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NINA Report

Reintroduction of kulan into the central steppe of Kazakhstan: Field Report for 2017

Petra Kaczensky
John D. C. Linnell
Steffen Zuther
Albert Salemgareyev
Ruslan Doldi

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CLIENTS/SUBSCRIBER CONTACT PERSON(S)

Caterina Boitani caterina.boitani@fondationsegre.org

COVER PICTURE

Kulan entering capture corral, Altyn Emel NP, Kazakhstan © Daniel Rosengren, Frankfurt Zoological Society

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CONTACT DETAILS

NINA head office

P.O.Box 5685 Torgarden
NO-7485 Trondheim
Norway
P: +47 73 80 14 00

NINA Oslo

Gaustadalléen 21
NO-0349 Oslo
Norway
P: +47 73 80 14 00

NINA Tromsø

P.O.Box 6606 Langnes
NO-9296 Tromsø
Norway
P: +47 77 75 04 00

NINA Lillehammer

Vormstuguvegen 40
NO-2624 Lillehammer
Norway
P: +47 73 80 14 00

NINA Bergen:

Thormøhlensgate 55
NO-5006 Bergen.
Norway
P: +47 73 80 14 00

www.nina.no

Abstract

Kaczensky, P., Linnell, J. D. C., Zuther, S., Salemgareyev, A. & Doldin, R. 2018. Reintroduction of kulan into the central steppe of Kazakhstan: Field Report for 2017. NINA Report 1459. Norwegian Institute for Nature Research.

This report summarises field activity during 2017 for the project “Reintroduction of kulan to the central steppes of Kazakhstan”.

(1) In June 2017 the project team visited both the capture site in Altyn Emel National Park and the release site on the Torgai steppe. The objective was to make final preparations for the planned capture and transport of kulan in the autumn. The main activities included planning the location of the capture corral, checking the helicopter and design of transport boxes, and making final adjustments to the acclimatisation enclosures. In addition, meetings were held with the local protected area staff and the central responsible committee in Astana.

(2) A series of interviews were conducted with local residents in the release site to get some insights into their attitudes towards kulan and their reintroduction. These indicated that people were generally positive or neutral to the proposed activities, but identified several areas where it will be necessary to focus our communication. These results were then used to fine-tune an education and outreach campaign primarily aimed at local school children and residents.

(3) A rapid assessment was conducted of kulan status in Barsa Kelmes nature reserve on the former Aral Sea, which also included the collection of faecal samples for genetical analysis. This area represents a potential source of animals for future translocations as well as being important to consider within the context of a national kulan conservation plan.

(4) In October 2017 the project team successfully captured 47 kulan in the capture corral in Altyn Emel. Of these, 12 were immobilised and boxed for transport. Two adult mares were released back into Altyn Emel because of adverse stress reactions. Both animals survived and are contributing valuable data on the ecology of the source population. Out of the 10 that were transported, 1 foal had to be euthanised on arrival. The other 9, 1 stallion, 4 foals and 4 mares, were released into the largest acclimatisation enclosure and are currently doing well, pending their release in spring 2018.

The experience from 2017 has demonstrated that all steps of the process, capture, transport and release into the enclosures work well, and has identified many areas where improvements can be made to procedures for the 2018 transport which will try to transport 16-18 animals.

Petra Kaczensky - Norwegian Institute for Nature Research
petra.kaczensky@nina.no

John D. C. Linnell - Norwegian Institute for Nature Research
john.linnell@nina.no

Steffen Zuther - Association for the Conservation of Biodiversity of Kazakhstan
steffen.zuther@fzs.org

Albert Salemgareyev - Association for the Conservation of Biodiversity of Kazakhstan
albert.salemgareev@acbk.kz

Ruslan Doldin - Association for the Conservation of Biodiversity of Kazakhstan
ruslan.doldin@acbk.kz

Sammendrag

Kaczensky, P., Linnell, J. D. C., Zuther, S., Salemgareyev, A. & Doldin, R. 2018. Reintroduction of kulan into the central steppe of Kazakhstan: Field Report for 2017. NINA Report 1459. Norsk institutt for naturforskning.

Denne rapporten oppsummerer feltaktivitet i 2017 for prosjektet «Gjeninnføring av kulan til Kasakhstans sentrale stepper».

(1) I juni 2017 besøkte prosjektgruppen både fangststedet i Altyn Emel nasjonalpark og utslippssområdet på Torgaisteppe. Målet var å få gjort de siste forberedelsene i forkant av planlagt innfangning og transport av kulan til høsten. Hovedaktivitetene besto i planlegging av fangstinnhegningens plassering, kontroll av helikopter og konstruksjon av transportkasser, samt noen siste justeringer til akklimatiseringsinnhegningen. I tillegg ble det avholdt møter med personale fra det lokale verneområdet og den sentrale ansvarlige komité i Astana.

(2) Det ble gjennomført en serie intervjuer med lokalbefolkningen i utslippssområdet for å få innblikk i holdninger til kulan og gjeninnføring av arten. Intervjuene indikerte at folk generelt sett var positive eller nøytrale til de foreslåtte aktivitetene, men identifiserte en rekke områder hvor det vil være nødvendig å fokusere vår kommunikasjon. Resultatene ble brukt til å finjustere en formidlingskampanje primært fokusert på lokale skolebarn og innbyggere.

(3) Det ble foretatt en rask vurdering av kulanstatus i Barsa Kelmes naturreservat på den tidligere Aralsjøen, som også inkluderte innsamling av avføringsprøver for genetisk analyse. Dette området representerer en potensiell kilde til dyr for fremtidige translokasjoner, samt at det er et viktig område å vurdere innenfor rammen av en nasjonal plan for bevaring av kulan.

(4) I oktober 2017 lyktes prosjektteamet i å fange 47 kulan i fangstinnhegningen i Altyn Emel. Av disse ble 12 individer immobilisert og flyttet inn i kasser for transport. To voksne hunner ble sluppet ut igjen i Altyn Emel på grunn av uønskede stressreaksjoner. Begge individer overlevde og bidrar med verdifulle data om økologien til kildepopulasjonen. Av de 10 dyrene som ble transportert måtte 1 føll avlives ved ankomst. De andre 9, 1 hingst, 4 føll og 4 hopper, ble sluppet ut i den største akklimatiseringsinnhegningen og har det for tiden bra i påvente av utslipp våren 2018.

Erfaringen fra 2017 har vist at alle trinn i prosessen, fangst, transport og utslipp i akklimatiseringsinnhegning, fungerer bra og har indentifisert flere områder hvor prosedyrene kan forbedres for transporten i 2018 som tar sikte på å flytte 16-18 dyr.

Petra Kaczensky - Norwegian Institute for Nature Research
petra.kaczensky@nina.no

John D. C. Linnell - Norwegian Institute for Nature Research
john.linnell@nina.no

Steffen Zuther - Association for the Conservation of Biodiversity of Kazakhstan
steffen.zuther@fzs.org

Albert Salemgareyev - Association for the Conservation of Biodiversity of Kazakhstan
albert.salemgareev@acbk.kz

Ruslan Doldin - Association for the Conservation of Biodiversity of Kazakhstan
ruslan.doldin@acbk.kz

Summary in Kazak

Каченски, П., Линнелл Ж. Д. С., Цутер Ш., Сәлімгереев, А. Р., Долдин, Р. И. 2018 ж. Орталық Қазақстан даласындағы құланның реинтродукциясы: 2017 ж. далалық жұмыс бойынша есеп. NINA Report 1459. Норвег табиғат зерттеулері институты.

Осы есеп 2017 жылғы «Орталық Қазақстан даласындағы құланның реинтродукциясы» жобасы бойынша далалық жұмыстың қысқаша сипаттамасын қамтиды.

(1) 2017 жылдың маусымында жобалау тобы «Алтын Емел» ұлттық саябағына және құландарды еркін жіберуге жоспарланған Торғай даласындағы аймаққа барып қайтты. Сапардың негізгі мақсаты – құландарды аулап, жаңа орынға тасымалдауға байланысты жұмыстың дайындық кезеңін аяқтау болды. Сапар барысында мамандар құландарды аулауға арналған коральдың орналастырылуын жоспарлады, тік ұшақтың техникалық сипаттамасымен танысып, тасымалдау жәшіктерінің конструкциясын тексерді. Сондай-ақ жануарлардың бейімделуіне арналған қашалардың құрылымына енгізілетін өзгерістерді талқылады. Сонымен бірге, ЕҚТА қызметкерлерімен және Астана қаласы орталық жауапты Комитеті мамандарымен кездесулер өткізілді.

(2) Жергілікті тұрғындардың құланға және оны реинтродукциялауға байланысты көзқарасын білу үшін, жануарлар еркін жіберілетін аймақтарға жақын орналасқан елді мекендерде бірқатар сұхбаттар жүргізілді. Зерттеу нәтижесінде халықтың басым бөлігі құландарды реинтродукциялау жобасын қолдайтындығы немесе бейтарап көзқараста екені анықталды. Дегенмен, халық үшін мағызы бар біршама мәселелер айқындалып, оларды алдағы қоғаммен байланыс жұмысы барысында шешу жаспарланды. Сұхбат нәтижелері негізінде біршама ақпараттық-танымдық материалдар дайындалып, жергілікті халық арасында, оның ішінде оқушылар арасында таратылды.

(3) Арал теңізінің маңында орналасқан Барсакелмес қорығындағы құландар популяциясының жағдайыан жедел түрде бағалау жұмысы атқарылды. Зерттеу жұмысы барысында құландардың экскременттері үлгілері жиналып, генетикалық талдауға жіберілді. Құландарды реинтродукциялау жобасын жалғастыруда аталмыш қорықтың мағызы зор – бұл аймақ құландарды табиғаттан алу ауданы ретінде қарастырылуы мүмкін. Оған қоса, құландарды сақтау бойынша ұлттық жоспардың елеулі бөлшегі ретінде қарастырылуы тиіс.

(4) 2017 жылдың қазан айында жоба аясында «Алтын Емел» ұлттық саябағынан 47 құланды сәтті ұсталды. Олардың 12-сі қозғалыссыз күйге келтіріліп, тасымалдау жәшіктеріне енгізілді. Екі ұрғашы құлан қолайсыз күйзеліс халіне түскендіктен, қайта «Алтын Емел» аумағында босатылды, жануардың екеуі де дін аман, құландардың экологиясы жайында маңызды мәліметтер беруде. Құландардың 10 данасы тағайындалған орынға жеткен соң, олардың біреуін (құлын) ұйықтатып тастау қажет болды. Қалған 9-ы (1 еркек, 4 жас және 4 ұрғашы құлан) жергілікті жерге бейімделуге көмектесетін арнайы үлкен қашаға шығарылды. Қазіргі уақытта олардың жағдайы жақсы, 2018 жылы көктемде жабайы табиғатқа жіберу жоспарланған.

2017 жылы іске асырылған құландарды аулау, тасымалдау және арнайы қашаларда ұстау қызметі ойдағыдай өткен, дегенмен жақсартуға боларлық жайттар анықталды. Осы 2018 жылы 16-18 жануарды тасымалдау жоспарланған.

