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Russia has joined the Convention on Conservation of Migratory species' Memorandum of Understanding on Saiga Antelope

Alexei Bazhanov, Deputy Minister of Agriculture of the Russian Federation signed the Memorandum of Understanding on the Conservation, Restoration and Sustainable Use of the Saiga Antelope in Bonn on June, 24th. This event occurred on the 30th Anniversary of the Bonn Convention, under which the saiga MOU sits.



Alexei Bazhanov and Robert Hepworth signing the
Memorandum of Understanding on Saiga Antelope.
Photo by CMS

The document provides for cooperation of the parties for the maintenance of effective protection of saiga antelope, its habitats, as well as exchange of the scientific, technical and legal information for saiga protection, restoration and sustainable use. CMS Executive Secretary Robert Hepworth said: Russia's signature of the Saiga Agreement tonight means that all four of the main Saiga range states have now

joined this CMS initiative and our partners to conserve these remarkable antelopes. Saigas have survived turbulent times in the past. The commitment of Russia, alongside Kazakhstan, Turkmenistan and Uzbekistan is essential if they are to enjoy a stable future."

During the signing ceremony in Bonn's city hall, Alexei Bazhanov said: "Together with Turkmenistan, Uzbekistan and Kazakhstan, we will cooperate



A resting saiga male.
Photo by Rotislav Stach

Continued on p.2.

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All contributions are welcome, in any of our six languages. Please send them to esipov@sarkor.uz, saigaconservationalliance@yahoo.co.uk or to one of the editors. We publish twice a year.

This publication is available online at www.saiga-conservation.com, <http://saigak.biodiversity.ru/publications.html> and <http://www.wildlifewardens.net/wcs/mini/Saiga-Chinese.pdf>, as a pdf, or in hard copy on request in Chinese, English, Kazakh, Mongolian, Russian and Uzbek.

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to ensure that the threats to the Saiga antelope during their long migrations are reduced. Awareness campaigns targeting the rural population will help to fight poaching and efforts will be made to minimise the impact of obstacles to migration."

The Memorandum of Understanding on the Conservation, Restoration and Sustainable Use of the Saiga Antelope entered into force in September 2006. Parties to the MOU provide Secretary of the Convention with a detailed annual report on their saiga conservation activities.

Updates

Conserving Ustyurt's biodiversity

On 10 February 2009, a round table on "Mechanisms of interaction for biodiversity conservation in the Ustyurt region" was held in Tashkent. The event was organized by the State Committee for Nature Conservation of the Republic of



Reconnaissance boring (Zarubezhneftegaz) in Ustyurt, northern west Uzbekistan.

Photo by Alexander Esipov

The theme of saiga conservation is one of the key topics of the upcoming XXIX International Union of Game Biologists Congress (IUGB) which will be held in Moscow on August, 17-22, 2009, organised by the Ministry of Agriculture of the Russian Federation.

For more information see: The Convention on the Conservation of Migratory Species of Wild Animals, <http://www.cms.int/> and Ministry of Agriculture of the Russian Federations, <http://www.mcx.ru/news/news/show/3450.78.htm>

Uzbekistan, the Institute of Zoology of the Uzbekistan Academy of Sciences together with the Saiga Conservation Alliance and the Armon centre for Ecological Law.

Representatives of the ministries and agencies concerned, as well as those of oil-gas and other companies working in Ustyurt, participated in the round table. The participants discussed possibilities for developing cooperation on the conservation of the Ustyurt plateau's unique natural environments, particularly under intense development impacts. The saiga is one of the flagships of the Ustyurt fauna and an indicator of ecosystem stability. The workshop adopted a resolution to set up a working group to develop a programme of joint measures for the conservation of Ustyurt's biodiversity in 2009 to 2012. The State Committee for Nature Protection was identified as the coordinator of this process.

On 19 March 2009, the first meeting of the working group took place, which approved the participants and the timings for preparation of the draft programme.

For further information please contact Alexander Esipov, esipov@sarkor.uz.

Saiga hunting prohibited in Russia

According to the federal law "On the fauna", commercial and sport hunting for saigas is prohibited until 2013. Enactment No 155 of 7 May 2009 was signed by the prime minister of the Republic of Kalmykia, Mr Vladimir Sengileev.

From the editorial board: *in Russia saiga hunts were first banned in 2001. The ban was renewed in 2004.*

Special attention to the saiga!

On 19 June, a meeting of the association for the solution of ecological problems of the Severny Kavkaz [North Caucasus] was held in Grozny. Mr Dmitry Tsutaev, the head of the Department of Forestry of the Ministry of Natural Resources, Environmental Protection and Energy Development, Kalmykia,

took part in the meeting. Among other questions, special attention was paid to the conservation and restoration of the European saiga population.

Based on a report in the newspaper Izvestiya Kalmykii, <http://www.askregion.ru/page.php?id=132>

Aerial counts held in Kazakhstan

Aerial counts of saiga antelopes were carried out on 2-24 April 2009 with the participation of staff from the Institute of Zoology, Kazakhstan, the Committee for Forestry and Hunting of the Ministry of Agriculture of the Republic of Kazakhstan, Okhotzoooprom, regional territorial forestry and ranching inspectorates and the Association for the Conservation of Biodiversity of Kazakhstan.

Total saiga numbers were estimated at 81,000; 45,200 in Betpak-dala, 9,200 in Ustyurt and 26,600 in Ural. In comparison with last year, the number and range of the Betpakdala and Ural sub-populations have increased, while the numbers of the Ustyurt sub-population remained constant. *For more information please contact Yury Grachev, terio@nursat.kz.*

Aerial counts of saigas in Uzbekistan

According to an agreement between Gosbiokontrol of the Republic of Uzbekistan Committee for Forestry and Hunting of the Ministry of Agriculture of the Republic of Kazakhstan, simultaneous aerial counts of the Ustyurt population were carried out for the first time on 5th-7th April 2009. Previously, the counts in Uzbekistan were carried out in winter and in Kazakhstan in spring. As a result the total number of saigas was unknown, as it was not clear how many animals were in the other country when the counts took place. No saigas were observed in the Uzbek part of Ustyurt, despite surveying both the northern and southern parts of the plateau as well as the Aral sea. However, a negative result is still important. Data from simultaneous vehicle surveys suggested the presence of singletons and small groups in the area, which in general confirms the results of the aerial counts – almost all the animals were in Kazakhstan at that time. *For more information please contact Alexander Esipov, esipov@sarkor.uz.*



Team members soon after a flight, Muinak airport.
Photo by Alexander Esipov

Young saiga researcher wins top award!

Bayarbaatar Buuveibaatar, a young scientist engaged in saiga research and conservation activities in Mongolia, has been awarded \$15,000 to carry out his Masters research in the USA from the Sidney Byers Scholarship for Wildlife Conservation. The Scholarship, which is administered by the Wildlife Conservation Network (WCN), awards funds annually to promising young conservationists working across Africa, Asia and South America.

"We believe that the future of wildlife conservation depends

on local people working with local communities to resolve wildlife conflicts," said Charles Knowles, WCN Executive Director. "The Byers Scholarship will identify, invest in, and help develop the future leaders of wildlife conservation around the world."

As a partner of WCN, the SCA is eligible to apply for the Byers Scholarship, and Buuvei's success follows on from a Scholarship awarded to Nadezhda Arylova of the Russian Republic of Kalmykia in 2007.

Young saiga researcher wins top award!

The skull of a prehistoric saiga has been found in Astrakhan province. According to Astrakhan palaeontologists, the finding is very interesting as scientists have not previously found prehistoric remains of this species in this region. A preliminary analysis showed that the skull was 250-300,000 years old.

The director of the Astrakhan State United Historical-architectural Museum-reserve, Yury Pavlenko, said that the excavation was conducted by the museum's field team under the supervision of M.V. Golovachev, in Bueraki area, approximately 10 km south of the village of Cherny Yar, Chernoyarsky district. The skull was washed out from the banks of the River Volga during flooding, subsequently covered with the sand and again exposed due to rain and flood water. It was a well preserved brainpan with the base of the right horn. Two years ago, the base of the left horn with the upper orbital arc and fragments of the lower jaw were found, presumably belonging to the same saiga. The museum collections contain other finds of the bones of ancient saigas.

Additional information is available from the museum at musei@astranet.ru.



The fossil saiga skull.
Photo by G. Gorodnichev

The Golden Loon flew to Shymkent

The animated cartoon “Saga of the saiga”, produced by the AniMaster studio, was awarded a winner's certificate at the 13th international television festival “Save and secure”, which was held in Hanty-Mansiysk on 2-6 June. More than 300 films from 120 TV companies in 24 countries were nominated for the festival. The animators from Shymkent were awarded first prize in the section “programme for children and young people”. In the entire history of the festival this was the first victory by a team from Kazakhstan.

This festival is rightly recognized as one of the most popular and representative international forums devoted to issues in ecology, conservation and environmental protection.



The director of the “Saga of the saiga” and unchallenged leader of the AniMaster Studio, Mahsut Zharimbetov with the golden statuette from the eco-festival. Photo by Tatiana Zharimbretova

The guest of honour at the festival, two times Hero of the Soviet Union, the astronaut Georgy Grechko, noted that our planet is so unprotected; it should be taken care of and conservation of the Earth is crucial. This is what “Saga of the saiga” is about. The film is in two parts, and has been released in Kazakh, Russian and English. Its main characters are children who worry about the fate of saigas, a ranger who chases horn collectors, poachers who will not escape punishment and of course the saigas, who have to learn to trust people all over again.

Stories by pupils from Uzbekistan were used in the making of the second part of the cartoon, which were chosen in a competition. At the premiere of the second part of the cartoon in Almaty in December last year and at the festival in Hanty-Mansiysk, the director was asked whether there would be a third installment. The authors gave a positive answer but asked for more time...

For more details see

http://ugrainform.ru/index.php?option=com_content&task=view&id=11961&Itemid=85

From the editorial board: we whole-heartedly congratulate our friends and partners on this significant victory and wish them further creative successes.



A DVD of saiga cartoons released in Kazakhstan

In May, the network Meloman released the first licensed DVD containing local cartoons in the Kazakh language. The collection is called “Fairytales of the Kazakh steppe” and includes the two parts of the “Saga of the saiga” by AniMaster studios and as a bonus, another cartoon (“Aldar Kose and the

devils”), by Zhebe Studios, also of Shymkent. This release was the initiative of the Seimar Social Fund, the organizer of the campaign “SOS - saiga” and the main sponsor of the “Saga of the saiga”. The profits from sales will be used for charity.

