a common framework that allows the actors to coordinate their activities and thus increase their effectiveness.

The development of communication and accountability tools is also a result of the functioning of international institutions. These include national and project reports as well as the publication Saiga News. Regular information exchange helps the people involved to learn from each other's experience and motivates them to achieve better results.

No less important is the contribution of international institutions to the development of measures to control disease outbreaks and mitigate the negative consequences of linear infrastructure development. This includes involving experts, searching for funding, support for research and development of solutions.

Updates (cont)

One of the key results is the contribution of international institutions to problem framing, or understanding the decrease in saiga numbers as an urgent social and ecological problem. That was facilitated by listing the species as critically endangered on the IUCN Red List. Finally, the organization of regular meetings under the MoU supports the work of the informal saiga conservation community by increasing cooperation and helping them to combine efforts for implementation of joint projects. The recent decision about the extension of the ADCI in Kazakhstan to cover all three populations is among the most striking examples of such collaboration.

Thus, my analysis demonstrates that the functioning of international institutions is one of the key factors that supports saiga conservation. Important factors affecting this process include; the potentially high economic significance of the species, the timely start of research into the species and raising the alarm about the problem of its rapid decline; and the active work of the many actors, including state agencies, NGOs, research institutions, experts.

I suggest that it would be worthwhile exploring the possibility of further increasing the number of participants in the saiga conservation process, firstly by increasing the direct involvement of local people.

In order to receive the full report of the study, please ***contact biodiversity@tut.by.***

Trialling the Theory of Change approach to impact evaluation in conservation using the Saiga Conservation Alliance's work in Uzbekistan as a case study

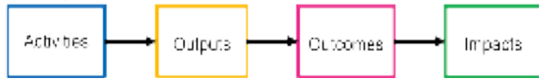
Kirsty Simkin, kirsten.simkin@some.ox.ac.uk University of Oxford

There is a need for high quality impact evaluation in conservation biology. In response to this need there is a growing body of work on how best to evaluate conservation interventions. However, often these methods are too time-consuming or resource-heavy for small NGOs to carry out. The Theory of Change approach has the potential to be a useful and feasible approach for small NGOs. As part of my undergraduate degree I used the Saiga Conservation Alliance's work in Uzbekistan to trial the Theory of Change approach to impact evaluation.

The simplest way to define a Theory of Change (ToC) is as "a theory of how and why an initiative works". More fully articulated, this can be understood as a way to describe the set of assumptions that explain both the mini-steps that lead to a long-term goal and the connections between these activities and the outcomes of an intervention or programme. The ToC process is a theory-based approach to planning, implementing or evaluating change at an individual, organisational or community level. If seen as an on-going process of discussion-based analysis and learning, the ToC approach has the potential to provide powerful insights to support programme design, strategy, implementation, evaluation and impact assessment. The approach is communicated through diagrams and narratives which are updated at regular intervals. ToCs may be developed and used at various points in the lifecycle of an initiative or programme, from planning an idea through to implementation, delivery and review.

A ToC typically functions according to a sequential logic that runs from activities through to impacts (see Figure 1). This pathway is underpinned by a series of assumptions which need to be articulated.

Figure 1. Diagram of the sequential components of a ToC:



I developed a series of ToCs based on the SCA's work in Uzbekistan, by collecting perspectives and feedback from experts in interviews and reviewing the SCA's strategic plans and other documents and reports. Figure 2 shows one of the pathways of a ToC, which focuses on reducing the pressure on saigas from poaching through activities involving law enforcement. It shows the hypothesised pathway from inputs to our desired impact.

Key ToC definitions:

Activities	Specific actions undertaken to mitigate a threat or support an opportunity.
Outputs	The immediate and measurable products of the activities of an intervention.
Outcomes	the intermediate result that is brought about by producing preceding project outputs.
Impacts	The wider and longer term effects of an intervention and the contribution the intervention makes to broader goals.
Assumptions	Statements that explain both the connection between preconditions for long-term change that occur in the early and intermediate stages of the change process, and the expectations about how and why proposed interventions will bring them about.