Summary in Russian

Каченски, П., Линнелл Ж. Д. С., Цутер Ш., Салемгареев, А. Р., Долдин, Р. И. 2018г. Реинтродукция кулана в степи центрального Казахстана: Отчет по полевой работе 2017г. NINA Report 1459. Норвежский институт природных исследований.

Настоящий отчет содержит краткое описание полевой работы по проекту «Реинтродукция кулана в центральные степи Казахстана» в течение 2017 года.

(1) В июне 2017 года проектная команда посетила место отлова в национальном парке Алтын Эмель, а также место выпуска в тургайской степи. Цель состояла в том, чтобы завершить подготовку к запланированному отлову и транспортировке куланов осенью. Основные мероприятия включали планирование расположения кораля для отлова, проверку вертолета и конструкции транспортных ящиков, а также обсуждение последних корректировок акклиматизационных загонов. Кроме того, были проведены встречи с сотрудниками ООПТ и с центральным ответственным комитетом в г. Астана.

(2) Ряд интервью был проведен с местными жителями в районе выпуска, чтобы получить представление об их отношении к кулану и его реинтродукции. По результатам было выявлено, что люди в целом относятся позитивно или нейтрально к предлагаемым мероприятиям, однако было определено несколько важных вопросов, в которых необходимо сосредоточить нашу связь с общественностью. В последующем, результаты были использованы для усовершенствования образовательной и информационно-пропагандистской кампании, ориентированной в основном на местных школьников и жителей.

(3) Проведена быстрая оценка состояния популяции куланов в заповеднике Барсакелмес, расположенном возле бывшего Аральского моря, которая помимо всего прочего включала в себя сбор образцов экскрементов для генетического анализа. Данная территория представляет собой потенциальное место изъятия животных для будущих работ по реинтродукции, а также имеет важное значение для рассмотрения ее в контексте национального плана по сохранению куланов.

(4) В октябре 2017 года проектная команда успешно отловила 47 куланов в Алтын-Эмеле, с использованием кораля. Из них 12 были обездвигены и помещены в транспортные ящики. Две взрослые самки были выпущены обратно в Алтын-Эмель из-за неблагоприятных стрессовых реакций. Обе самки живы и предоставляют ценные данные об экологии популяции-источника животных. По прибытии из 10 привезенных особей было необходимо усыпить 1 молодую особь (жеребенка). Остальные 9 (1 самец, 4 молодые особи и 4 самки) были выпущены в большой акклиматизационный загон, в настоящее время они находятся в хорошем состоянии, ожидая выпуска в дикую природу весной 2018 года.

Опыт 2017 года показал, что все этапы процесса отлова, транспортировки и выпуска в загоны хорошо работают, однако был выявлен ряд процедур, которые можно улучшить в 2018 году, когда планируется транспортировка 16-18 животных.

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Foreword

After more than two years of planning 2017 saw the first steps taken in the reintroduction of kulan to central Kazakhstan. In October, the project team successfully managed to translocate 9 animals from Altyn Emel National Park to the central Torgai steppes. This pilot year was basically a proof of concept and a field test of all steps of the process. As a result, the first kulan in more than a century are currently grazing the steppes of central Kazakhstan. A reintroduction is a massive logistical task that would not have been possible without the hard work of a large number of people and the funding provided by several organisations.

Field work in Barsa Kelmes would not have been possible without the support of Sergey Sklyarenko (ACBK). The Barsa Kelmes NR staff offered support, discussions and hospitality. Director Zauresh Alimbetova made this trip possible and memorable. Vice director Gaukharbek Satekeyev was a wonderful guide. Arman Zhylkaydarov added his mammal experience, Arman Zhylkaydarov helped bridge the language barrier, Fatima Anessova and Meirambek Kuatov lent a helping hand whenever needed, and Bolatbek Satekeyev drove with great skill.

Nicolas Lescureux (CNRS, Montpellier) conducted the field work for the human dimensions survey, assisted in the field by Meirzhan Baïtas (Nazarbayev University). Mukhit Suttibayev (ACBK) developed the information materials and was assisted in the field by Saltanat Kamiyeva.

Veterinary support was provided by Chris Walzer (Vetmeduni Vienna and Wildlife Conservation Society), Nikolaus Huber (Vetmeduni Vienna), Thierry Petit (La Palmyre Zoo) and Sanatana-Eirini Soilemetzidou (Leibniz Institute for Zoo and Wildlife Research). Markus Schmidbauer, Paul Hien and Daniel Rosengren shared their video and photo documentation of our activity.

During capture, Alexandr Putillin, Roman Alexandrovich, Talgat Kisebayev, and Baurzhan Iskakov (from ACBK) provided invaluable practical assistance. Vitaly Levonov constructed the capture corral. From Altyn Emel national park vice directors Daniyar G. Turgambayev and Galym Akhmetbekov, and head ranger Murat Sydygaliev, provided invaluable assistance with kulan capture, assisted by state rangers Kaisar S. Tushkenov, B.R. Agmanov, E.A. Aypeisov, and A.A. Gridchin from the State Enterprise "Okhotzoo". Two veterinary interns, Diana Gigla and Natalia Petrova, remained behind to monitor the kulan during the Kazak winter. The crew of the Mi-26 helicopter deserve a special thanks for the careful transport of their exotic cargo across those many hundreds of kilometres of steppe.

Funding was mainly provided by Fondation Segré and Nuremberg Zoo, with valuable additional funds provided by the Friends of the Nuremberg Zoo Foundation, Wrocław Zoo, and the Wrocław Zoo Foundation.

We are grateful to them all for making this project succeed.

This report is intended as both a documentation of the 2017 activity, as feedback to our funders, and as general information to a broad public interested in the progress of this project.

January 2018
Petra Kaczinsky & John Linnell

1 Background

Asiatic wild ass, or kulan (*Equus hemionus*), were once a key species in the assemblage of large herbivores (along with saiga antelope, several gazelle species and wild horses) that ranged the Eurasian steppes, stretching from the eastern shores of the Mediterranean to Mongolia. Overhunting and habitat conversion decimated their populations and nowadays they can only be found on less than 3% of their historic global distribution range.

While it is still possible to see large herds of kulan in the Gobi Desert of Mongolia, the species only persist in tiny fragments in the rest of Central Asia. The end of the USSR resulted in dramatic socio-economic changes in the region. While some of these changes have been negative for species conservation, e.g. through the breakdown of management structures that prevented overhunting, others such as large scale rural-urban migration of the human population have created new opportunities for landscape-level biodiversity conservation and species recovery.

In Kazakhstan, large parts of the central steppe – an area equal to the size of France – have become almost devoid of people and livestock. This situation has created the rare opportunity for landscape-level biodiversity conservation and species recovery in a steppe ecosystem. In 2005, the Altyn Dala Conservation Initiative (ADCI) was initiated: A large-scale joint initiative of the Association for the Conservation of Biodiversity of Kazakhstan (ACBK), the Committee of Forestry and Wildlife (CFW) of the Ministry of Agriculture of the Republic of Kazakhstan and international partners. The ADCI aims to conserve and recover nationally and internationally important flagship species and their habitats in the steppe and semi desert zones of Kazakhstan.

This project links into the ADCI vision and aims to 1) Re-establish kulan as part of the large herbivore assemblage on the Torgai steppe, 2) Double the range of kulan in Central Asia, 3) Significantly increase the global population, 4) Provide a catalyst for kulan and Przewalski's horse conservation actions across the region. The project involves a cooperation between several international partners (Norwegian Institute for Nature Research, Royal Society for the Protection of Birds, Nuremberg Zoo, Frankfurt Zoological Society) and a Kazakh NGO (Association for the Conservation of Biodiversity of Kazakhstan). Veterinary support is provided by the Research Institute of Wildlife Ecology, University of Veterinary Medicine, Vienna, Austria and the Wildlife Conservation Society (WCS). Population genetics support is provided by the Molecular Zoology Unit, Technical University of Munich (TUM), Germany.

In the initial project phase, we plan to capture 32-36 kulan in Altyn Emel National Park in south-eastern Kazakhstan and airlift them to the Torgai steppe using a large transport helicopter. There, kulan will be initially held in two large acclimatization enclosures ("soft release") to familiarize them with the new environment and suppress excessive dispersal. The release site is strategically located in a network of protected areas and ecological corridors covering 40,000 km². Adult kulan will be released with GPS-Iridium collars to allow post-release monitoring. Post-release monitoring will be integrated in ongoing monitoring and patrolling routines by protected area and state rangers. For more details see Kaczensky et al. 2017 (<http://www.nina.no/english/Research/KULANSTEP>).

2 June planning trip

2.1 Reintroduction site in the Torgai steppe

We conducted a planning trip from 2-8 June 2017 (Table 1). The team consisted of Petra Kaczensky, John Linnell (NINA), Dag Enke, Max Reinhard (Nuremburg Zoo), and Steffen Zuther, Albert Salemgareyev, and Ruslan Doldin (ACBK). The aim was to inspect the field station and acclimatisation facilities at Alibi in the Torgai steppe and make suggestions for improvements based on the combined expertise on captive and wild ungulates of the team (Fig. 1).

On the way back to Astana, we visited the administration of State nature reservat "Altyn Dala" in Amangeldy. Here we gave a presentation about the kulan reintroduction project to representatives of both Irgiz-Turgaiskiy and Altyn Dala reservat. Back in Astana, a similar meeting was organized with the Committee of Forestry and Wildlife.



Fig. 1: Site inspection (top from left to right: Albert Salemgareyev, Ruslan Doldin, Steffen Zuther, Max Reinhard, Dag Enke) at Alibi. Photos: Petra Kaczensky

2.2 Capture site in Altyn Emel National Park

In Almaty, we met with Vitaliy F. Levanov and Sergey V. Sokolov of LLP Okhotprojekt at ACBK office to discuss past capture experiences and make plans for the October capture. Vitaliy F. Levanov will be responsible for building the capture corral and organize the kulan night drives into the corral.

We also inspected the MI-26 helicopter at Burundai airport in Almaty. We measured the loading space and discussed the loading and transport options with the technical staff. The helicopter has an effective loading space of 10.5 x 2.73m, plus 17 folding seats on each side and a loading

capacity of ~20 tonnes. Based on these measurements we concluded that it is possible to fit 16-18 boxes.

We also inspected a prototype of the kulan transport box. However, the design deviated from the measurements provided by Nuremberg Zoo and it was decided to build the boxes in Karaganda under ACBK's close supervision.

In Altyn Emel National Park (NP) we met with the National Park director Kalyk O. Bayadilov and vice-directors Daniyar G. Turgambayev (Tourism & Science) and Galym Akhmetbekov (Management & Patrolling) to discuss the details of the kulan capture in October. We visited the sites where previous corrals were situated and decided on a new location near the Zhantogai ranger post in the western part of the NP. The location is outside the core area (where there are restrictions on building structures and helicopter landing) and within the region where kulan are most frequently seen in autumn. The last afternoon / evening was used to plan and discuss capture logistics in detail (Fig. 2). Following the planning trip, Petra Kaczensky travelled to Barsa Kelmes state nature reserve.

Table 1: Planning trip June 2017.