“Mongolian Saiga” documentary film produced

WWF Mongolia has produced a documentary film on Mongolian saiga biology and ecology for the general public, in cooperation with the Scientific and Environmental

Cinematographic Society for Mongolia. They have also produced a song about a saiga calf, with great help from a famous musician and singer. This is one of the best ways to reach local people.

Mongolian language web-portal for the Altai-Sayan Ecoregion is running

WWF Mongolia has successfully launched a Mongolian language web-portal (www.econet.mn) on the Mongolian part of Altai-Sayan Ecoregion, and the English language version will be

ready soon. This portal is also linked to the Russian website for the Altai-Sayan Ecoregion and the website of the Saiga Conservation Alliance.

A Fairytale of the saiga calf for the children of Kalmykia



The Centre for Wild Animals of the Republic of Kalmykia is preparing a book “Fairytale of the saiga calf”, with the support of the oil company Lukoil. The book is written by the poet Dolgan Shanaev and is aimed at children of preschool and junior school ages. The book will be published in three languages – Kalmyk, Russian and English. The book is not only about the life of saiga antelopes, but also about their neighbours, such as cranes, ground squirrels, hares, etc. There is a lot of magic and adventures in the fairytales, which teach children to be kind, care for the environment and value true friendship.

For more information please contact Nadezhda Arylova, arylova@gmail.com.



Visiting Kalmykia's schoolchildren

On 28 April, 2009, staff of the Centre for Wild Animals of the Republic of Kalmykia and the N.N. Palmov National Museum of the Republic of Kalmykia visited secondary school No 9 in Elista, where they taught a lesson on the theme of the ecological issues of their native land. The next day, they went to Buluktin secondary school, Tselinny district, together with staff from the Station of Children and Youth Tourism. Both these events were focused on saiga conservation. The staff centre told the children about the status of saigas, research methods and conservation actions, not just in the north-western Pre-Caspian, but range-wide. A short film “The saiga, karma of the steppe”



A relay race.
Photo by Vadim Sanzhaev

by I. Shpilenok, produced an unforgettable impression not only on the children but also their teachers, and provoked many questions and a lively discussion. In conclusion, each pupil was given a saiga booklet and other materials. At the end, a local history quiz and some games were organized for the schoolchildren, followed by traditional tea-drinking, during which the children and their teachers sincerely thanked the organizers and expressed their wish to visit the Yashkul breeding centre to see saigas and find out what they do there. For additional information please contact Vadim Sanzhaev, kalmsaiga@mail.ru.



A lesson on saigas at school # 21.
Photo by Nadezhda Arylova

Kalmyk children get creative about saigas

On 26 May 2009, the results were announced of a republic-wide contest for school children, “The steppe antelope”. This was part of a conservation event called the Days of Protection from Environmental Threats. The contest is held annually, and was conducted by the centre for Ecological Projects of the Republic of Kalmykia and the Ecological-Biological Centre for Pupils of the Republic of Kalmykia. It is aimed at improving the sense of responsibility of the younger generation for nature protection, raising public awareness of the importance of saiga antelopes, attracting attention to the problem of saiga decline

and promoting active engagement in its protection. Categories included essays, poems, pictures, craftworks and songs. More than 200 children from all over the Republic took part. It was not easy for the jury to select the winners, as each work was part of the authors’ soul, their thoughts and feelings. The winners were not only creative and original, but also made people think and promoted feelings of pride in our living heritage. For additional information contact Olga Obgenova, centrecep@yandex.ru.

The schoolchildren of Uzbekistan celebrate Saiga Day

Shortly before the end of the school year, teachers and pupils from two villages in the Ustyurt saiga range celebrated a Saiga Day. In the last few years, it has become a tradition to hold shows and competitions devoted to saigas (see SN7). Saiga Day is a holiday held in spring when the first saiga calves are born. This is a celebration of life and renewal, which doesn't just attract attention to the saiga, but also unites people living in Ustyurt under a common symbol, because saiga antelopes are found only in this part of Uzbekistan. The celebration was held

only at school No26 of Karakalpakiya village and school No 54 of Zhaslyk village. Children of all ages took part. Songs and poems were performed, and the schoolchildren showed their talents in dancing and drama. A colourful presentation with an amazing story was given by the guests of the event, representatives of the international NGO Fauna & Flora International (FFI), Paul Hotham and Maria Karlstetter. The award ceremony crowned the festive occasion. *For more information contact Alexander Esipov, esipov@sarkor.uz.*



Young actors on Saiga Day.

Photo by Alexander Esipov



TNT Express helps to conserve the Kalmyk saiga



TNT Express has been providing support to the saiga conservation programme of the Centre for Wild Animals of Republic of Kalmykia. Fodder for the animals has been purchased, new enclosures have been built, old ones repaired and an office equipped thanks to this support centre. TNT Express has also developed a long-term project called

“Save the saiga!” The company sends out a form to its customers each year, with each form returned prompting a donation of 20 euros to the Centre. The number of customers responding is growing year-on-year.

For more details please follow the link

http://www.tnt.com/express/ru_ru/site/home/about_us/about_tnt_express/social_responsibility/2/1/1.html.



Development of “Irves” Software

WWF Mongolia has developed Irves Software which aims to track and monitor crimes against wildlife. Currently this pilot software is being field tested in the protected area administration of the Altai-Sayan Ecoregion supported by WWF Mongolia. The software has generated

enormous interest among the law enforcement agencies within Mongolia as an effective monitoring and tracking tool for wildlife crime, allowing the integration of information into one database that will improve coordination and communication between the agencies. *For more information please contact B.Chimeddorj, chimeddorj@wwf.mn.*

Training for Rangers and environmental inspectors in

In December 2008, comprehensive training was organized for Saiga rangers, environmental inspectors and policeman from from allover the saiga's range. This training was carried out in collaboration with the State police department and focused on nature conservation related crimes. In particular, participants were introduced to environmental conservation, conservation biology, government policy on conservation, the basis of conservation legislation, public relations skills, self-defence and protected area management and monitoring techniques.

For more information please contact B.Chimeddorj, chimeddorj@wwf.mn.



Training for rangers and environmental inspectors for saiga conservation. Photo by B. Chimeddorj

Saiga poaching detected



Documents and evidence.

Photo by G. Olonbaatar

The Mongolian anti-poaching unit Irves-3 and the police agency are working on 2 cases of illegal hunting of 13 Saiga in Shargiin Gobi, in the north the saiga distribution. The poachers were detained and identified by volunteer rangers and Anti-poaching unit. The crime site is part of a protected area. WWF Mongolia and the Aimag Environmental Agency are brought to the attention of the public on a regular basis by newspapers, radio and TV, to ensure that wildlife-related crimes are not overlooked by the judicial system.

Depending on the result of the court cases, the poachers will have to pay compensation 50000 to 55000 US dollars or face imprisonment of 2-5 years. Additionally they have to pay between 50 and 150 US dollars in fines for each animal killed. Due to the active partnership with law enforcement agencies and encouraged by the success of MAPU actions, local herders are nowadays giving more information more about wildlife crimes.

For more information please contact B.Chimeddorj, mailto:chimeddorj@wwf.mn.

Action for the damages resulting from saiga poaching considered by the court

The public prosecutors of the Lagan and Yashkul districts of Kalmykia asked the court to recover damages from saiga poaching from those found guilty of illegally hunting the species. Amongst other actions, the prosecutor of the Yashkulsky district recovered damages of 12,000 rubles

for the Russian Federation. In total, 45 environmentally related actions were brought by the public prosecutor's office in 2008, recovering a total of 6.5 million rubles.

More details are at <http://www.elista.org/elista/poslednie-novosti/respublikanskaya-prokuratura-v-proshlom-godu-napravila-45-iskov-o-vzyiskanii-uscherba-s-brako.html>.

Poachers to be put on trial in Kalmykia

In April 2009, traffic police officers found thirty saiga horns while inspecting a car in Yashkul district. The driver confessed that some of the horns were found in the steppe, while ten were the result of his hunting. A criminal case is ongoing, based on the article on “Illegal Hunting” of the Criminal Code of the Russian Federation.

More details at <http://www.elista.org/elista/poslednie-novosti/v-yashkulskom-rayone-respubliki-zaderzhan-brakoner-perevozivshiy-roga-sa.html>.

The deputy public prosecutor of the Chernozemelsky district approved the conviction of residents of Komsomolsky village who had shot four saiga antelopes. Currently, the criminal case is under consideration at the Chernozemelsky district court. The prosecutor's office has prepared a statement claiming damages of 91.200 rubles (~\$3,000).

For more details please follow the link:

<http://www.elista.org/elista/poslednie-novosti/v-chernozemelskom-rayone-kalmyikii-budut-sudit-brako.html>

A poacher shooting saiga antelopes detained in Kazakhstan

On 5 June, a resident of Stary Zhaiem village, Zhana-Arkinsky district, who had shot four saiga antelopes, was detained near Karakaska village, Nurinsky district (Karaganda province), reports the newspaper “Kazakhstan Segodnya” [Kazakhstan Today]. During the arrest, the suspect attempted to escape on an unregistered motorbike. The poacher had an

unregistered 12-calibre rifle, 11 newly sawn-off horns and a saw with fresh blood stains. A survey the area by the hunt inspectors revealed four dead saigas. Documents have been submitted to the authorities, and damages are being assessed.

For more details please follow the link

<http://news.mail.ru/society/2646672>.

Saigas in the News

Izvestiya Kalmykii, 29 April 2009, <http://www.elista.org/elista/files/ik/290409/4.pdf>

Saiga Antelopes and the Metonic Cycle

Fecundity, mortality and dynamics of the saiga population are determined by the amount, quality and accessibility of forage. All these indices depend on weather conditions, if there is not, of course, a significant negative impact of human exploitation.

Steppe antelope numbers vary in relation to favourable weather and forage conditions when anthropogenic pressures are low. The periodicity of changes in saiga numbers in Kalmykia is 19 years. There are three phases – a decline, depression, growth and a peak. The first of these phases, which lasts nine years, includes five unfavourable years; the four-year phase of depression has two unfavourable years; the six-year growth in numbers has one unfavourable year.

An analysis of the dynamics of climatic characteristics during the year, based on the Gregorian calendar, shows no relationships. However, relationships are seen if we use a year beginning from the 1st of September. In Russia, this calendar was in use from 1492 to 1700. It had been previously used in Mongolia. Under this calendar, if the autumn was adverse for the saiga, winter and spring were also adverse, particularly during mass calving. In adverse years, saigas are of below-average fatness. If the following year is favourable, saiga fattiness recovers and female fecundity increases.