Assumptions for pathway 1:

Code	Assumption
A1.1	People care about the opinions of their communities
A1.2	Interagency cooperation is helpful to law enforcement
A1.3	Better trained and equipped guards do not use their advanced equipment for poaching or other purposes
A1.4	Training increases knowledge of participants
A1.5	Being celebrated in communities increases pride in job and subsequently a desire to work harder
A1.6	Motivation of law enforcement increasing is coupled with sufficient capacity of law enforcement
A1.7	Poachers have not similarly strengthened their capacity and equipment, negating any gain through an ongoing 'arms race'.
A1.8	Relative value of poaching is not so high as to make increased risk of poaching worth it
A1.9	Disincentive for poaching are larger than incentives

Updates (cont)

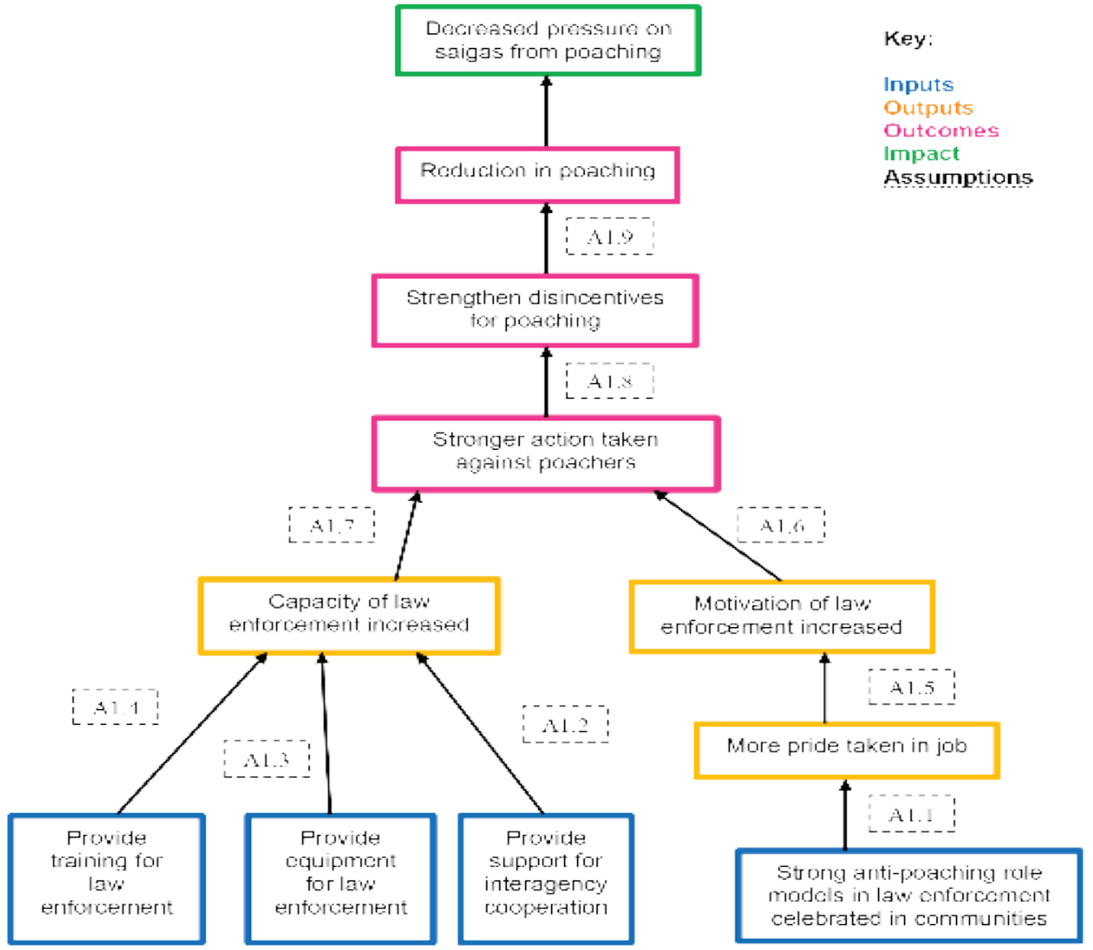


Figure 2. One pathway of the Theory of Change developed for decreasing pressure on saigas from poaching via support for law enforcement

I also identified assumptions for each step of the framework. Assumptions explain the underlying logic behind our expectations of the connections between different components of the pathway of change. Ideally assumptions should be supported by scientific research, best practice or expert knowledge. It is also possible to test assumptions with field research, depending on funding and time constraints.

Using the ToC approach to look at the SCA's work in Uzbekistan showed the potential this approach has as a framework for communication, planning and learning, and in particular for setting priorities for future data collection and evaluation. The ToC approach is intended to be an evolving tool that is tested and improved over time and there is potential for the approach to be utilised by the SCA in the future.