Date	Activity	Participants
01.06.2017	Departure of Dag and Max from Germany	
02.06.2017	<ul style="list-style-type: none"> • Arrival in Astana of Dag/Max • Departure from Astana by car with Ruslan and Albert • Overnight stay in Arkalyk • Departure of Petra/John from Norway 	Petra, John, Dag, Max, Ruslan, Albert
03.06.2017	<ul style="list-style-type: none"> • Arrival in Astana of Petra/John • Departure from Astana by car with Steffen • Overnight stay in hotel in Arkalyk • Dag, Max, Ruslan and Albert continue trip to Alibi, arrival late afternoon/evening 	Petra, John, Dag, Max, Ruslan, Albert, Steffen
04.06.2017	<ul style="list-style-type: none"> • Dag, Max, Ruslan and Albert work at the reintroduction center • Petra, John, and Steffen continue trip to Alibi, arrival in the afternoon 	Petra, John, Dag, Max, Ruslan, Albert, Steffen
05.06.2017	Work at the reintroduction center	Petra, John, Dag, Max, Ruslan, Albert, Steffen
06.06.2017	Work at the reintroduction center	Petra, John, Dag, Max, Ruslan, Albert, Steffen
07.06.2017	<ul style="list-style-type: none"> • Departure in the morning towards Amangeldy for meeting with representatives of the Irgiz-Turgaiskiy and "Altyn Dala" reservat • Overnight stay in Arkalyk 	Petra, John, Dag, Max, Ruslan, Albert, Steffen
08.06.2017	Travel to Astana, arrival in the afternoon	Petra, John, Dag, Max, Ruslan, Albert, Steffen
09.06.2017	<ul style="list-style-type: none"> • Meeting with the Committee of Forestry and Wildlife • Planning meeting at ACBK office • Dag returns to Germany 	Petra, John, Dag, Max, Ruslan, Albert, Steffen, Vera, Ramasan (joining in office)
10.06.2017	<ul style="list-style-type: none"> • Departure to Almaty • Inspection of transport box and helicopter • Discussion of capture and transport in ACBK's Almaty office 	Petra, John, Max, Ruslan, Albert, Steffen, Vitaliy Levanov, Sergey Sklyarenko, Sergey Sokolov (joining in the office)
11.06.2017	<ul style="list-style-type: none"> • Max leaves to Germany • Meeting with director of National Park "Altyn Emel" 	Petra, John, Ruslan, Albert, Steffen, Sergey Sklyarenko
12.-15.06.2017	Visit of National Park "Altyn Emel" for planning of kulan capture	Petra, John, Ruslan, Albert, Steffen, Vitaliy Levanov, Sergey Sklyarenko
16.06.2017	<ul style="list-style-type: none"> • flexible day • Albert and Ruslan leave towards Astana 	Petra, John, Ruslan, Albert
17.06.2017	John departs to Norway Petra departs to Barsa Kelmes State nature reserve	John, Petra



Fig. 2: Top: Habitat near the new corral location; Bottom: Discussing capture logistics for October 2017, from left: Vitaly Levanov, Ruslan Doldin, John Linnell, and Steffen Zuther. Photos: Petra Kaczensky

3 Kulan situation in Barsa Kelmes protected area

3.1 Background

In Kazakhstan, Asiatic wild ass or kulan (*Equus hemionus*) became extinct in the 1930s, because of overhunting and competition with livestock. Between 1953-1963 a total of 19 kulan were transported from Turkmenistan to Barsa Kelmes Nature Reserve, a former island in the Aral Sea (Fig. 3), to reestablish the species in Kazakhstan. The population grew and animals from Barsa Kelmes were subsequently transported to other regions in Kazakhstan (Kaczensky et al. 2016a).

Today, kulan are present in Kazakhstan in three locations:

- (1) Barsa-Kelmes Nature Reserve with an estimated population of >500 individuals.
- (2) In Altyn Emel National Park with an estimated population of >3,000 individuals.
- (3) Some additional kulan are also present in the Andassay Sanctuary, from reintroduction attempts during the last decades, but the status of this population is currently unknown.

The aim of this field trip was twofold:

- 1) Obtain a rapid, first-hand assessment of the kulan situation in Barsa Kelmes Nature Reserve for the IUCN Red list (Kaczensky et al. 2015, 2016b) and the Convention of Migratory Species' (CMS) Central Asian Mammals Initiative (CAMI; <http://www.cms.int/cami/>).
- 2) Explore the potential for cooperation on kulan conservation in Kazakhstan, particularly within the framework of the planned kulan reintroduction to the Torgai steppe in the Altyn Dala region of central Kazakhstan (Kaczensky et al. 2017).

3.2 Field logistics

Petra Kaczensky visited Barsa Kelmes protected area and the surrounding for a 5-day period in June 2017, including a short field trip to Kaskakulan and Uzynkair islands (Table 1, Fig. 1). The field trip was kindly organized by director Zauresh Alimbetova and her scientific staff which joined the field trip (Table 2).

Table 2: Itinerary of the trip.

Date	Activity
19.06.2017	Arrival Aralsk, briefing with director Zauresh Alimbetova, leaving for Zhanakulani (overnight)
20.06.2017	Arrival Kaskakulan, kulan observations and scat sampling, discussions with team (overnight)
21.06.2017	Khulan observations and scat sampling, meeting with rangers, drive to Uzynkair (kulan winter habitat), and Karateren (overnight)
22.06.2017	Drive to north Aral Sea, Kokaral and dam, back to Aral (overnight)
23.06.2017	Debriefing with director Zauresh Alimbetova, discussion and information exchange with team, departure

Table 2: Team on the field trip.

Name	Position	Affiliation
Gaukharbek Satekeyev	Vice-director	Barsa Kelmes
Arman Zhylkaydarov	Scientific staff - Senior scientist for mammals	Barsa Kelmes
Alma Yessenova	Scientific staff – Ecologist, PR & Education	Barsa Kelmes
Fatima Anessova	Scientific staff	Barsa Kelmes
Meirambek Kumatov	Scientific staff	Barsa Kelmes
Bolatbek Satekeyev	Driver	Barsa Kelmes
Petra Kaczensky	Scientist	NINA / FIWI

3.3 Barsa Kelmes Nature Reserve

Barsa Kelmes Nature Reserve (NR) is located in the Kyzylorda Region of Kazakhstan and was initially established in 1939 as a wildlife refuge on the former island of Barsa Kelmes (meaning “Land of No Return”). With the increasing drying up of the Aral Sea, Barsa Kelmes ceased to be an island in the early 2000s (<http://aralsea.kz/history-of-the-aral-sea/>; <http://sometimes-interesting.com/2014/11/23/the-disappearing-aral-sea/>). In 2006, the NR was expanded to its current size of 1,601 km². The NR now consists of two parts, the first part being the former island of Barsa Kelmes and the second part being part of the dry seafloor and areas including the former islands of Kaskakulan and Uzynkair (Fig. 1). In 2016 Barsa Kelmes was designated for inclusion in the World Network of Biosphere Reserves with Barsa Kelmes NR forming the core area (<http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/biosphere-reserves/asia-and-the-pacific/kazakhstan/barsakelmes/>). The NR currently aims to add a third part to their territory which would include the Syr Darya river delta close to the North Aral Sea dam, which is of high importance for bird and fish conservation, and has a high potential for nature-based tourism (Fig. 3).

Vegetation in Barsa Kelmes NR is dominated by Chenopodiaceae, Brassicaceae, and Poaceae. Typical and widespread species are black Saxaul (*Haloxylon ammodendron*, Synonym *Haloxylon aphyllum*), *Anabasis salsa*, and *Artemisia terrae-albae*. Ungulates, namely kulan, goitered gazelles (*Gazella subgutturosa*) and saiga (*Saiga tatarica*), have always been of special conservation concern for the reserve. During our trip in June 2017, we visited the second part of Barsa Kelmes NR, staying one night at Kaskakulan (Fig. 3).

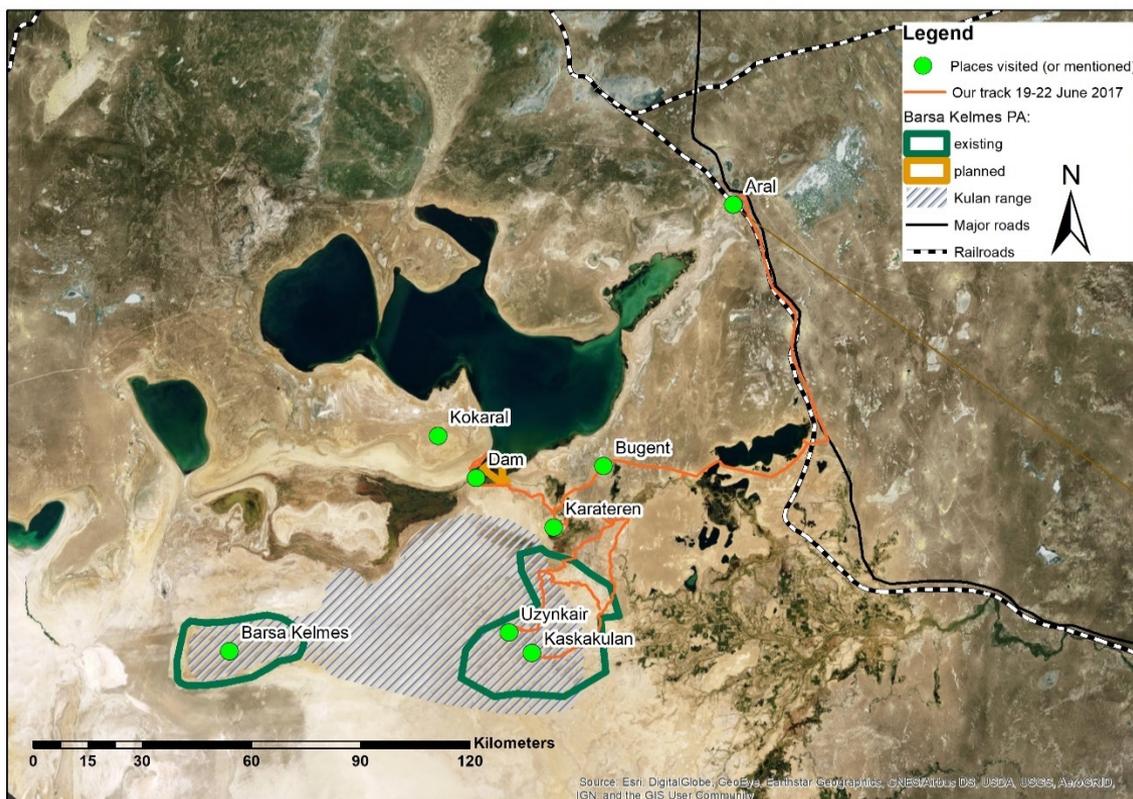


Fig. 3: Barsa Kelmes NR and travel route in June 2017. The map shows the current boundaries of the protected area (PA), the areas proposed for extension, and the current range of kulan in the area.

3.4 Kulan situation

3.4.1 Distribution

In the past, ungulates living on Barsa Kelmes island had access to the Aral Sea for drinking. With the drying and increasing salinization of the remaining Aral Sea this water source was lost and kulan and other water dependent wildlife left the former island (alternative water sources are >80 km away).