Studies have documented that if a population is in a normal state, the date of the mass calving in May is determined by lunar phases. The duration of the dynamics of Kalmyk saiga numbers is determined by the 19-year lunar cycle (the metonic cycle). This was used in ancient China and Babylon; later it was discovered by the Greek astronomer Meton in 432 BC.

An unfavourable year for the saiga has a dry autumn with no autumn re-growth of grasses and possible early winter.

The winter is more severe: temperatures are below average, while the depth of snow cover is above average. Glazed frost is possible in the early spring and even in winter. Forage resources are in a worse state than the long-term average. Rains are possible in the period of mass calving. In favourable years all these values are reversed.

A 19 year periodicity of saiga numbers was also established by us during a study of the Betpakdala saiga population (Kazakhstan). However, the analysis revealed that the cycles are shifted by four years. If in Betpakdala, the last peak was in 1993, in the Kalmyk population it was in 1997. This is connected to the different climatic conditions in the two populations.



Grazing saigas.

Photo by Tatiana Karimova

Let us make a prognosis for the next few years: 2010 (from 1st September 2009 to 31 August 2010) will be unfavourable; 2011 and 2012 will be favourable; 2013 will be unfavourable, while 2014 and 2016 will be favourable years.

Based on this prognosis, the cattle breeders of Kalmykia should start storing up forage more actively from May, as no re-growth of grass will take place in the autumn, while the winter will be severe and long. If by this time, saiga protection has improved

and the number of mature males at the rut has reached 10-12% (their numbers average 18-19% when the population is healthy), a sharp increase in saiga numbers will occur. Then, in the next nine years, the decline phase will take place, as conditions will significantly deteriorate for these animals.

This prognosis is true for the NW Pre-Caspian Region, i.e. for Kalmykia and adjoining districts of other regions of the Russian Federation.

Dr Anatoly Bliznyuk, PhD

Forum

Evaluating the evidence for cyclicity in saiga population dynamics

Cycles in nature and in ecological theory

Cycles in animal population numbers have fascinated ecologists for centuries. One of the first published examples was the coupled cycling of lynx and snowshoe hare numbers in the 19th century, documented by the trade records of the Hudson Bay company. Since then there have been many other studies, most of them focused on arctic mammals, which are particularly prone to cycles.

The crucial prerequisite for cycling is delayed density dependence. This means that the growth rate of the population in one year is affected by the population size in previous years, rather than the population size in the year itself. This delay means that the size of the population is out of kilter with its environment. For example at the top of the cycle populations get much too large for the food available to them, and so they crash down below the size that the food resources could support, and then rapidly recover, starting the next cycle. This phenomenon is called over-compensation. If the population is able to adjust more quickly and exactly to the resources available to them, then they do not cycle, and if the population growth rate is slow, they do not cycle because the population is never so far away from equilibrium as to cause instability in the population dynamics.

As an illustration, the red grouse is a famously cyclic species. There is still huge controversy about the reasons for its cycles. One theory suggests that the cycles are caused by a gut parasite; this theory has been successfully tested in the field. When the population is large in the summer, the birds become heavily parasitised. This not only kills many of the birds in the ensuing winter but also reduces the female's fertility in the next spring. So parasitism in one summer leads to very low population size and very low fertility in the next summer. This then means that the new crop of birds is healthy and breeds well, until the population builds up to large numbers and the process begins again. This cycle is typically between 4 and 6 years, and is well predicted by simple mathematical models.

The key attribute of true cycles is that they are internally generated, by the population dynamics of the species itself. They are only found in mammals under very specialised conditions. Saigas are highly unlikely to have intrinsically generated cycles because their population growth rate is not fast enough and there is no obvious mechanism by which the effects

of over-abundance of the population would be delayed until the next year – it would be expected that any reduction in resources would be translated relatively immediately into population declines. Ungulates in general do not cycle, and mathematical models of saiga antelope population dynamics show no sign of cyclic behaviour. There is only one ungulate which has been suggested to have cyclic dynamics, the Soay sheep, which is confined to a very small island and has dynamics that are strongly influenced by a gut parasite.

Population Fluctuations

Of course many ungulate species, including the saiga, do naturally display very large fluctuations in population size. These fluctuations are distinguished from true cycles by being driven by external variability from year to year (e.g. in the weather or forage availability), rather than by processes that are intrinsic to the population. It is important to make this distinction because the differences in the underlying ecological processes lead to differences in the predictability of the periodicity – cycles are predictable, because they are driven by processes internal to the population, while fluctuations are a response to external factors and so would not be expected to be predictably periodic unless those external factors are also periodic.

The saiga population naturally fluctuates because it suffers high mortality in years with bad weather (e.g. dzhut years), and it can recover rapidly from mortality events due to its unusually high birth rate. In the past 2 centuries the saiga has also been subject to substantial anthropogenic change; heavy hunting at the end of the 19th century and again at the end of the 20th century has caused rapid declines in population size. Additionally, human disturbance, competition for grazing with livestock, infrastructure and agriculture are likely to have had impacts on the population size. It is therefore very difficult to disentangle all the factors that are likely to have affected the saiga population growth rate over the last century. In order to distinguish between the factors affecting the birth rate and mortality of saigas, we need long time series of reliable data collected using comparable methods. Unfortunately we do not have these data available to us; even though the time series of saiga population estimates is enviably long for a mammal, it still covers 40 years at the most.

It has been suggested that saiga populations cycle with a period of 19 years, due to changes in forage quality and availability linked to the Metonic lunar cycle (Blizniuk, this issue). With the current population data that we have, it is impossible to discern whether or not saigas have a 19 year pattern of increases and declines, because in 40 years of data we would only have 2 repeats of the pattern from which to make inferences. This data limitation is exacerbated by the fact that the second 20 year period was one of very high poaching pressure and population decline, which has swamped all other factors. Under these circumstances, it is not possible to analyse the effect on saigas of any processes that have a periodicity of more than 2 or 3 years.

Potential mechanisms for saiga population changes

The proposed basis for the 19 year fluctuation in saiga numbers is a cycle of weather conditions linked to the Metonic lunar cycle, causing changes in the vegetation. Blizniuk also suggests that within a year, saiga birth dates are also linked to lunar cycles.

In order to test these hypotheses, it would be necessary to carry out a detailed statistical analysis to show first that there is a relationship between meteorological conditions and phase of the lunar cycle (either within or between years), and further, that there is a link between meteorological conditions and saiga population dynamics. We already know that saiga birth dates are strongly linked to the spring peak in vegetation greenness.



Saiga female with calf.

Photo by Igor Shpilenok

Although it would be hard to demonstrate statistically due to data limitations, it seems intuitively reasonable that there would also be a between-years relationship between vegetation quality and population growth rate. However the link to the lunar cycle has not yet been conclusively demonstrated.

There is strong evidence that marine organisms are affected in a range of ways by lunar cycles of the type Blizniuk describes, through the influence of these cycles on tides. Ungulate dynamics in northern latitudes are affected by the North Atlantic Oscillation, which is variation in atmospheric conditions affecting the weather over several years, not linked to the lunar cycle. There is some evidence that lunar cycles can act as cues for synchronous breeding in other species, such as wildebeest in the Serengeti. Hence the possibility of lunar cycles affecting



Saiga calf.

Photo by Igor Shpilenok

saiga populations should not be dismissed. However, the underlying mechanism by which the Metonic cycle would affect vegetation and hence saiga population dynamics is not clear, and it seems unlikely that this cycle would override the many other factors that affect saiga populations. There is no published evidence of the Metonic cycle influencing the population dynamics of other terrestrial species. Currently, poaching clearly has the strongest influence on saiga population dynamics everywhere but Mongolia. Given that we are able to influence poaching rates, it is upon these that we need to concentrate if we are to ensure the continued recovery of the saiga population.

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“**Saiga Antelopes and the Metonic Cycle**” is the title of the article authored by Dr Bliznyuk, who has been studying the saiga in the pre-Caspian region for many years.

It is noteworthy that throughout its entire history, the saiga has been too much subject to “adverse effects” and for this reason it is not a convenient object for studies of this kind.

In the opinion of the author of the article, there is a 19-year periodicity in saiga numbers, during which the decline is observed in the first nine years; depression lasts four years and then the growth in numbers lasts for six years. Then the cycle is repeated. This periodicity was allegedly established for the Betpakdala (Kazakhstan) and Kalmyk (Russia) saiga populations.

In Kazakhstan, saiga counts are carried out regularly and data on the Betpakdala population are available for the years 1969 to 2009. It is not possible to see any periodicity in these data; declines and increases in numbers recur for different periods of time because they are predetermined by numerous factors. So, from 1974 to 1978 the numbers dropped three-fold (from 1,200,000 to 400,000 individuals) due to excessive hunting; the number hunted reached 320,000-500,000 individuals or 26-39% of the population, compared to a norm of 20%. Then numbers increased. However, 70,000 individuals died in 1981, and 270,000 in 1988, from pasteurellosis.

In some years, mass mortality from foot-and-mouth disease

was recorded. Many saigas died on the roads, in trenches, canals, wired fences, etc. All these factors (not only availability of food!) caused significant changes in saiga numbers. The recurrence of snowy (dzhut) winters, fatal for saigas due to lack of forage, was not consistent either. In the 1970s, there were four dzhut winters; three in the 1980s; one in the 1990s. Management varied from year to year as well. In the 1990s, the

determining factor for saiga dynamics was large-scale poaching, which resulted saiga declines of an order of magnitude. In recent years, Betpakdala saiga numbers have been on the rise, and the reason for its growth is not the end of the phase of “depression in the 19-year cycle”, but specific protection measures taken by the state. Without these measures “the phase of growth and peak in saiga numbers” may never come.