To read my full report please go to ***http://www.iccs.org.uk/sites/www.iccs.org.uk***

New publications

Jürgensen, J., D.G. Drucker, A.J. Stuart, M. Schneider, B. Buuveibaatar, H. Bocherens. 2017. Evolution of the diet and habitat of the saiga antelope over the late Quaternary using stable carbon and nitrogen isotope ratios. Quaternary Science Reviews. 160: 150-161.

Skull of Pleistocene Saiga, https://phys.org/news/2017-03-saiga-antelopes-flexible-thought.html#jCp

The saiga antelope (Saiga tatarica) is one of the typical late Pleistocene species of the cold and arid mammoth steppe that covered a large area of northern hemisphere. The species is currently endangered and persists only in small areas of the Central Asian steppe and desert ecosystems. To examine how different their diet and habitat were from those observed nowadays, the research team compared the composition of carbon and nitrogen isotopes in the collagen from 76 fossilized and 52 recent bones and hairs of saiga antelopes. The survey results suggest the modern saiga is occupying just one of the diverse habitats they used in the past. Therefore, the extant saiga is not a refugee species confined to a suboptimal habitat. During the late Pleistocene, the saiga occupied a separate niche compared with the other ungulates of the mammoth steppe. However, this species could also adapt to a lichen-dominated diet normally seen in reindeer, leading to an isotopic overlap between saigas and reindeer in south-western France and Alaska around the Last Glacial Maximum. This adaptation allowed a geographical expansion that does not correspond to a habitat-tracking episode. Hence, the realized niche currently observed for the saiga is reduced compared with their potential capacity for adaptation, a crucially important factor for the conservation of this endangered species.

Olga V. Sibiryakova, Ilya A. Volodin, Roland Frey, Steffen Zuther, Talgat B. Kisebaev, Albert R. Salemgareev, Elena V. Volodina 2017 Remarkable vocal identity in wild-living mother and neonate saiga antelopes: a specialization for breeding in huge aggregations? Sci Nat 104: 11.

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Saiga antelopes Saiga tatarica tatarica give birth in large aggregations, and offspring follow the herd soon after birth. Herding is advantageous as anti-predator strategy; however, communication between mothers and newborn calves is difficult in large aggregations. A series of individual nasal and oral contact calls of mothers and calves was selected from automated recordings near hiding calves on the saiga breeding grounds in Northern Kazakhstan during the synchronized birth period of 30,000 calving females. We used 168 nasal calls from 18 mothers, 192 oral calls from 21 mothers, 78 nasal calls from 16 calves, and 197 oral calls from 22 calves. Discriminant function analysis (DFA), based on six acoustic variables, accurately classified individual identity for 99.4% of oral calls of 18 mothers, for 89.3% of nasal calls of 18 mothers, and for 94.4% of oral calls of 18 calves. Variables mainly responsible for an animal›s vocal identity were the fundamental frequency and the second and third formants (vocal tract resonances). The strong vocal identity of mothers and calves suggests a powerful potential for mutual mother-offspring recognition in dense aggregations of saiga antelopes as an important component of their survival strategy.

Saiga females with calves at a watering hole in the Stepnoi Reserve © Eugeny Polonsky

Saiga heroes

Today we interview Buyanaa Chimeddorj, Conservation director of WWF Mongolia. For more than 10 years Chimeddorj has led numerous conservation projects in his country, but saigas play a very special role in his life and professional career.

Editor: *When did you first become interested in saigas?*

B.Ch.: I was born and spent my childhood in Uvs province, Western Mongolia, where we have the most pristine zones with rich biodiversity. At that time, my curiosity and fascination with nature started. After that, my interest grew so much I decided to pursue biology at the National University of Mongolia and become interested in Mongolia's rare and endangered animals, including the Mongolian saiga antelope.

Editor: *When did you start to work on saiga research and conservation?*

B.Ch.: In 2005, I was invited by WWF-Mongolia to help them to explain the achievements of their saiga conservation project to a representative from a donor organization. Later, in 2006, I was invited to carry out a feasibility study on the restoration of the Mongolian saiga in the Great Lakes Basin of Western Mongolia. For this, I gained knowledge about the ecology and biology of the Mongolian saiga and gained a great interest in conservation science and management of natural resources. Based on the results of this feasibilty study, WWF-Mongolia successfully raised substantial financial help from the MAVA Foundation for Mongolian saiga conservation.