The former island of Kaskakulan, on the other hand, has an artesian spring that provides surface water at two locations ca. 700m apart (a third one has stopped flowing in winter 2017). Kaskakulan currently represents the core of the kulan distribution in Barsa Kelmes NR, though kulan also use parts of the dry seafloor and Uzynkair island (Fig. 3). Barsa Kelmes island and other areas far from water are primarily used in winter when snow covers the ground and provides an alternative water source. To the north of the second part of the NR, there is a large lake (south of Karateren) which is also used by kulan for drinking (G. Satekeyev pers. comm.). The kulan population in and around Barsa Kelmes NR is currently estimated to roam over ~3,500 km² (Fig. 3).

3.4.2 Kulan population development

Kulan were reintroduced to Barsa Kelmes island between 1953-1963. The population grew to about 200 by the early 1980s, when the island ceased to be an island and when the water situation started to become a problem. Some of the kulan were captured and transported off the island for reintroduction elsewhere and the remaining animals dispersed towards the former islands of Kaskakulan and Uzynkair. Between 1985 and 2005, their population was believed to fluctuate between 250 to 330 animals, but has been increasing in recent years (Bannikov 1967, Pavlov 1996, Denzau and Denzau 1999, Baydavletov 2015, Barsa Kelmes NR unpubl. data; Fig. 4, Table 3).

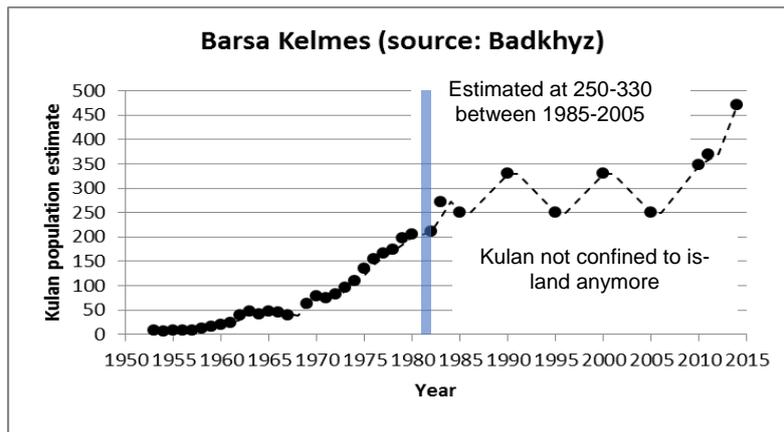


Fig. 4. Population history of Barsa Kelmes. The dashed line show the moving average to the available population estimates. The Blue bar depict periods when kulan were captured for reintroductions to Altyn Emel.

The NR currently conducts kulan counts twice a year, one in early summer (Figs. 4 & 5) and one in autumn. The autumn count is the one used for the annual population estimate (A. Yessenova pers. comm.). The NR has 15 rangers which are responsible for controlling and monitoring. During the counts, the rangers drive along pre-defined routes counting all kulan groups encountered and sum up the numbers for a total estimate. The estimates for recent years show an increasing trend, with the latest from 2016 suggesting a population of 518 kulan. The count data suggests that the population is currently increasing by an average 6% annually (Table 3).



Fig. 5: Rangers at the "cordon" (ranger station) near Kaskakulan getting ready for the early summer count in June 2017.

Table 3: Total counts of kulan in Barsa Kelmes Nature Reserve (Barsa Kelmes NR, unpubl. Data).

Year / Species	2012	2013	2014	2015	2016
Kulan	408	440	471	490	518

We observed several large groups of kulan at Kaskakulan (the largest numbering ~150 individuals, including females with foals), but encountered additional animals and kulan dung along our track to Uzynkair island (Fig. 6). Spotting and counting kulan is difficult as most of the area is covered by black saxaul bushes (Figs. 7 & 8), often reaching 1.5m or higher, and there are very few overview points. To the west of the former Uzynkair island, large areas are covered by sand and are only accessible on horseback. From the cemetery at Kaskakulan, which is located on a low hill, we saw groups of at least 80 kulan in one direction, 20 in another direction, and 20 more in a third direction and more animals spread out in the landscape behind these more “discrete” groups on 20 June. The next day (21 June) Gaukharbek and Kaczensky approached a group of about 150 kulan in the morning (Figs. 7 & 8), but more kulan “were seen and heard around dawn near the spring, some 2 kilometers away. There may also have been a second large group of kulan – as the one that was approached was resting in a depression which probably was not visible from the cemetery hill.

From observations, there were at least 200 kulan in the proximity of the track taken. Given the low visibility, the difficult access to the area, and the fact that we only covered a small portion of the area, the current estimate of >500 kulan for the entire Barsa Kelmes NR is not unrealistic.

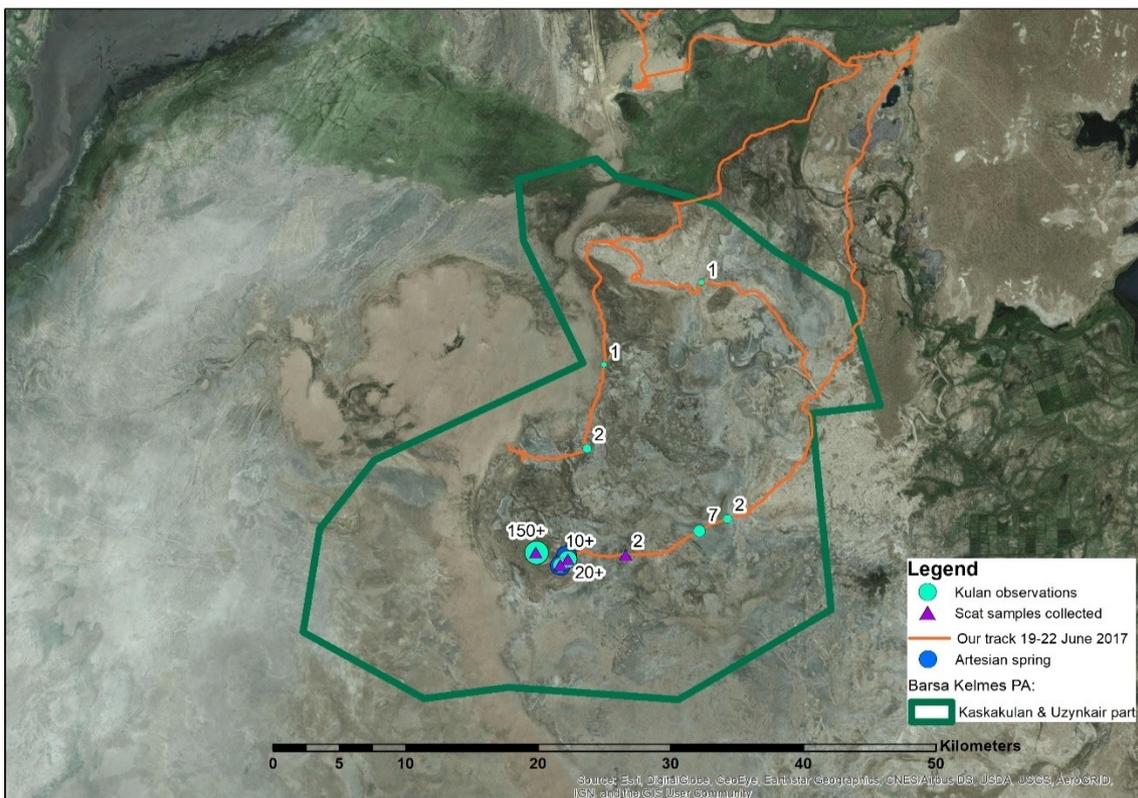


Fig. 6: Location and minimum number of kulan seen and location of scat samples collected along our track in June 2017.



Fig. 7: Part of a large group of kulan seen on 21 June 2017 illustrating the difficulty of seeing and counting kulan even in relative open saxaul stands. Photo: Petra Kaczensky



Fig. 8: Overview image of most of the same group as in previous image, but seen from a slightly elevated vantage point. The group includes multiple mares with foals. Photo: Petra Kaczensky

3.5 Collection of genetic samples

Genetic analysis of samples from Altyn Emel NP within a comparative framework with adjacent populations in Turkmenistan, Iran, and Mongolia, suggests that the reintroduced population in Altyn Emel has retained most of the original genetic variability found in the source population in Badkhyz NR, Turkmenistan. As Barsa Kelmes was the source for Altyn Emel, we were interested to also assess their population genetic status (Kaczensky et al. unpubl. data). Having been the source for the Altyn Emel population, one would expect a high level of genetic variability, which may be complementary to the animals in Altyn Emel. However, given the population's history of having remained at relatively low population size (numbering only in the few hundreds, rather than thousands as in Altyn Emel), the population may well show reduced genetic variability and/or signs of drift. To assess genetic diversity, also in respect as a complementary source of animals for future reintroductions, we collected 30 scat samples (Fig. 9) for subsequent analysis at the laboratory of Prof. Ralph Kuehn, Unit of Molecular Zoology, Chair of Zoology, Department of Ecology and Ecosystem Management, Technische Universitaet Muenchen, Germany.



Fig. 9: Scat samples of kulan from Barsa Kelmes. Photo: Petra Kaczensky

3.6 Public perception

Kulan appear to be well known and generally liked by local people. Local school children have a great interest to do term papers on kulan and children would like to see the animals (A. Yessenova pers. comm.). There seem to be no conflicts between kulan and local people as kulan remain largely confined to the protected area.

Kaskakulan is an old name from the times before kulan were reintroduced to Barsa Kelmes and there is an old legend about the presence of a kulan with a white star on its forehead on the former island (A. Yessenova pers. comm.). There are also other place names with “kulan” in the region which are a reminder of their presence in the region before their extirpation (Z. Alimbetova pers. comm.).

Despite the positive trend in number, there seems little evidence of an expansion of the population into the surrounding of the protected area. Being “wild donkeys” Islamic Kazakh people believe that they should not eat kulan, though this remains somewhat of a religious grey zone (Linnell et al. 2016), and likely some people do illegally kill kulan for sport and meat.

Around Kaskakulan we did not find any recent evidence of illegal hunting. Furthermore, kulan were relatively relaxed about us, even allowing us to walk relatively close to a large group including females and foals. Obviously, the management of the nature reserve is doing an excellent job at protecting the species within its borders.

4 Human dimension survey: first results

4.1 Fieldwork session

Field work was conducted by Nicolas Lescureux (CNRS, Center for Functional and Evolutionary Ecology (CEFE), Montpellier, France) and Meirzhan Baïtas (Nazarbayev University, Astana, Kazakhstan) from 5th to 11th May in the area show in Fig. 10. In total of 35 people were interviewed. Because of the short time frame, it was not possible to really build relationships and trust with the respondents. As such this does not constitute an in-depth study, and there may be some biases, but it does provide some broad insight into general issues.

4.2 Results in brief

It appears that people are rather positive about the reintroduction of kulan and Przewalski's horses. People we interviewed are used to deal with domestic horses and they don't see any harm in having wild horses and/or wild asses coming back to their regions.

However, it is not sure that the purpose of the project and the nature of reintroduced animals are understood in the way expected by the reintroduction project. Indeed, some answers seem to indicate that the reintroduced animals can be perceived almost as domestic animals which will be owned and kept by the project, with potentially the same goal as for domestic animals, i.e. producing milk and meat. Process and aims of the project probably have to be clarified in communication campaigns. In addition, it appears that Przewalski's horses are less well known than kulan and that communication is needed on Przewalski's horses, their origin, status and the goal of their reintroduction.