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Articles

The Status of the Saiga population in the Ural-Volga interfluvium

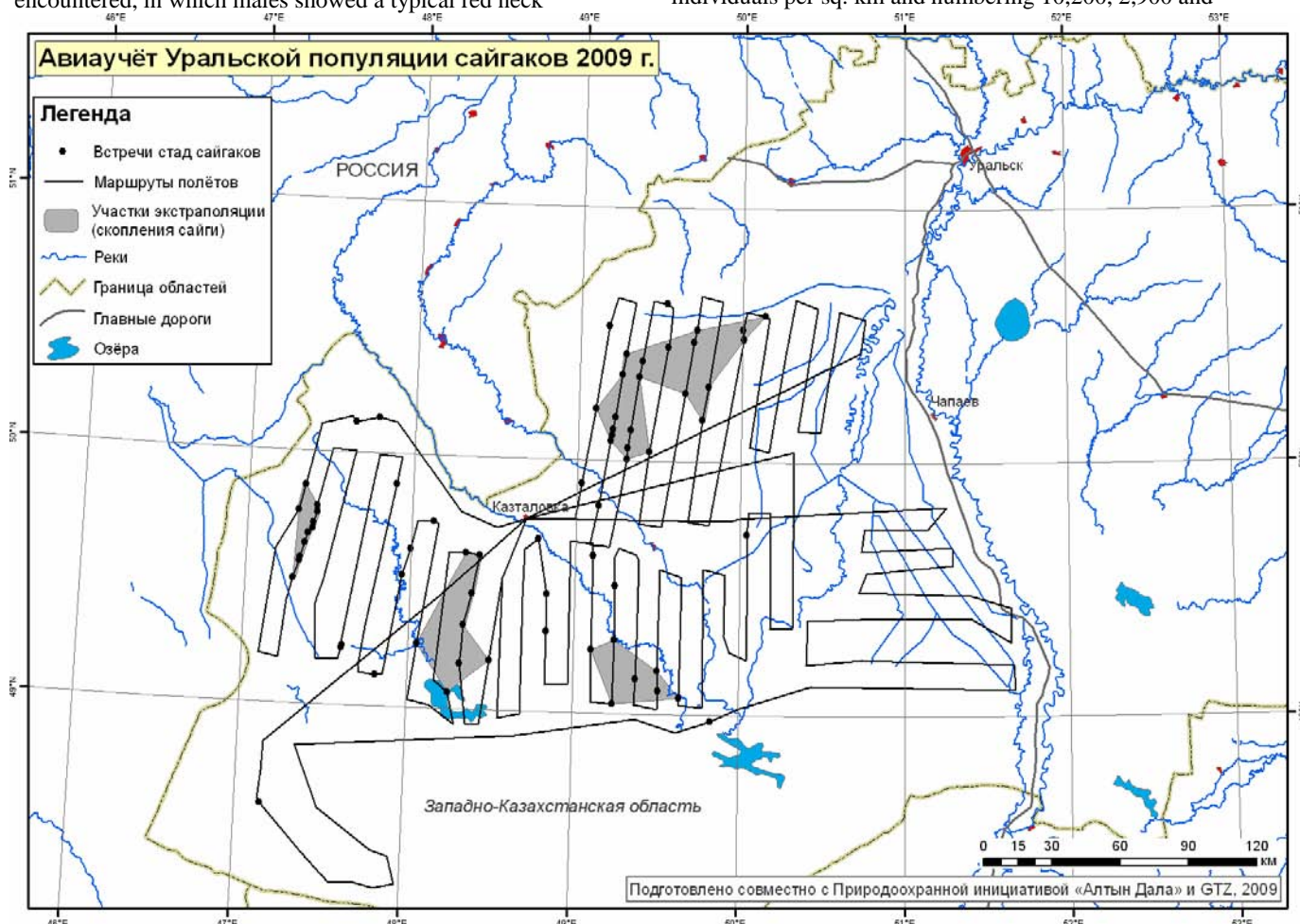
A.V. Grachev, Zh.D. Abdykerimov, Yu.A. Grachev

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Materials for this article were collected in December 2008, during the rut, in April 2009 during the aerial count and in May 2009 during the birth period.

In December 2008, there was a large aggregation of saigas (ca. 5000 to 6000 individuals) in the territory between the River Maly Uzen and the River Ashchizek (north-east of Lake Aralsor N 49°25' E 48°35'). Before mid-December there was no snow; forage was available and temperatures ranged from 0 to 6 °C. In early December (pre-rut period), saigas aggregated in large herds of 100-1500 individuals. Several harems were encountered, in which males showed a typical red neck

colouration. A total of 40 small harem herds with 6 to 26 (on average 15) individuals were recorded, with 1 to 4 males in each (just 1 male in 24 of the herds). First year males were frequently ousted by older males. We observed a mating on 10th December. Apart from harems, we recorded another 30 small herds consisting of 50 to 600 saigas (average 203). Of 6094 recorded saigas, 606 were males (9.9%). An aerial count was carried out in April 2009. The saigas were scattered in the north-western part of the Volga-Ural interfluvium. Four aggregations were recorded, with densities of 2.4 to 47.5 individuals per sq. km and numbering 10,200, 2,900 and



11,100. Total population size was estimated at 26,600 (18,300 in 2008). As numbers grow, the saiga range is also expanding, particularly in the north-eastern and eastern directions (towards the River Ural). Local inspectors informed us of small groups of saigas moving in the west and north towards neighboring provinces of the Russian Federation. This necessitates the rapid signing of the inter-governmental agreement between Kazakhstan and the Russian Federation on the conservation of this saiga population.

By the start of calving in May 2009, the saigas had moved north of the areas where they were observed in the April counts. Two aggregations were recorded between the Maly Uzen and Ashchiozek rivers, to the west of Karaoba village (N 49°56' E47°41'). The first aggregation of 2,500 saigas occupied an area



Ural-Volga interfluvium: Saiga movements through the Zhalspak saltpan.

Photo by Alexander Grachev

of ca. 100 sq. km (10×10 km). The second aggregation of 1000 individuals occupied an area of 35 sq. km. (7×5 km). The areas were mainly flat with vegetation consisting mainly of wormwood and grasses.

The first newborn calves were observed on 4 May; mass calving occurred on 9-14 May. Of 27 females encountered with calves, 16 had one; 11 had two calves. Later, when the calves and females formed herds, 1455 females and 1615 calves were recorded in total, i.e. 1.10 calves/female. This suggests that some of the females had no offspring. The animals left the



Ural-Volga interfluvium: Killed and discarded saiga male with cut off horns.

Photo by Alexander Grachev

calving grounds by the end of May.

Males were rarely seen in the calving grounds, but were mainly in the periphery and to the north. Nine bachelor herds were recorded, numbering 50, 7, 11, 42, 154, 59, 15, 35 and 25.

Eight dead females were found; the cause of death was not clear as the carcasses were heavily pecked by birds of prey. Nineteen dead calves were found, 1.01% of the total number of calves recorded ($n=1870$). Possible causes of death were death of their mothers, predator attacks etc. Once we observed an unsuccessful attempt by an eagle to tackle a saiga calf.

Saiga protection in the region is carried out by the western branch of PO Okhotzooptom, the western Kazakhstan regional inspectorate and district inspectors. The territory is well protected; nevertheless, there are cases of poaching. On 13 December 2008 we found a dead male with its horns cut off. We also frequently recorded the tracks of poachers' vehicles.

This study was funded by the small grant programme of the Saiga Conservation Alliance and is part of Kazakhstan's "programme for the conservation and sustainable use of water resources, wild life and development of the network of strictly protected natural territories to the year 2010".

Saigas on the Vozhrozhdenie Peninsula

Artur Nurjanov

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The Vozhrozhdenie Peninsula came into existence as a result of the drying up of the Aral Sea, and its core is the former islands of the Aral Sea (Komsomolsky, Vozhrozhdenie, Konstantin and Lazarev). The largest of these islands was Vozhrozhdenie (formerly the Island of Nikolai I). Vegetation on this island is largely comprised of *Artemisia terrae-albae* in association with *Peganum harmala* on gray-brown soils. Despite a lack of information on Vozhrozhdenie island, it is known that saigas used to inhabit it. G.I. Ishunin (1987), referring to L. Berg (1905), stated that in spring 1897 a manufacturer killed 1500 saiga males, whose horns were cut off and carcasses were thrown away. In mid-1940s, a secret military laboratory was set

up to develop biological weapons on this island. During the entire period of military research this island remained closed. Practically, this island represented a kind of a nature reserve, where not only military secrets, but also nature was preserved. In 1992, when the Soviet Union broke up, the laboratory was closed and the island became open.

Our studies were carried out from 2007 to 2009 within the framework of a programme ecological audit conducted by request of the Russian company Petroallians. The first saigas (a group of one male and four females, as well as a singleton male) were recorded on 29 May 2007. Later, we recorded other saigas. The largest herd consisted of 21 individuals.



Abandoned town.

Photo by Artur Nuridjanov

including both adults and calves. This suggests that calving occurs on the Vozrozhdenie Peninsula, and that it happens earlier than on the mainland, approximately in late April. According to preliminary counts, there are about 200 saigas on the peninsula, mostly confined to the western part of the main island. If threatened, the saigas escape to the salt marsh-sandy desert that formed from the exposed bed of the Aral Sea.

There are three lakes on the peninsula, which serve as water sources, two in Uzbekistan and another in Kazakhstan. These emerged as a result of water leakage. In 2008, one lake practically dried up as geologists withdrew the water for their technical needs. Searching for water, the saiga antelopes had to move to the northern part of the peninsula in Kazakhstan.

Wolves are main enemies of saiga antelopes on Vozrozhdenie, and during calving foxes attack saigas. There is a pair of wolves inhabiting the peninsula. We recorded the animals, their tracks and signs (faeces and prey remains).



Saiga watering ground.

Photo by Artur Nuridjanov

In autumn 2008 a wolf den was found in the northern part of the peninsula (approx. 3 km from the town of Vozrozhdenie).

There are two abandoned settlements, Kantubek and Vozrozhdenie, on the peninsula, in which scientists and soldiers used to live.

In 2007 saiga antelopes could be encountered throughout the main peninsula; however, in 2008, due to the geological exploration (causing disturbance and explosions) these animals moved to the northern part of the peninsula, which is less visited by people. In the span of our two years of observation rather significant changes for the worse took place. The island was isolated for a long time and nobody visited it. In 2007 we observed virgin landscapes and unscared animals including saiga antelopes, allowing us to approach to distances of several dozen metres, but one year later the picture had sharply changed. Numerous roads had emerged, disturbing the vegetation and soil cover of the main peninsula and the already overgrown exposed bed of the Aral Sea, and providing access to poachers. We found two poacher hideouts on animal paths and the tyre marks of motorcycles chasing saigas (tyre marks are well preserved on salt marshes). The poachers tend to come from nearby villages, particularly Muinak.



Saiga poachers' hideout.

Photo by Artur Nuridjanov

The saigas of Vozrozhdenie are the only saiga group permanently based in Uzbekistan. Unlike the others they were not subject to anthropogenic effects until 2007. As the island turned into a peninsula and roads were built, it became accessible to poachers and looters, who were stealing everything from abandoned towns.

There is no doubt that the fragile ecosystems of Vozrozhdenie need protection. Besides saigas, other amazing animals, such as the four-lined snake, tartary sand boa, Brandt's hedgehog, wolf, flamingo, eagle owl, tawny eagle and others inhabit this region. This peninsula is an ideal place to establish a protected area. It is surrounded by water on three sides and only its southern part, which is connected to the mainland, needs control measures. It is important to establish an international reserve here urgently, as the saiga's habitat is deteriorating and we could lose this group irretrievably.