Editor: *What is your usual day like?*

B.Ch.: I give professional advice to the saiga ranger network through their leader and ensure that they are carrying out coordinated and science-based monitoring and conservation work. In order to do this, I felt the need to acquire an intimate network of scientists, local wildlife managers and rangers. In addition to my work as a biologist, I also take care of planning of activities and managing budgets and project implementation reports, which I consider just as important.

Editor: *What are the fundamental problems in your work?*

B.Ch.: The Mongolian saiga antelope is a highly vulnerable subspecies. The total population numbered 15,000 individuals

Collarig the saiga antelope © B. Batsaikhan

as of 2014, which has increased over the past years after a population crash at the start of the century (caused by a dzud, a natural disaster, in the winter of 2001-2002, leaving only 750 animals).

Key threats to the Mongolian saiga's survival include poaching and the illegal horn trade, competition with livestock for critical habitats, climate change and the road network. In addition, sadly, the fate of the Mongolia saiga is currently in jeopardy from an epidemic of peste-des-petits-ruminants (PPR), a viral disease of ruminants.

Editor: *What can be done to remove impediments in your work?*

B.Ch.: A suitable grazing regime and reduced numbers of livestock are key responses to the increasing impact of climate change on both Saiga survival and herders' livelihoods. Key to decreasing the livestock populations will be the identification of market opportunities for livestock commodities (e.g. meat and skins). Therefore, we should raise additional funds for piloting market-based options for sustainable pasture management without affecting herders' livelihoods. Furthermore, environmentally-friendly pasture management has started in selected areas; the community group in Darvi and Durgun (Shargiin Gobi, Durgun steppe) restored four wells to improve water availability for people, livestock and wildlife, reducing conflict for open water in core Saiga habitats but these local initiatives are not sufficient to solve the problem throughout the saiga's range.

We need to continue to support the volunteer saiga ranger network (SRN) and the Mobile Anti-poaching unit (MAPU) and inter law enforcement

Teaching monitoring methodology for saiga rangers © B. Buuveibaatar

agency cooperation. The poaching and trade of horn situation is still volatile as shown the poaching cased in last several years. Education and public awareness programme should primarily focus on changing herders' attitudes towards adopting sustainable pasture management. Another special emphasis shall be put on addressing illegal poaching and trade of saigas.

To ensure the long term survival of the species, it's crucial to have more than one population to prevent a single natural extreme event (e.g. harsh winter and infectious disease) wiping out the entire population. Therefore, we should rebuild new populations in former habitats to establish a meta-population structure to safeguard the subspecies from the extinction.

Editor: *What do you consider the best thing in your work?*

B.Ch.: Involvement of local stakeholders, particularly the support of local herders for conservation, is crucial. Participatory planning and the participatory decision-making process is as important as reaching the conservation goal itself.

Editor: *What has changed over the time you have worked in species conservation, and what are the current trends in conservation?*

B.Ch.: Since 1998, with financial assistance from the MAVA and other sources, WWF-Mongolia has implemented several projects on saiga conservation that have reversed the saiga population decrease for the first time in the past two decades. These results are inspiring but the foundation we have built is still fragile and external pressures from unsustainable livestock husbandry practices, demand for saiga horn, disease, natural disasters and lack of knowledge could easily erode these initial successes.

Editor: *What do you think about the current Mongolian saiga death due to PPR and what should be done to protect the Mongolian saiga from becoming extinct?*

B.Ch.: Given the epidemiology of PPR and its airborne spread, saiga aggregations of several hundred animals are likely to be affected for as long as 3 months after the index case, which means the outbreak could be expected to last until the end of spring. Therefore, the main preventive measure is to strengthen law enforcement and conduct regular inspections. This is because, the poachers and horn collectors are intensifying their activities to take advantage of the mass death of the saiga. Horns and body parts collected from dead carcasses will likely increase the risk of the pathogen spreading more quickly and into new areas. Furthermore, all livestock must be immunised and the ongoing situation monitored continuously.

Acknowledgements

We would like to express our deep gratitude to all the people whose donations of money and time support the work of the Saiga Conservation Alliance. We particularly thank the WCN staff and volunteers for their support and advice, and members of the public in the USA and worldwide for their generous donations to our recent appeal concerning Mongolian Saiga die off. We are grateful to the organisations that have supported this issue of the newsletter – WCN and WWF-Mongolia.

SAIGA CONSERVATION ALLIANCE

Saiga Conservation Alliance
www.saiga-conservation.com

Saiga Resource Centre:
www.saigaresourcecentre.com

Email: *mail@saiga-conservation.com*