The main concerns about the reintroduction project appear to be linked with drought and potential shortages in grass, which could imply competition between domestic animals and wild animals for pastures and/or water. This is notably the case for *Akkol* and *Karasu* villages.

The future of these villages also appears as a concern, considering an apparently ongoing rural abandonment process. Potentially, a reintroduction project that contributed to the develop of these villages and assisted with infrastructure developments (roads and equipment for water storage and distribution) would really help develop partnerships between villagers and conservation actions.

In the entire survey area, livestock production is generally perceived as the only possible economic activity and appears to be increasing. Therefore, potential competition between livestock and wild animals for both grass and water should be considered as a potential area of conflict.

Tourism is not perceived as a potential economic opportunity for the future, even if some people mentioned it in *Akkol* and *Karasu* notably for fishing tourism and people visiting hot springs. If tourism is to be developed, it could be linked with development of local infrastructures as mentioned above.

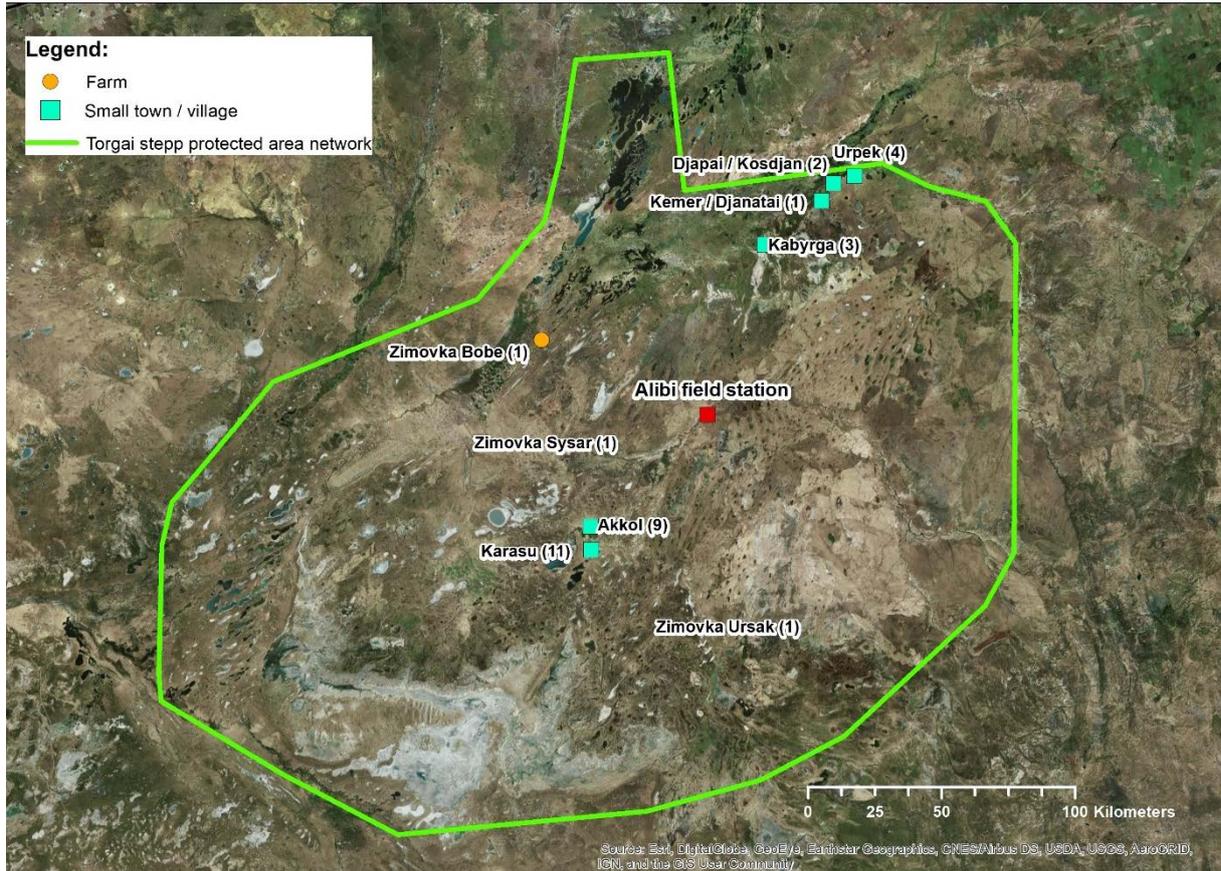


Fig 10: Interview locations (Number of interviews in brackets) in the Torgai steppe.

5 Public outreach

5.1 Print material

Mukhit Suttibayev (ACBK) developed a set of information material giving basic information about kulan and the kulan reintroduction project. The new material consists of 1 poster on kulan, 1 poster on the food web of the steppe, 1 kulan fact sheet, 1 kulan booklet, and a kulan comic (Fig. 11).



Fig. 11: New public outreach materials on kulan.

5.2 Public outreach work

From 17-24 September, Mukhit Suttibayev (ACBK) and intern Saltanat Kamiyeva visited the Torgai steppe with the “Kulan Mobile” (a bus). They visited 6 villages in the area, where Mukhit gave presentations for adults and organized kulan activity days at local schools (Fig. 12).

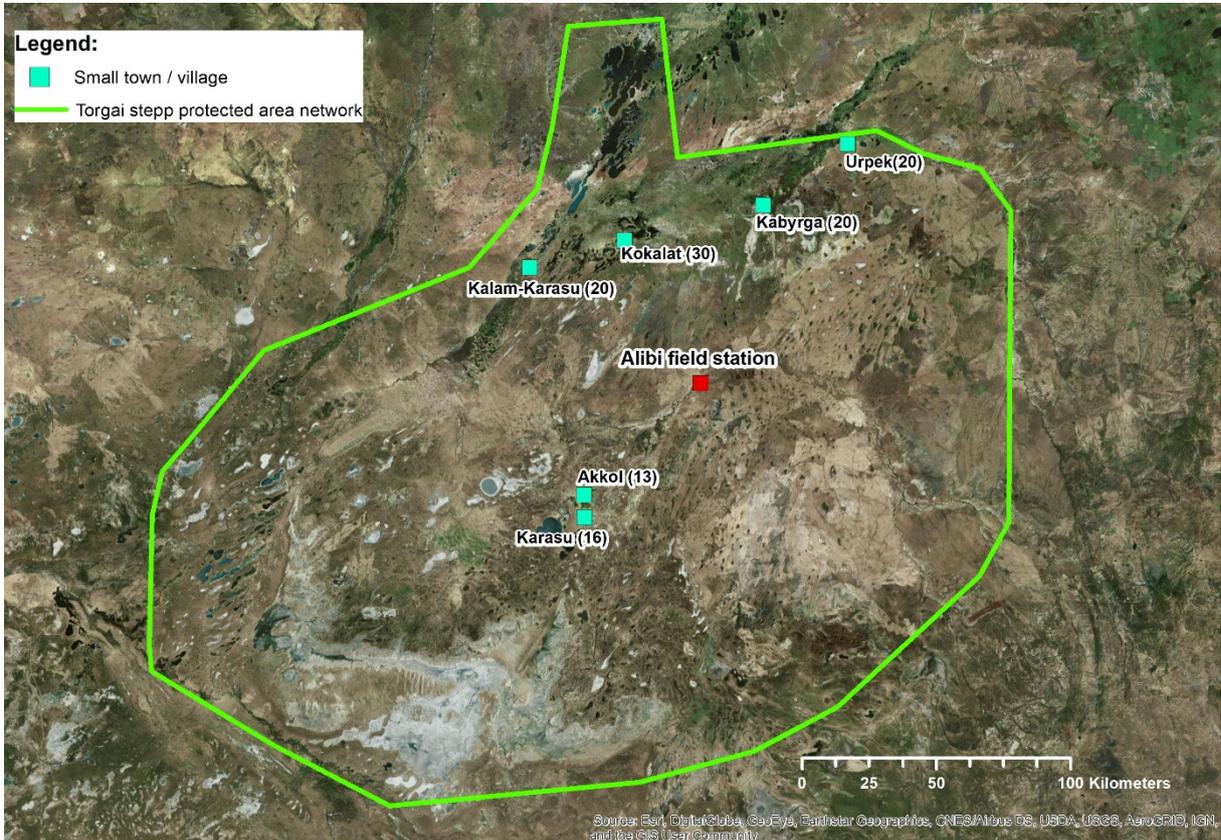


Fig. 12: Villages visited with the “Kulan mobil” in September 2017 (number of adults visiting presentations in brackets).

In total, 116 adults attended the talks and ~500 school children participated in the kulan activity days (Fig. 13). In addition, a group of 13 children from Akkol were given the opportunity to participate in a field trip to the Altybai ranger station which is surrounded by quite a unique landscape with a mosaic of steppe, river, fresh water ponds, and salt lakes (Fig. 13).



Fig. 13: Top: “Kulan mobile”; Middle: Children during “kulan activity” at school; Bottom: at a salt lake near Altybai during a short field trip with a small group of 13 pupils from Akkol. Photos: Mukhit Suttibayev & Saltanat Kamiyeva

6 Kulan capture & transport

6.1 The team

Kulan capture and transport work happened from 11-25 October 2017 in three phases: preparatory phase (11-18 October), capture phase (19-22 October), handling phase (23 October), and transport phase (24 October).

The core capture team included:

- Coordination and logistics: Petra Kaczensky, John Linnell (NINA), Ruslan Doldin, Steffen Zuther, Albert Salemgareyev, Alexandr Putillin, Roman Alexandrovich, Talgat Kisebayev, and Baurzhan Iskakov (ACBK), Saltanat Kamiyeva (intern and translation).
- Capture corral construction and kulan night drive organiser: Vitaly Levanov
- Veterinary expertise: Chris Walzer (Research Institute of Wildlife Ecology, University of Veterinary Medicine, Vienna (FIWI / Vetmed) & Wildlife Conservation Society (WCS)), Thierry Petit (La Palmyre Zoo), Nikolaus Huber (FIWI / Vetmed), Sanatana-Eirini Soilemetzidou (Leibniz Institute for Zoo and Wildlife Research (IZW)).
- Documentation: Markus Schmidbauer & Paul Hien (video filming), Daniel Rosengren (still photography, Frankfurt Zoological Society (FZS))

The wider capture team additionally included representatives of local and regional organizations:

- Altyn Emel National Park: vice directors Daniyar G. Turgambayev & Galym Akhmetbekov, head ranger Murat Sydygaliev
- Oblast branch of the Committee of Forestry and Wildlife (CFW) of the Ministry of Agriculture of Kazakhstan for Almaty oblast: Roman S. Korshunov,
- State Enterprise "Okhotzooptom" (state rangers): Kaiser S. Tushkenov, B.R. Agmanov, E.A. Aypeisov, and A.A. Gridchin
- Research Institute for Problems of Biological Safety: Syrym Kopeyev
- Almaty branch of National Veterinary Reference Center: B.D. Aytzhanov
- Veterinary station of the Basshi municipality: A. Amandos

6.2 Preparatory phase

The preparatory phase included test loading of the helicopter at Burundai airport in Almaty, improving and finalizing the transport boxes and the capture corral, and briefing of the immediate and wider kulan capture team (Fig 14).