Askania Nova, a semi-natural Saiga captive breeding centre

Viktor Gavrilenko

Biosphere nature reserve Askania-Nova named after F.E. Falz-Fein, YAAH, the Ukraine
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In the last hundred years, our conception of saiga range has encompassed the pre-Caspian and Asian steppes. Saigas were only recorded west of Kalmykia during mass migrations, but in the 20th century, they didn't venture beyond the Don River, even when the numbers were highest. However, until the mid-19th century, it inhabited the northern Black Sea region, in the the Dnieper-Molochnyansk interfluvium, the last refuge of this animal in modern Ukraine. Woldemar Falz-Fein (1930) wrote about his encounters with saigas in his book "Askania Nova". His eldest brother, the founder of the zoo, arboretum and the first nature reserve in Eurasian steppe, Friedrich Eduardovich Falz-Fein, had to import saigas from Kalmykia in the late 19th century. The semi-captive approach to husbandry at Falz-Fein's zoo was highly suitable to the biology of this species. In the early 20th century, we see in the archives of the Chapli State Steppe Nature Reserve (the name of Askania Nova then) that the saiga was not only kept, but also bred, in the "menagerie", which was an enclosure of 100 ha (Zavadovsky, Fortunatov, 1924; Kolodko, Fortunatov, 1928). However, by the end of the 1920s, this animal vanished from the list.



Conditions for saigas in the Bolshoi Chapelsky Pod enclosures closely approximate natural conditions

Photo by Viktor Gavrilenko

Further attempts to return the saiga to Askania Nova proved unsuccessful in the coming decades. The last mass introduction took place in 1979; however, of the 73 individuals caught in Kazakhstan only 37 survived during air transportation. Nevertheless, it was this group that formed the core of the modern population. Dr E.P. Steklenev and M.Yu.Treus were involved in the rehabilitation of the saiga in Askania Nova. The steppes of the Bolshoi Chapelsky Pod area within the 11,054ha Askania Nova Biosphere Reserve are extremely favourable for this species: a flat relief with a slope of 4-6 m per 10 km; fescue-grass mat vegetation with a high diversity of herbs; periodically flooded areas in the valley bottom with natural brackish soils and areas of bare ground. The 2300 ha Bolshoi Chapelsky Pod area has a system of fences built in 1966 including Falz-Fein's first menagerie.

1800-2000 ha of this are actively used by saiga antelopes. This area is adequate for the saigas to find forage without supplementary feeding and also allows for local movements that allow the vegetation to rest.



Saiga share the area with other ungulate species

Photo by Viktor Gavrilenko

The saiga herd is in a mixed exhibit, with both steppe and acclimatized species. From April 15, the Bolshoi Chapelsku Pod will turn into a Noah's Ark, containing bison, Przewalsky's horses, wild asses from Turkmenistan, bluebucks, buffaloes, fallow deer as well as other deer species.

Compared to other captive populations, Askania Nova appears to be one of the most suitable places for behavioural studies of saigas under semi-captive conditions, as it is easy to observe their activities and interactions with other ungulate species. The first studies on this theme showed that saiga antelopes display close to wild behaviour (Kokshunova, Gavrilenko *et al.*, 2005). At the same time, the animals are not shy and allow observers to follow them for hours in a vehicle or cart at a distance of 50-80 m.



Newly born saiga calf.

Photo by Viktor Gavrilenko

During the rut, we can observe classical harem groups and dominance. During calving the herd stops and females form calving aggregations. By the end of May, most of the saigas

form one herd and migrate across two open enclosures. In mid-summer, until the rut, the herd forms fluid groups.

In spite of the enclosure, saiga numbers are basically regulated by natural factors: climatic conditions, forage and predators. Numbers fluctuate around 120-340. Wolves have been a constant presence in the reserve since 1996 but have not affected the saigas. Before the wolves appeared the herd was significantly affected by attacks from stray dogs. However, the constant presence of wolves has deterred dogs from leaving the nearby settlements. This situation will continue until the wolves change their hunting preferences. So far, they mainly prey on hares, rodents or sometimes attack sheep (although as there are few sheep, these are not their main prey).

Foxes have a significant effect on saiga numbers. The calving period coincides with cubs emerging from their dens, and near each den we find numerous remnants of saiga calves. Until saiga

calves begin to follow their mothers, they are attacked by crows and Pallas' gulls, which cause similar losses to foxes. There are 7-9 crows' nests on pylons near the saiga area, and by May the month-old nestlings require abundant food. We recorded an attack by six crows on a newly born saiga calf, while its mother was delivering the second calf 1.5m away. The crows attacked the female saiga and drove it off. Particularly high loss occurs after droughts, when the low grass leads to a lack of shelter for the calves. In winter, the weakened saiga antelopes are preyed on by golden eagles. We observed a white-tailed eagle feeding on a dead saiga. The last two species regularly overwinter in the biosphere reserve.

In conclusion, a long-standing semi-natural breeding herd of saiga antelopes is present in the south of Ukraine. The breeding centre has accumulated experience, which can be used not only for conservation, but also for research into the biology of an ancient ungulate.

Research on the potential effects of domestic dogs on Mongolian Saiga in Shargyn Gobi NR, Mongolia

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Understanding the effects of predation and other mortality factors on Mongolian saiga is critical to the long-term survival of the sub-species. Although domestic dogs are the most abundant carnivore in Shargyn Gobi, the extent to which domestic dog predation affects saiga is unknown. The Mongolian Academy of Sciences, in collaboration with the Wildlife Conservation Society, carried out research on the potential impacts of feral and free-roaming dogs on Mongolian saiga in Shargyn Gobi, Mongolia, on 7-27 August 2008. This study was funded by a grant from the EDGE Fellows programme, Zoological Society of London, UK. The major objectives of the research were to (1) implement a transect survey to determine the number of free-roaming dogs within areas utilized by saiga, (2) interview local herders to understand



Mongolian saiga calf in Shargyn Gobi, Mongolia.

Photo by B. Buuveibaatar

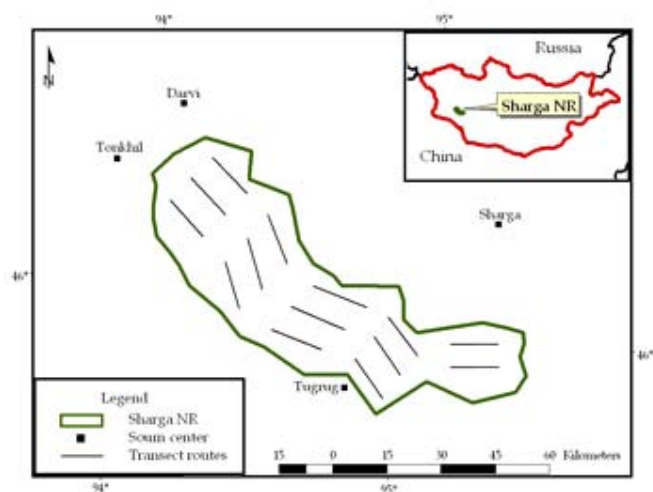


Figure 1.

Transect routes in Shargyn Gobi Nature Reserve (NR), Mongolia.
Inset illustrates location of Sharga Reserve in western Mongolia

presence/absence patterns of their dogs and assess their knowledge about dog-saiga issues.

We implemented 14 transect routes within the Shargyn Gobi Nature Reserve (NR) boundary (Fig. 1). During the transect survey, we counted 37 herds, totalling of 222 saiga (6 ± 6.8 (SD) animals per herd, range = 1 - 33). The ratios of males per 100 females and calves per 100 females were 0.2 and 0.9, respectively. We did not count any free-roaming dogs but did locate herders' gers with dogs along transect routes (1.1 dogs/ger ± 0.7 ; mean \pm SD).

For the second objective, we interviewed 21 people (local herders, saiga rangers, and inspectors from the administrative centre). During the survey period, there were 15 herders within the Sharga NR with approximately 4,600 livestock and 19 dogs.

Livestock were mainly composed of sheep and goats, although some herders reported having camels, horses, and

Cows (goats 2600, sheep 1100, camels 750, horses 120, and cows 30). Those interviewed said the numbers of herders, livestock, and dogs increase significantly in late autumn both within and outside the Sharga NR. Interviews revealed that only one person had witnessed a domestic dog preying on a saiga calf. However, some local people reported that free-roaming dogs occasionally kill adult saigas in spring, when they are weak while recovering from harsh winter conditions. Data from inspectors indicate there are about 2,300 domestic dogs in 4 soums (counties) of Gobi-Altai province, which includes Sharga, Tugrug, Tonkhil, and Darvi (Fig.1).

The abundance of dogs reported within the range of the Mongolian saiga suggests potential conflict (opportunities for predation) but we did not observe free-roaming or feral dogs during our transects. Because saigas occur at low density throughout this region, it is unclear if such conflicts are more common than reported in our interviews. Further studies that



Free-roaming dog in Shargyn Gobi NR, Mongolia.

Photo by J.K. Young

directly monitor spatial patterns of saiga and dogs in areas where they overlap are needed.

A visit to the Uzbek Ustyurt Plateau – saiga conservation in Uzbekistan

Maria Karlstetter

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Flying into Nukus, the capital of the Autonomous Republic of Karakalpakstan, Uzbekistan, it is striking how the huge expanse of endless plains of seemingly uninhabited desert and steppe suddenly changes into irrigated fields. Not far from the city of Nukus, the banks of the Amu Darya river are flanked by some of the last remaining tugai forests left in Central Asia.

Alexander Esipov, from the National Academy of Science in Tashkent, Paul Hotham, Regional Director of Fauna & Flora International's Eurasia Team and I are on our way to the field site of a project which began in 2004. The project, developed during 5 years of cooperation between Alexander, Elena Bykova, the National Academy of Science in Tashkent, and Fauna & Flora International, aims to raise the awareness of and actively involve local communities in conserving the saiga

antelope in Ustyurt. The designation of a one million hectare protected area in 1991 acknowledged the importance of the saiga range in Uzbekistan for conserving the species, however this never got further than being designated on paper. The Saigachy Zakaznik, named after the animal it is supposed to conserve, currently has no funding or staff.

Out of Nukus, the Ustyurt plateau rises suddenly, clearly demarcated by its steep escarpments, which reach up to 150m in height – the locally called chink. Traditionally inhabited by nomadic herdsman, the building of a railway in Soviet times - which crosses the plateau and reaches Beyneu in Kazakhstan - and the extraction of gas deposits led to the construction of villages some 35 to 40 years ago, to provide housing for labourers. Karakalpak people became settled over time and



The Ustyurt plateau rises suddenly, the escarpment reaches heights of up to 150m. In the foreground, the Kungrad-Beyneu railway heads across the plateau towards Kazakhstan. Photo by Maria Karlstetter/FFI

have mainly given up their traditional way of life. Unemployment is high in these villages, which for the most part consist of Soviet-style two storey houses, most unrenovated since their construction. Old gas pipelines are widely reused as cheap building material; cut in half and painted to make fences around schools and other public places.

During our trip we met with a variety of local people to find out more about the current situation and to discuss future plans. Some of those we met were once involved in poaching and trading saiga products - and some probably still are. Over the last years Elena and Alexander have been working hard on the difficult job of building trust in people whose business depends inherently on secrecy. They have successfully established an informal network of local individuals, who now regularly provide them with invaluable information on saiga sightings and movements – and even numbers being poached. For obvious reasons Elena and Alexander's work has not been welcomed in some villages. However, some of the people they have been

organised by the SCA (see above). Children and teachers put a truly tremendous amount of effort into preparing the final show, performing songs, poems, dances and dramas about all sorts of environmental issues and in particular the saiga. The saiga is not yet helped directly by these activities but through strengthening our relationship with local people and by extending our network of saiga advocates, people become aware of the saiga's fate. Ultimately we hope to establish a system of local rangers who are actively engaged in saiga protection; work necessary to complement our efforts to reassign and expand the Saigachy Zakaznik and to provide support to state ranger patrols.



Poaching is recognized as being detrimental for wildlife and has been depicted in children's paintings (left); School children performing at the award ceremony of a painting and art work competition on the environment (right). Photo by Maria Karlstetter/FFI

working with now call themselves former poachers, indicating that they have stopped their illegal activities.

Awareness raising and community engagement in saiga conservation, however, goes beyond working with poachers. Several families, the local police and school teachers have been engaged as Saiga Friends, actively supporting our work by providing help wherever needed. For example, we were lucky enough to attend the award ceremony of a competition

Besides poaching, the increasing interest of extractive industries on the Ustyurt plateau is an additional threat to the saiga. Estimates suggest Karakalpakstan has some 1.7 trillion cubic metres of natural gas and 1.7 million tons of liquid hydrocarbon resources. Gazprom, the world's largest oil and gas company is currently drilling around 20 new exploration



Extractive industries are growing fast on the Uzbek Ustyurt. Outside Jaslyk village. Photo by Maria Karlstetter/FFI

wells on the plateau, aiming to invest \$400 million in the project. In order to involve extractive and associated construction industries in conservation planning, Elena and Alexander recently initiated a workshop in Tashkent (see more details above).

A key focus of our future work will be addressing the illegal trade of saiga products to Kazakhstan, which is the main route for saiga horn and meat. We plan to carry out a regional campaign targeting illegal trade along the border crossing at Karakalpakia village and in nearby markets. Training for customs officers in cooperation with the State Committee for Nature Protection will be followed up by police controls of local market goods.

The conservation of the saiga in Uzbek Ustyurt has to compete with a series of other pressing needs. Being one of Uzbekistan's most underdeveloped regions, Karakalpakstan has been worst affected by the tragedy of the Aral Sea (see Box 1) and faces serious problems. High unemployment, especially of young people, and water supply shortages constrain economic sustainability. To date, efforts to conserve the saiga in Ustyurt have been limited in scale. However, Alexander and Elena, in cooperation with FFI and other organisations, have established a

Box 1

Karakalpakstan has been worst affected by the tragedy of the Aral Sea. Much of what has been previously farmland has become heavily salinized. High concentrations of toxic agrochemicals (fertilizers, defoliants, insecticides) originating from the Aral Sea basin and the Amy Darja delta have caused anaemia in 97% of Karakalpak women, which is seriously increasing infant mortality and maternal death. Genetic damage associated with cancer and birth defects was found to be 3.5 times higher in Karakalpak residents compared to US citizens. Cases of liver cancer tripled within only six years in the 1980s and tuberculosis rates have risen 70%, nearly a third of which are multi-drug resistant strains.

For a recent satellite image from the Aral Sea go to:

<http://www.spiegel.de/wissenschaft/weltall/0,1518,grossbild-1530632-626267,00.html>

good platform of existing partnerships on which to build.

New initiatives are on their way to expand the project to Kazakhstan in an effort to focus on the conservation of the wider Ustyurt landscape, with the saiga being a keystone species of the steppe ecosystem and a symbol of a healthy and intact environment.

The work on conserving saiga populations on the Uzbek Ustyurt of Elena Bykova and Alexander Esipov in cooperation with Fauna & Flora International has been made possible through the generous support of The British American Tobacco Biodiversity Partnership, The Disney Wildlife Conservation Fund and The Alexander Marsh Christian Award for Conservation Leadership.

Using phytoliths as a non-invasive method to study Saiga diet

Tatiana Karimova

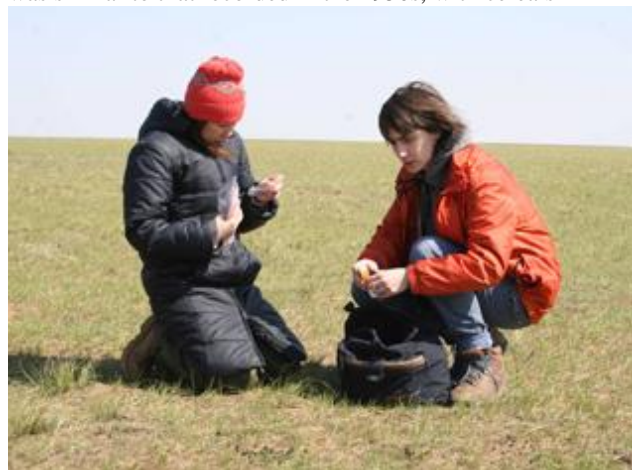
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Changes in plant cover have been noted in the saiga range area, caused by a wetter climate and a decline in livestock numbers causing reduced pasture pressure (Neronov, 1998; Zolotokrylin, Vinogradova, 2007). As a result, natural regeneration of the steppe was triggered in the early 1990s, which was manifested in the replacement of the desert-steppe xerophyllous plant communities by steppe bunchgrass communities dominated by *Stipa* grasses. These changes in the plant cover could lead to changes in saiga diet and influence population dynamics.

Since the 1950s, direct methods have been used to study saiga diets, such as observation of the rumens of culled animals, experimental feeding in captivity and direct observations in the wild. No doubt the most accurate data can be obtained from the examination of stomach contents; however, currently due to low saiga numbers it is preferable to use non-invasive methods such as faecal analysis.

In the last few years, several studies on saiga diet have been carried out using cuticular-coprological analysis (Rozenfeld, Larionov, 2006; Larionov, 2008; Larionov et al., 2008), however phytolith analysis has not yet been applied to this kind of work. The goal of this project is to study the saiga diet at a key period, around the time of calving, using phytolith analysis, which reveals the range of plants consumed by saigas.

At the initial stage of project implementation, we studied all the available literature on the annual saiga diet in the span of one year. This showed that the saiga in the North-West Pre-Caspian feeds on 116 species of higher plants. The most recent stomach content studies were conducted in 1995, as the vegetation was starting to recover (Bliznyuk, Baktasheva, 2001). According to these data, in the spring (March-April) saigas consume up to 64 plant species; the forage composition was similar to that recorded in the 1950s, with cereals



Collecting faeces in the field.

Photo by Yuri Arylov

constituting 40 to 70% of the diet. The range of plants found in the faeces is a function not just of feeding selectivity but also of the phase of plant development and variation between species in resistance to mastication, digestion and decomposition after passing into the digestive tract. The precision of interpretation of the botanical analysis of faeces increases many times if there is a simultaneous phytolith analysis (Kiseleva, 2006).

Given that a significant part of the saiga diet in spring is cereals, we decided to focus on this group of plants. We selected a study site in an area where mass calvings have taken place in

the last few years, in the Chernye Zemli Nature Reserve, and collected faeces there. In order to compare the phytolith content of saiga faeces from that of the environment (vegetation and soils) we set up standard geobotanic plots (10 × 10 m) where we collected plants and soils. The material will be processed at the Laboratory of Historical Ecology of the Institute of Ecology and Evolution of the Russian Academy of Sciences. This project was funded by the Saiga Conservation Alliance's small grants scheme and its results will be published at the end of 2009.

Outcome of Workshop on Population Estimation Methodologies for Mongolian Saigas

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Population size estimates are vital for understanding species ecology, yet obtaining estimates of rare species that inhabit large geographic areas is logistically difficult at best. The severe decline of saiga throughout its range led to the signing of a Memorandum of Understanding (MOU) among range states under the Convention of Migratory Species (CMS), which established the need to adopt a standardized monitoring protocol to regularly assess population numbers (CMS 2006). Two workshops held in Mongolia in 2007 highlighted the need for an additional workshop that focused specifically on population estimation methodology and survey design; this would enable scientists involved in Mongolian saiga research to best understand, use, and choose a survey technique. Through funds obtained from Trust for Mutual Understanding, four scientists from the Institute of Biology at the Mongolian Academy of Sciences traveled to Missoula, Montana, USA, to participate in a saiga population estimation methodology workshop in February 2009. In addition to the workshop, participants had opportunities to interact with faculty from the University of Montana, meet with people from non-governmental organizations that conduct conservation-based research in

Mongolia, and visit Yellowstone National Park.

The goal of the workshop was to establish a standard survey method to estimate population size of Mongolian saiga. The survey method had to be repeatable, have a measure of precision, and be acceptable to both Mongolia officials and the global scientific community. Through a series of lectures and practical exercises on general statistics, wildlife monitoring and trend estimation, distance sampling, survey design and field protocols, and analysis of previous survey data, participants selected a standard survey method to be applied to future saiga population counts; distance sampling (Buckland *et al.*, 2001). The workshop had two major outcomes:

- Distance sampling was agreed upon as a survey method for Mongolian saiga population estimates and sampling designs were created (Fig. 1);
- The utility of previous survey data on saiga populations was identified.