The final corral consisted of three parts: a large capture part, a smaller holding and darting part, and a handling pen (Fig. 15). This upgraded design was chosen to allow for the possibility of capturing successive groups of kulan as well as to facilitate darting and handling



Fig. 14: Top left: Test loading of boxes. Top right: finishing transport boxes. Bottom left: Constructing a water point in the corral. Bottom right: covering the capture corral with opaque material. Photos: Top: Petra Kaczensky, Bottom left: John Linnell, Bottom right: Albert Salemgareyev

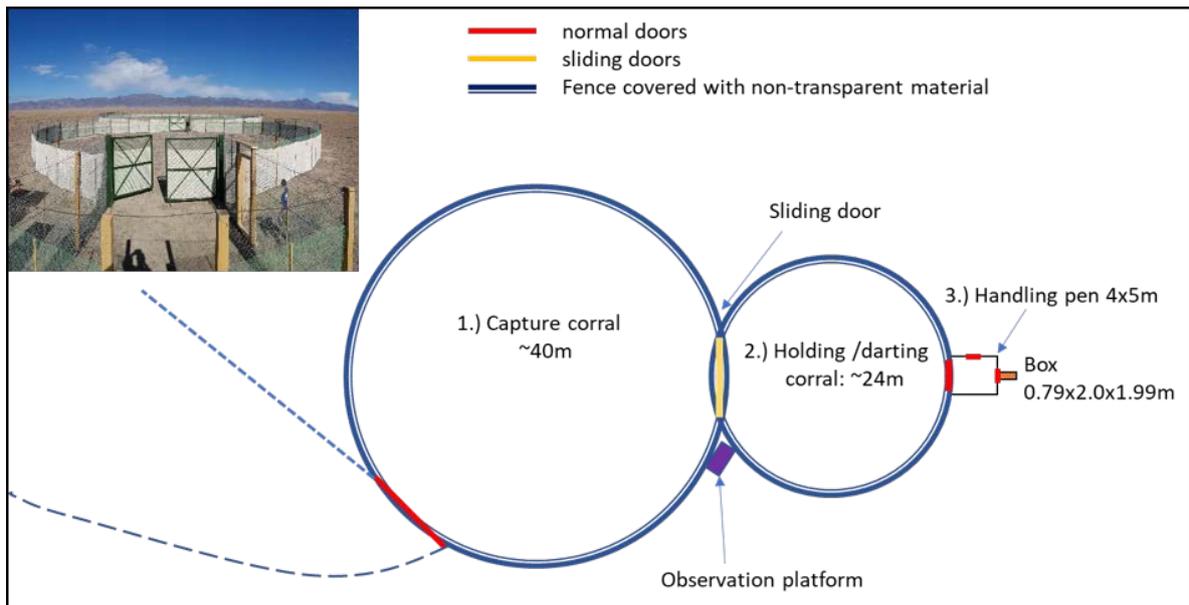


Fig. 15: Upgraded design of the new 2017 capture corral. Photo: Petra Kaczensky

6.3 Capture phase

The kulan capture was organized by Vitaly Levanov together with Altyn Emel National park and followed the method outlined in Levanov et al. (2013). Multiple vehicles were positioned at strategic locations along the anticipated drive route, but only three cars did the actual drive using strong hand-held spot-lights. The lights create a “light-fence” which allows the guiding of the kulan towards the guiding fence of the corral. It took us four capture attempts, of which two were successful, to capture one group of 11 and a second group of 42 kulan, respectively.

The 1st capture attempt was made on 19 October, but failed due to technical problems and an overall lack of coordination caused by malfunctioning walkie-talkies and a team that had never worked together. The 2nd capture attempt was done on 20 October and resulted in a group of ~100 kulan being driven up to 20m from the entrance gate of the capture corral. However, something spooked the animals at the very last moment and they turned around and escaped. The 3rd capture attempt on 21 October was successful, but because of the difficult terrain a large part of the original group could break away before reaching the corral; out of a group of ~100 kulan, only 11 (6 mares and 5 foals) were captured. The 4th capture attempt on 22 October managed to drive 42 kulan out of a group of ~70 into the capture corral (Fig. 16).



Fig. 16: The second group of 42 kulan being driven into the capture corral. Photo: Daniel Rosengren

The first group captured the previous night, and held in the smaller “holding corral” section, was closely observed during the second drive and remained calm throughout the drive despite the disturbance. The two groups were kept separately (the 1st group in the smaller “holding corral”, the 2nd group in the larger “capture corral”) as we wanted to move all animals from the first group (which consisted of matching mares and foals), but only wanted some additional animals from the second group, particularly stallions (Fig. 17).

Upon arrival in the corral, kulan immediately stopped running (Fig. 18) and within 15 min inspected the hay, and drank from the water points. None of the animals had any serious injuries,

besides the occasional cuts and bruises. All animals seemed in good health and none had obviously poor body condition. Kulan reacted to people walking or approaching the corral mainly by slowly moving to the opposite end (Fig. 19). In general, their reaction was stronger to unexpected sudden movements or noises, than towards continuous presence or noise.



Fig. 17: First and second group of 11 and 42 kulan, respectively, in the “capture corral” and the “handling corral” just before handling. Photo: DJI drone image NINA



Fig. 18: Second group of 42 kulan immediately after having been driven into the capture corral. Photo: Petra Kaczensky



Fig. 19: First group of 11 kulan showing reaction to human presence around corral. Photo: Chris Walzer

6.4 Handling phase

Handling started in the morning of 23 October and anaesthesia followed protocols described for wild equids previously (Walzer et al. 2007a&b, Walzer 2014). Kulan were additionally given long-lasting neuroleptics (Perphenazine and Haloperidol) to calm them down during transport and the initial release phase.

Kulan were darted by Chris Walzer and Thierry Petit in the “holding corral” and walked out once the drug had taken enough effect to allow approaching and touching the animal (Fig. 20). Once in the handling section, samples were taken (hair, blood, nasal & rectal swabs), each animal received numbered ear-tags, and the fully-grown individuals were fitted with GPS-Iridium collars. Subsequently, animals were placed facing the transport box, given an antidote, and upon partial recovery were guided into the transport box (Fig. 20). Handling – from darting to boxing – took on average 15 min (range: 10-22 min). Two of the boxed mares started to get very distressed within 4 hours of boxing, and we eventually decided to release them back into Altyn Emel NP, rather than attempt to transport them. Both mares were wearing GPS-Iridium collars allowing the monitoring of their whereabouts (see: 6. Post-release monitoring).

Unstable weather conditions in northern Kazakhstan resulted in a delayed start of handling, as it was not sure in the early morning whether the helicopter would be able to fly on the 24 October. We only received the “go” at 10:00. Furthermore, the problems with the two mares in the box required veterinary attention and the release back into Altyn Emel NP caused rather extensive discussions with the wider capture team, all resulting in further delays. As a consequence, we started to run out of daylight. For safety reasons, we decided to restrict the first transport to the 5 mares and 4 foals in the boxes and 1 stallion selected out of the second group in the last daylight. In summary, we handled and boxed 13 kulan of which we released 2, leaving us with 10 kulan for transport (Table 4). Of the 10 kulan for transport, the four adult mares were equipped

with GPS-Iridium collars. The stallion was still young and likely to increase in body size and thus did not receive a collar, nor did the foals which were only about ¾ of the size of adults.

All remaining kulan in the capture corral were immediately released once handling stopped, which was less than 24 hours after their initial capture.



Fig. 20: Kulan handling from darting, walking out the animal, sampling and collaring, to boxing. Photos: Top: Albert Salemgareyev, Bottom left: Daniel Rosengren, Bottom right: Petra Kaczensky

Table 4: Kulan handled and boxed in Altyn Emel NP on 23 October 2017 and their successive fates. Drop date is the pre-programmed date for the collar drop-offs, ear-tags are described with both number and colour, and “box” refers to the box number during transport.

Date	Number	Sex	Age	Collar Number	Foal	Drop date	Eartag left	Color	Box	Darted	Fate
23.10.2017	1	Female	7	14	Foal 9 or 10	20.10.2020	1	blue	7	10:17	Released
23.10.2017	2	Female	10	7	Foal 9 or 10	20.10.2020	2	blue	16	10:58	Released
23.10.2017	3	Female	7	5	Foal 8	20.10.2020	3	blue	8	11:25	Transported
23.10.2017	4	Female	7	17	Foal 7	20.10.2018	4	blue	17	11:55	Transported
23.10.2017	5	Female	6	4	Foal 11	20.10.2020	5	blue	11	12:30	Transported
23.10.2017	6	Female	5	9	No foal	20.10.2020	6	blue	12	12:57	Transported
23.10.2017	7	Female	0.5				7	blue	4	13:58	Transported
23.10.2017	8	Male	0.5				8	blue	5	14:23	Transported
23.10.2017	9	Male	0.5				9	blue	3	15:08	Euthanized
23.10.2017	10	Female	0.5						2	15:30	Transported
23.10.2017	11	Male	0.5				11	blue	1	16:30	Transported
23.10.2017	12	Male	3				12	blue	18	18:00	Transported

Leukocyte Coping Capacity (LCC) measurements from blood samples were run on site by Nikolaus Huber. LCC values reflect the overall ability to cope with stress and provides an integrated perspective on the effects of stress rather than being just one of its constituent mediators (McLaren et al. 2003; Huber et al. 2017). Raw values showed a greatly reduced LCC reaction in the two agitated mares released from the boxes as compared to the other kulan, suggesting higher stress levels in these two animals (Fig. 21). Further analysis is pending, but the on-site analysis may have a high potential to identify kulan likely to have a “high risk” of developing problems due to a lower capacity to physiologically cope with the situation of capture, anaesthesia and transport.

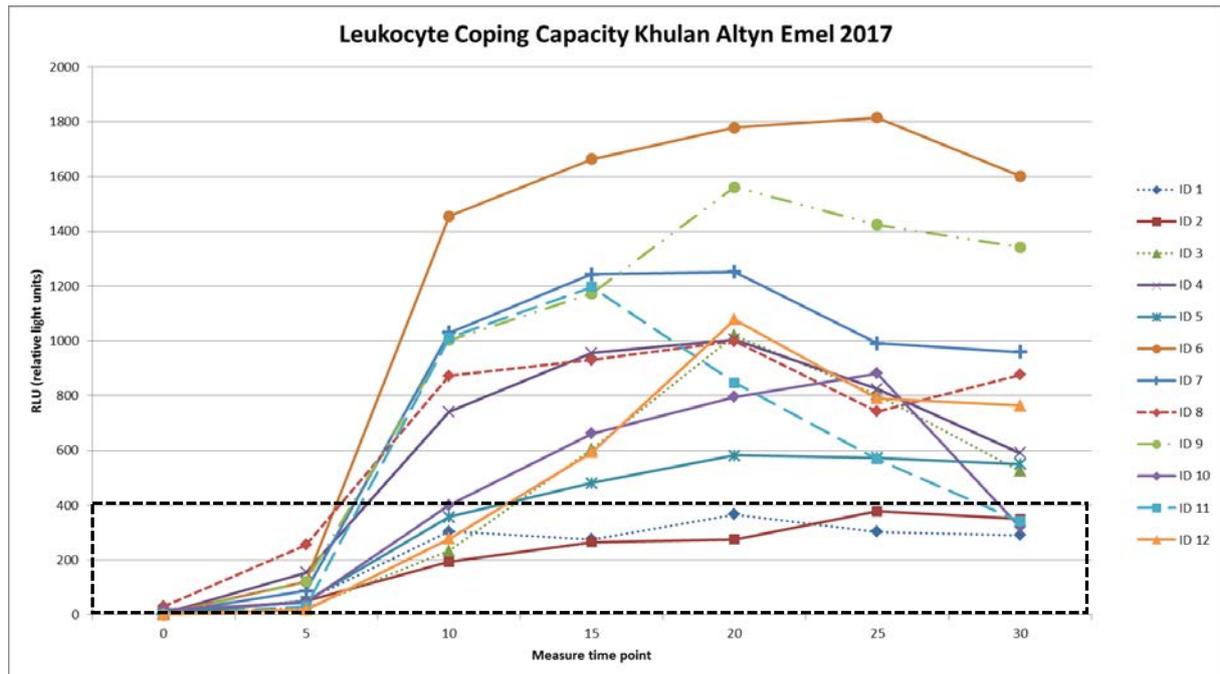


Fig. 21: Raw Leukocyte Coping Capacity (LCC) values for the 13 kulan handled and boxed on 23 October 2017. The two animals within the dotted outline were the two mares too agitated to be transported – their values were well below those of the other animals suggesting higher stress levels.

6.5 Transport phase

The MI-26 transport helicopter arrived on 23 October in the afternoon. The helicopter crew consisted of Talgat Tazhikbayev and Vladimir Rozhkov (pilots in command), Zhaslan Akzholtai (second pilot), Askar Tuleuzhanov (navigator), Ravil Galiev (board engineer), Viktor Revyakin, M. Bakirov (board operators), and G. Nusipov, A. Itahunov, A. Cymbalistov, D. Islamov, E. Zhumadilov (technical staff).

Kulan in the corral and boxes did not react much to the considerable noise of the approaching and landing helicopter. Loading the helicopter started at 05:30 the next morning and was completed by sunrise at 07:15 (Fig. 22). Boxed kulan remained calm during loading, flight, and the two refuelling stops in Balkhash and Zhezkazgan. The total travel time was 9 hours (6 hours flying and 3 hours re-fuelling stops), the distance covered was 1300 km (Fig. 23).



Fig. 22: Loading boxes and box arrangement inside the helicopter. Photos: Petra Kaczensky

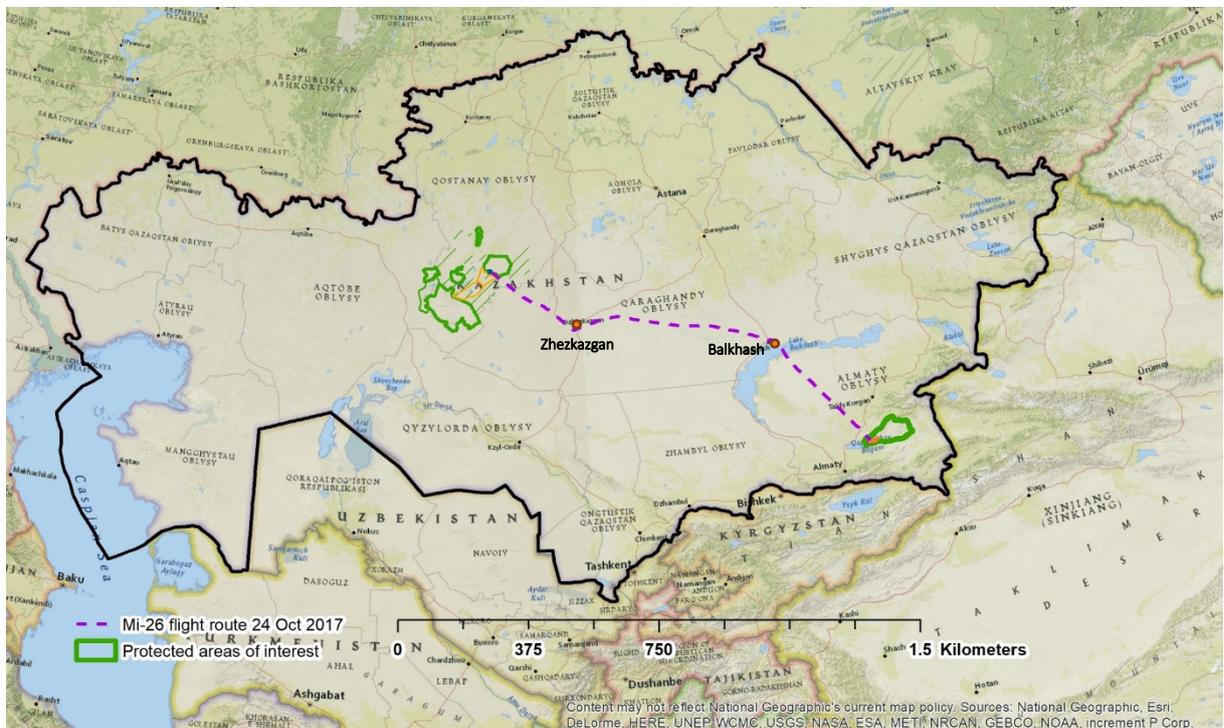


Fig. 23: Flight route (GPS log) from Altyń Emel NP to the Alibi field station in the Torgai steppe protected area network.

Upon arrival in Alibi, the team was met by M.K. Baydildin (Kostanay regional inspection of the CFW), D.A. Nasarov (Kostanay regional inspection of the CFW), Batikhan Kh.-A. Saduakasov (director of Altyń Dala State Nature Reservat), Sayat Mukhtarov, Aidar Erzhanov, Gani Sadvakasov, Kishkentai Ordabayev, Kaiyrzhan Zhusupbekov (ACBK), and veterinary interns Di-ana Gigla (University of Veterinary Medicine, Vienna) and Natalia Petrova (Moscow State Academy of Veterinary Medicine).

Unfortunately, a male foal (kulan #9) had to be euthanized for animal welfare reasons. The foal became agitated and laid down in the transport box at Altyń Emel, but because of its small size

we could adjust its position which calmed it down. During the night, the animal again became agitated and was given a sedative (Detomidine). Upon arrival in Alibi, its condition had deteriorated to a point where recovery seemed unlikely. To spare the animal from suffering it was euthanized.

The other nine animals were transferred by tractor & trailer to the larger of the two acclimatisation enclosures (55 ha). As we had transported a group with only one adult stallion, there was no need to split the group, so only one enclosure was used. Once the boxes were in the enclosure, kulan were released one after the other. All animals were calm upon release and started grazing in front of all the people present at the release (Fig. 24).

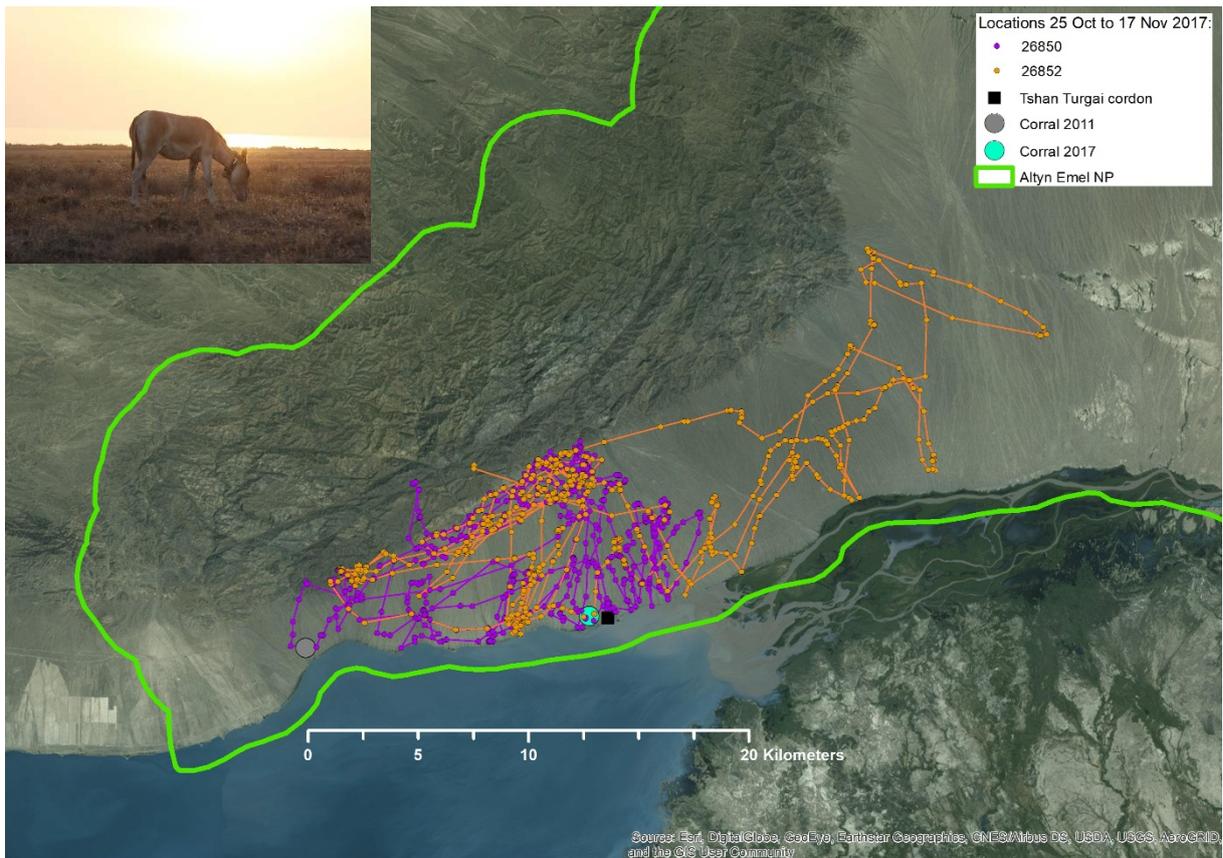


Fig. 24: Transfer of boxes to the large acclimatisation enclosure and release of animals. The calm behaviour and lack of fear of people is the consequence of long-acting neuroleptics. Photos: Top left: Petra Kaczensky, Top right: Daniel Rosengren, Bottom: John Linnell.

7 Post release monitoring

7.1 Released mares in Altyn Emel NP

The two mares in Altyn Emel seem to have recovered from the distress they showed in the transport boxes prior to their release. They have since remained in the vicinity of the capture corral, where we had seen multiple groups of kulan during our stay in Altyn Emel. The mares move between pastures on the plains and rivers or springs at the base of the mountains in the north and the Kapchgay reservoir in the south (Fig. 25). They met occasionally and stayed together for a few hours, but then separated again and move independently – a pattern consistent with a fission-fusion social structure.



*Fig. 25: GPS locations (at 1-hour intervals) of the two mares released back into Altyn Emel NP.
Photo: Saltanat Kamiyeva*

7.2 Reintroduced kulan in the acclimatisation enclosure

Monitoring in the enclosure at Alibi (Fig. 26) on the Torgai steppe is being done by veterinary interns Diana Gigla and Natalia Petrova together with the station's caretakers. The interns plan to stay until the kulan are released, supported by the station's caretakers which are on a 15-day roster schedule, and Ruslan Doldin.