The intent of the workshop was to not disregard past survey efforts to estimate saiga numbers, but to use that information and knowledge about other wildlife survey methods to



Workshop instructor, Dr. Samantha Strindberg, assisting workshop participants (from right to left): Dr. Berger, Mr. Amgalanbaatar, Dr. Amgalan, and Dr. Lhagvasuren. Photo by WCS

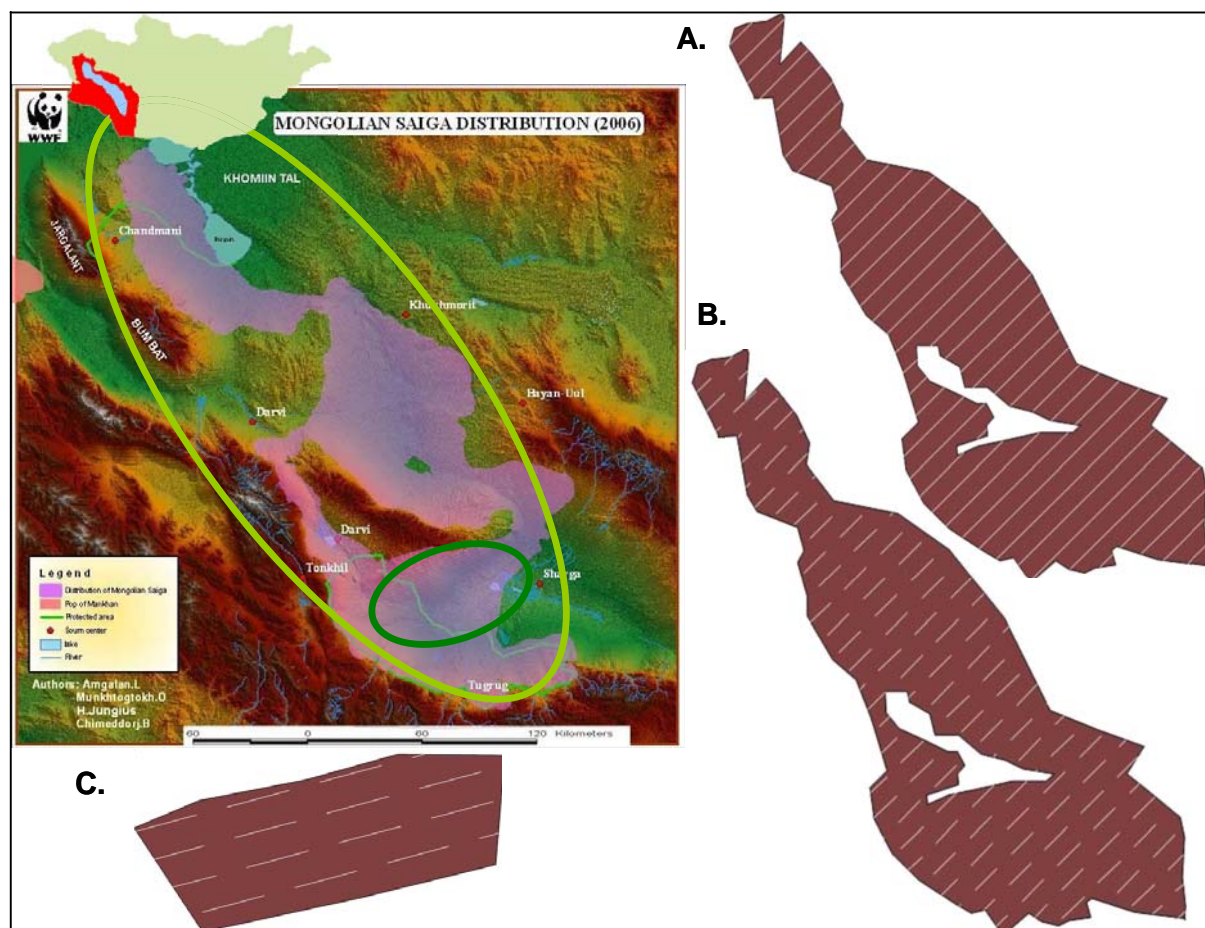


Figure 1.

Draft survey designs developed during the workshop. Survey design is likely to be amended as these are discussed with colleagues of the workshop participants in Mongolia. Designs were developed for a variety of modes of transport: A. The aerial survey design that may be executed every few years (2300 km of effort) - assuming availability of air transport, B. the terrestrial survey by car that would be executed annually (1400 km of effort), and C. the terrestrial survey by horse (140 km of effort). Replicate transect lines are shown in white with the survey regions in brown. Designs A & B correspond to a larger portion (approximately 6900 km²) of the entire saiga range highlighted in light green, whereas design C corresponds to a smaller area (approximately 1056 km²) highlighted in dark green that has rough terrain and is particularly difficult to access – during a pilot survey it will be used to evaluate the feasibility of more extensive use of horses or camels. Saiga distribution map was created and distributed by WWF-Mongolia, and provided by map co-creator Dr. Amgalan, Institute of Biology, Mongolian Academy of Sciences.

identify the best way to move forward. This was accomplished through the two major outcomes.

We identified ways to use previously collected data to provide information on potential ecological or human influences driving saiga distributions, while new designs were created that account for different objectives and potential logistical opportunities (i.e., if a plane is available for aerial surveys). We anticipate the first range-wide survey for Mongolian saigas using distance sampling techniques will be conducted in September 2009 (Fig. 1), with at least three participants of the workshop conducting this survey.

This workshop represented a step forward in identifying a standard survey method and developing a survey design, and may have an impact on surveys for saigas beyond Mongolia. In fact, we suggest signatories of the MOU consider adopting distance sampling as the standardized monitoring protocol to regularly survey saiga populations (CMS, 2006). Pilot studies in Mongolia have shown its potential in Mongolia (Young *et al.*, in review). The method's flexibility suggests its utility to determine population size and to assess impacts of natural and human-induced threats to saiga populations. A range-wide workshop for members of range states would be a beneficial next step.

Editorial note: A pilot study on distance sampling was also carried out in the pre-Caspian population in 2008 (see H. O'Neill's MSc thesis, www.iccs.org.uk). In Kazakhstan, a report submitted to the Committee on Biodiversity by FZS in 2007 identified key improvements required for aerial survey methods. It is hoped that the authors' suggestion above of a range-wide discussion of appropriate methods under CMS can be swiftly acted upon.

Project round-up

Saiga activity by Imperial College London

Our current work on saigas is focused on understanding the factors affecting saiga distribution patterns, and using this knowledge to predict changes in saiga locations and movement behaviour in the future. The work is funded by a Royal Society Wolfson Research Merit award and the Leverhulme Trust.

In collaboration with the Institute of Zoology, Kazakhstan, our activities included organising the SCA's scientific meeting in Almaty in October 2008, exchanging best practice in saiga monitoring (see SN7). We also collated historical population survey data from the reports of the Institute of Zoology's scientific expeditions to identify the broad distribution patterns of saigas within the last four decades. The data were used to investigate the drivers of long distance migrations in Kazakhstan. A latitudinal gradient in vegetation productivity and precipitation appears to drive the saiga's migrations. Despite a precipitous decline in last 15 years, the migrations still seem to be intact. Another study investigated the factors affecting calving site selection by saiga females on the landscape scale. Using the identified factors, predictive models were prepared, which can be used to stratify the sampling of future calving areas, thus improving the efficiency of saiga

monitoring. Alongside climatic factors, disturbance appeared as a major factor influencing calving site selection by saiga females and its effect increased over time, with calving sites located further away from towns in recent decades.

We are carrying out a new study in the pre-Caspian saiga population this year, in collaboration with the Centre for Wild Animals of Kalmykia. The study builds on our previous joint work on the BRIDGE project (see SN7), and will investigate changes in saiga distributions using the observations of local people. We will also be collaborating with the Institutes of Zoology in Uzbekistan and Kazakhstan and with Takehito Ito of Tottori University in Japan, who plans to fit satellite collars to saigas in the Ustiurt population to monitor their movement patterns at a more detailed scale.

The information from these studies will be extremely useful in planning saiga conservation interventions in the future, as knowing where saigas are and why is a key component of effective monitoring and protection. *For more information please contact* E.J. Milner-Gulland, e.j.milner-gulland@imperial.ac.uk and Navinder Singh, n.singh@imperial.ac.uk

Saiga conservation project supporting herder communities

As a result of a Participatory Rural Appraisal and a series of meetings, 4 local resource management communities have been established in saiga habitat. WWF Mongolia is working to strengthen the positive linkage between sustained rangeland management, saiga conservation and improved livelihoods for these herders. The goals are to improve herder income from sustainable livestock production and increase income opportunities from non-livestock based activities such as agricultural development. Three training sessions on alternative income opportunities and wool processing skills development

were provided to members of 3 herder communities. Once the herders gain the necessary knowledge and skills for wool processing, they will have the opportunity of producing value-added products, increasing their per unit income from livestock products. The trainees are supported with manuals which are available in the local administrative centres. This is best approach to linking conservation and community empowerment, and formation of herder groups has become a popular approach to community mobilization for conservation activities. *For more information please contact* B.Chimeddorj, chimeddorj@wwf.mn.



Training session with some wool products.

Photo by Tuya

The revival of traditional crafts for the conservation of the saiga in Uzbekistan



In 2009, the SCA programme for the development of alternative income-generating activities for the unemployed women of Ustyurt entered its second stage. The project is being carried out with the financial support of The Wild Foundation. In 2008, we initiated a pilot project to teach women living in the saiga range traditional crafts, with the financial support of WCN (see SN 7). The main idea was to make women aware of saiga conservation. It is no secret that saiga meat is in demand among local people, as it is cheap and seen as “meat for the poor”. Women who are the main buyers of saiga meat at the local market. Besides, being spiritual leaders in their families, women influence the opinion of their husbands, many of whom are involved in the illegal saiga business, and also their children on whom the future survival of the species depends. Our mission was not only to train women in the production of traditional crafts, but also to establish stable marketing routes for these goods. Thus, women gain a range of opportunities for the development of their creative potential and for earning extra money, which contributes to the growth of their role and status in the local community.



Participants of the training courses.

Photo by Alexander Esipov



Group of girls on the embroidery training courses in Nukus.

Photo by Maria Karlstetter/FFI

The project also set a goal of uniting women and the exchange of experience and knowledge. In a close partnership with a non-governmental organization Onerment (the Karakalpak word for craft), we carried out training in the Karakalpak method of embroidery for women from two Ustyurt villages (Karakalpakiya and Jaslyk). After gaining knowledge and skills in embroidery and attending a personal development course, women will teach other unemployed women in their homes.

At the initial stage, the project provides all the materials required for the manufacture of the goods. The first handbags embroidered with national ornaments have been produced. Aizada Nurumbetova, the chair of Onerment, is preparing for the marketing of the first batch and for the next training course. She has analysed the current situation with respect to the production of crafts in Karakalpakstan, and made recommendations for the development of traditional crafts in the region. *For more information please contact Elena Bykova, esipov@sarkor.uz.*

Featured Institutional Member



The Russian committee of the UNESCO programme Man and the Biosphere (MAB)

The Man and the Biosphere (MAB) programme is an inter-governmental and inter-disciplinary programme which has occupied an important position in UNESCO activities for more than 35 years. In 1972, the UNESCO General Conference approved the start of this programme's work, with 14 international projects, including some on arid and pasture ecosystems. In the former USSR, the Inter-Departmental Committee embarked on the implementation of the MAB programme in 1976. Before perestroika and collapse of the USSR, scientific conferences and workshops on the 14 international MAB projects were held, while more than 4000 natural and social science specialists were involved in the implementation of more than 1000 projects.

The work is still being carried out, albeit on a smaller scale. The programme has been coordinated between all CMEA states, which influenced the development of cooperation within EuroMAB (which includes all European states), the USA and Canada.

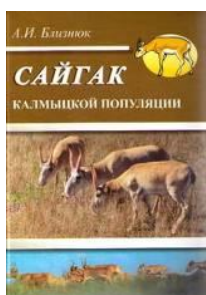
After 1986, UNESCO focused its activities on the strengthening and development of the Global Network of Biosphere Reserves. Up to now, 553 reserves have been set up in 107 countries. Since 1978, UNESCO has approved 39 biosphere reserves in the Russian Federation, one of which (Chernye Zemli, Republic of Kalmykia) is aimed at saiga conservation. All Russian biosphere reserves carry out a detailed inventory and study their protected flora and fauna species, and carry out ecological monitoring for the assessment of the effects of human activities including climate change. Together with the Commission of the Russian Federation for UNESCO and the Ministry of Natural Resources and Ecology of the Russian Federation, the Russian MAB

In its specific projects the Russian MAB Committee pays significant attention to cooperation with other international programmes (UNEP, IGBP DIVERSITAS), organizations (WWF, IUCN, IUBS) and Secretariats of Conventions (CBD, CMS, CITES). Due to the contacts of the Russian MAB Committee and the support of the Government of Kalmykia, the first international conference on saiga conservation was held on Elista in 2002. At this conference, more than 100 leading experts from around the world prepared a draft memorandum of understanding on the saiga and an Action Plan, which formed the basis for the official documents signed by all saiga range states.

As an institutional member of the Saiga Conservation Alliance, the Russian MAB Committee intends to use its accumulated experience and potential to improve saiga protection and carry out a detailed study of its ecology not only in Russia, but also in other saiga range states. Currently, the main objective of the Russian MAB Committee is to assist in the rapid completion of the preparatory stage and a final signing by Russia of the MOU on the saiga, as well as successful convening of the Section on the international cooperation for the protection of the saiga during the 29th Congress of the International Union of Game Biologists (Moscow, August 2009).

Editorial note: The first of these aims has now been achieved (see feature article)

Review of recent saiga publications



Bliznyuk A.I. (2009) The Kalmyk saiga population. Elista: Jangar, 544.

The book concerns the biology of the Kalmykian saiga population. It also provides data on Kazakh populations. Much attention is paid to the identification of the timing of maturation, embryogenesis, range and population dynamics, and pasture load. The book also discusses the timing of calving relative to lunar phases, and distinguishes phenotypes and three ecomorphs of the saiga. A 19-year cycle in the saiga population and the relation of this population to this lunar cycle are established. Principles for prediction of the long-term dynamics of saiga numbers are described. The book is intended for zoologists, biologists, ecologists and hunters. It is also of interest to a broad scientific community and environmental organizations.

Editorial note: See the articles above for discussion of the saiga cycles

Kuhl, A., Mysterud, A., Grachev, Iu.A., Bekenov, A.B., Ubushaev, B.S., Lushchekina, A.A., Milner-Gulland, E.J. (2009) Monitoring population productivity in the saiga antelope. Animal Conservation 12, 355-363

Effective conservation requires a good understanding of factors causing variation in population growth rate. We here analyse the relationship between female age and fecundity in the saiga antelope (*Saiga tatarica tatarica*), a critically endangered ungulate of the Eurasian steppes and semideserts, at both individual and population levels. Annual variation in age structure and twinning rates was investigated using long-term datasets, sampling a total of 3308 females in four populations over more than 40 years. Further, a new non-invasive method is presented, estimating twinning rates from both calves and placentas encountered during calving aggregation transects. At an individual level, the most parsimonious model for twinning rates included three age classes (1 yr, 2 yr and ≥ 3 yrs); however the model with only two classes (1 yr and ≥ 2 yrs) was competitive and particularly useful for monitoring since these two age classes can reliably be determined by direct observation in the field. Among yearlings, 77.4% were fecund and 11.7% twinned, whereas among older females 94.6% were fecund and 72.6% twinned. At a population level, annual variation in age structure (proportion ≥ 2 yrs) correlated well with annual variation in twinning rate except in the north west Pre-Caspian population. Our results suggest that the recent poaching-driven collapse in saiga numbers has potentially resulted in reductions in fecundity, which will have an impact on population growth rate. Our results highlight the potential for monitoring of twinning rate using non-invasive calving aggregation transects as a cost-effective additional tool to population counts for monitoring the status of this critically endangered species. These monitoring methods are also potentially transferable to other ungulate species.

Kuhl, A., Balinova, N., Bykova, E., Esipov, A., Arylov, Iu.A., Lushchekina, A.A., Milner-Gulland, E.J. (2009) The role of saiga poaching in rural communities: Linkages between attitudes, socio-economic circumstances and behaviour. Biological Conservation 142, 1442-1449.

Effective conservation of exploited species requires an understanding of the motivations experienced by resource users. When use is illegal, it can be particularly difficult to distinguish users from non-users. The attitudes of local people are critical to conservation success, because they interact with social circumstances to determine behaviour. In this study we explore the factors influencing inferred poaching behaviour of the Critically Endangered saiga antelope (*Saiga tatarica*) in six communities in three countries of the former Soviet Union. We show that local people have a good understanding of the species' status and positive attitudes towards its conservation, regardless of their household's inferred poaching status. Poaching is a low prestige occupation, and our analyses suggest that it is carried out by poor, unemployed households who have the means to hunt. These results are consistent for all villages. However we find important regional differences in hunting behaviour, linked to saiga population density and migration patterns, which have implications for the likely effectiveness of different conservation strategies. Community-based interventions are more likely to be appropriate in Russia, where saigas are present year-round and hunting is more subsistence based, than in the strongly seasonal Kazakhstan populations where economies of scale require organised poaching by fewer households. This case study illustrates the complex linkages between attitudes, social circumstances and behaviour in resource user behaviour, and highlights both the consistencies and differences in drivers of poaching between locations at a range of spatial scales.



Announcement



SCA Small Grants Competition, 2009

We are glad to announce the call for application for SCA small grants on the conservation of saiga for the year 2009. As before, the small grant programme is supported by the Wildlife Conservation Network (WCN).

The applications should meet the following requirements:

- They should be aimed at the conservation of the saiga in natural conditions (not in captivity);
- Have a direct and clear effect on the state of the saiga;
- The maximal duration is one year (to the end of August 2010);
- The budget is between 1000 and 2000 USD;
- The project should be independent and not be a smaller component of a larger project;
- The project should be carried out under the aegis of the SCA and comply with the articles of its statutes and reporting requirements indicated in it.

The registration form and guidelines for the submission of the application can be obtained at the SCA web-site: http://saiga-conservation.com/http://saiga-conservation.com/http://saiga-conservation.com/project_detail/items/small-grants-programme-2009.html or by sending the request by email to the address esipov@sarkor.uz and saigaconservationalliance@yahoo.co.uk.

The deadline is **31 July 2009**. The application is sent as an attached file to Elena Bykova's electronic address: esipov@sarkor.uz.

The SCA is monitoring progress of the MOU on Saiga Conservation

Summary report on progress towards the CMS MOU in the period November 2008-June 2009.

Report compiled by E.J. Milner-Gulland for the SCA

There has been good progress for saiga conservation in this reporting period. A major step forward was the signing of the MOU by Russia in June 2009, which means that all the saiga range states are now signatories to the MOU.

There are many ongoing activities in the field of public awareness in all the range states and in China, and some progress is also being made on saiga monitoring, although more investment is required if we are properly to evaluate the achievement of the goal of the MTWP (stable or increasing populations within five years). This is because as yet we do not have a time series of population estimates in any of the range states that have been made using standardised methods with an associated measure of uncertainty, as required by the MTWP. However, the indications are that the status of all populations except Ustiurt is favourable, suggesting that Ustiurt should be a high priority focus for urgent conservation action.

Important information about the status of the little-studied Ural population in Kazakhstan has been published, suggesting that the population is doing well. Anti-poaching efforts have been ramped up in all the range states, as evidenced by the successful detection and prosecution of saiga poachers in the last few months, which will hopefully have a deterrent effect in the future. We have no information about activities being carried out in Turkmenistan in this reporting period.

There are only three A1 (urgent and high priority) actions which have had no discernable progress in the 2.5 years since the MOU came into force:

Action 3.1. Compliance with CITES recommendations by Russia and Kazakhstan, and lifting of the moratorium on exports.

Actions 9.1/14.2. Establishing captive breeding facilities in Mongolia.

Action 11.2. Public awareness and engagement in the Ural population.

Little action in general appears to have been taken in the arena of international trade, either by range states or by China, and this deserves prioritisation in the lead-up to the next meeting of the parties to the MOU (hopefully to be held in 2010). Captive breeding has been downgraded in the national priorities for conservation of the Mongolian sub-species, and the priority level of this action within the MTWP should be revisited (and potentially reduced) at the next meeting. The status survey in Ural was a useful first step towards a higher profile for this population, and an urgent priority should now be to institute conservation actions for this population that engage local people.

Acknowledgements

The Saiga Conservation Alliance would like to express its sincere gratitude to the following individuals for supporting our activities over the last 6 months: Maggie Bryant, Vance Martin and the Wild Foundation, Joy and Tyler Covey, Kennon and Bob Hudson, Linda Tabor-Beck, Jeff Flocken, Dr. Marjorie Parker, Brad Roberts and Anne Marie Burgoyne, Michael Hackett, Kent and Gloria Marshall, Kevin and Kim Nykanen, Michael Linvill, East Bay Zoological Society, Marc Gerard, Priscilla Pettit, Helen Galland and Jenny Bettensen at Spitalfields City Farm, Sophie Arlow, Christian Wenzel at www.saiga.de, Stacey Iverson & Eve Schaffer at WCN, Paul Hotham & Maria Karlstetter at FFI. We are grateful to Igor Shpilenok – wildlife photographer - who has made a generous input to our saiga photogallery, and Rory McCann, wildlife artist, who has generously contributed an original drawing to the SCA. We are also grateful to the organisations that have supported this issue of the newsletter – Rufford Foundation, WCN, and WWF Mongolia.