Numbered ear-tags and IDs on radio-collars allow for individual identification of kulan (Fig. 27). Binoculars and a spotting scope allow observations from a certain distance.

Monitoring in the enclosure includes:

- Daily morning checks for kulan presence and well-being
- Daily behavioural observations (individual time budgets)
- Daily protocols on feeding and watering regime
- Daily protocol on the ice and mud situation of the oxbow lake within the enclosure
- Daily protocols on rain/snow events
- Weekly protocols on body condition
- Opportunistic checking of the shelter for use by kulan
- Weekly fence controls

In addition, the interns collect faecal samples of individual kulan:

- Weekly for subsequent analysis of hormone levels (pregnancy and stress level) by Franz Schwarzenberger at the Unit for Physiology, Pathophysiology and Experimental Endocrinology, University of Veterinary Medicine Vienna, Austria
- Every two weeks for parasite analysis at the field laboratory in Alibi using the McMaster Counting Technique, Larval culture, Passive Sedimentation, and the Baermann-Wetzel larval migration method following instructions and training received by Barbara Hinney at the Institute of Parasitology, University for Veterinary Medicine Vienna, Austria

Until the end of November 2017, kulan appear to have settled nicely in the enclosure, not making any attempts to escape. They are feeding entirely on the natural vegetation, but within 3 days started to use the concrete trough where water is provided daily for drinking.

Until the end of November 2017, kulan showed no intention of escaping from the enclosure. They have not touched the hay provided, but rather feed on the still abundant standing vegetation (Fig. 27). They started drinking from the concrete troughs after a few days, probably to avoid the unstable shore of the oxbow lake which due an unusually wet autumn consists of soft, deep mud (Fig. 28). Camera trapping has confirmed repeated use of both the troughs and the lake as water sources (Fig. 29).

The kulan largely move as one group mostly lead by the largest mare. With increasing time, more "solo" movements of certain mares have become more apparent. Kulan have quickly adapted to the daily monitoring routine and do not react much to the presence of observers at distances of ~100m.

GPS locations confirm that the kulan are exploring the whole enclosure, but seem to prefer the eastern edge and the area near the main gate. The small spatial extent of the enclosure also provides an interesting opportunity to test collar accuracy – which falsely show multiple locations outside the enclosure (Fig. 30).



Fig. 26: Top: Research station at Alibi (the enclosure and heap of winter hay is visible in the back), Bottom: Inside the acclimatisation enclosure. Photos: Petra Kaczensky



Fig. 27: Kulan in acclimatisation enclosure. Photo: Daniel Rosengren



Fig. 28: Daily checking of the oxbow lake (we tried to stabilize the shoreline with reed mats where kulan tracks suggested use). Photo: Petra Kaczensky



Fig. 29: Daily provisioning of water in concrete drinking troughs and camera trapping image confirming use. Photos: Left: Petra Kaczensky; Right: Camera trap Diana Gliga.

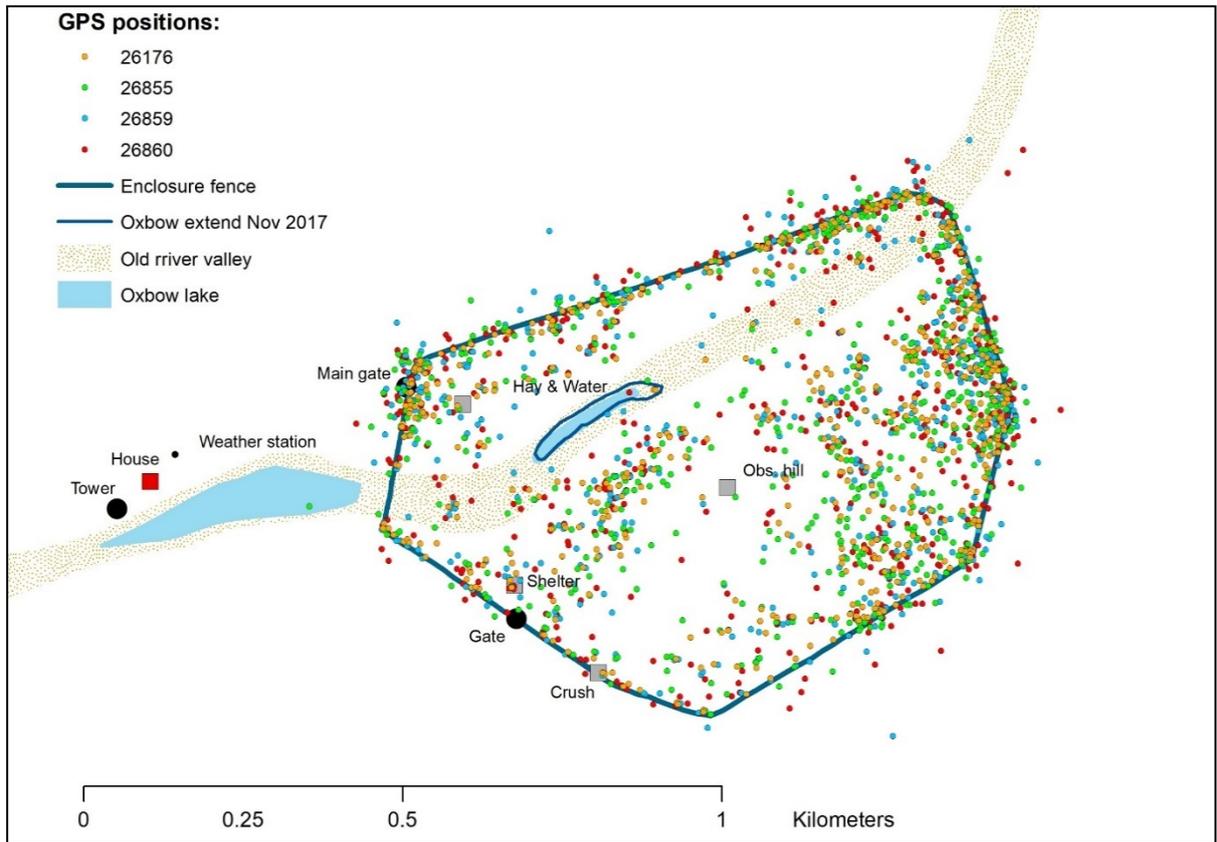


Fig. 30: Hourly GPS locations of the four collared mares in the 55 ha acclimatisation enclosure.

8 Lessons learned

The 2017 experience was a successful proof of concept for the capture, transport, and release of animals into enclosures stages of the project. The plan is to repeat the process in 2018, aiming for 16-18 animals. The 2017 experience has identified many areas where we can make small improvements to the process. The most important are listed below;

(1) Improvements to the capture corral, including a better and more opaque material to cover the netting, a better light to guide the chase vehicles to the end of the fences during night-time drives, and better protection from wind and rain in the area where animals are

(2) Improvement of the floors of the transport boxes. The weakest part was the rubber floor material which came unstuck due to animal movements and caused some animals additional distress on top of being in a confined space. Also, we need to find a way to accommodate foals of different sizes so as to limit their movements in the boxes and re-design the head compartment, mainly making it longer and closing the sides off.

(3) More attention paid to adverse stress reactions when animals have been boxed. We shall review the veterinary procedures and drug mixtures, and develop protocols to facilitate more rapid releasing of animals showing adverse reactions before transport. The potential to use the leucocyte coping capacity as a real-time test of adverse reaction will be further evaluated.

(4) Adjustments need to be made to the acclimatisation enclosures with respect to the access to water in the ox-bow lakes to avoid the potentially dangerous situation of the mudbanks. Options include stabilisation of the substrate or fencing.

(5) In addition, an alternative water source needs to be established for cold periods without snow to allow kulan 24 hour access to liquid water. We will explore the use of large insulated and solar heated troughs used for free-ranging livestock in winter.

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10 Annex 1. Information materials produced for the project

«АЛТЫН ДАЛА» ТАБИҒАТ ҚОРҒАУ БАСТАМАСЫ

СЕРІКТЕСТЕР

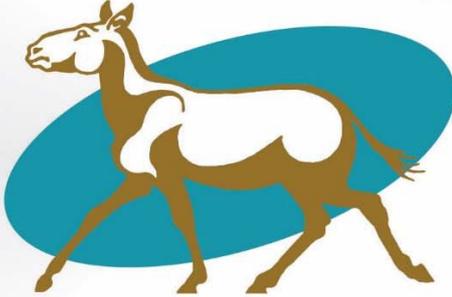


ДЕМЕУШІЛЕР





ФОТО: «ОХОТЗООПРОМ "ӨБ" РМҚК»



**ҚҰЛАНДЫ ТАРИХИ МЕКЕНІНЕ
ҚАЙТАРУ ЖОБАСЫ**

ҚҰЛАН

(*Equus hemionus*)



ҚҰЛАН – ДАЛАЛЫ ЖӘНЕ ЖАРТЫЛАЙ ШИП ДАЛАЛЫ АЙМАҚТАРДЫ МЕКЕНДЕЙТІН ЖАБАЙЫ ЖЫЛҚЫ ТЕКТЕС ЖАНУАР. СЫРТҚЫ КЕЛБЕТІ БЕККЕ ҰҚСАС. ЖЫЛҚЫҒА ҚАРАҒАНДА ҚҰЛАНДЫ ҚОЛҒА ҮЙРЕТУ МҮМКІН ЕМЕС. ТҮСІ - САРҒЫШ-ҚОШҚЫЛ. ҚҰЛАҚТАРЫ ҰЗЫН, ЖАЛЫ ҚЫСҚА ӘРІ ТІК. КӨРЕКТЕНУДЕ ШИП ТАЛҒАМАЙТЫН. ҚОҢЫС АУДАРУШЫ ЖАНУАР. ТАРЕМДІК ТОП ҚҰРМАЙДЫ.

ҚАЗАҚСТАННЫҢ ҚЫЗЫЛ КИТАБЫНА ЖӘНЕ ХАЛЫҚАРАЛЫҚ ТАБИҒАТ ҚОРҒАУ ОДАҒЫНЫҢ ҚЫЗЫЛ ТІЗІМІНЕ «ҚАТЕР ТӨНГЕН» МӘРТЕБЕСİNДЕ ЕНГЕН.



Е

ҚҰЛАН - ЗЕРЕК, БАТІЛ ДАМ, СЫНМАС БЕСІГЕ БІТЕ ВЕС. ҚҰЛАН КЕЛІШ ОДАҚТЫ ҚЫЗЫҚТАУАР ЖАНУАР

Е

ОДАҚТЫ КӨРГҮ ЕСТУ ИС КІЗУ ҚАЛЫПТІ ЖАҚСЫ ДАМБЫҒАН ЖАҚСЫ ЖҮЗЕДІ

Е

КҮЛЕНУАҚАТЫ - МАҢЫР-ШОҒЕ 11 МА САЗАҒА ҰАЛЫҒЫН КӨЛІН СӨЗІРЕ КҮЛІН САЗАҒА

Е

ОДАҚ БІЕ ҚАҚТЫ ЖІНЕ ТІБІЛДІ. КҮНІНЕ 16-20 МИ ЖҮРЕДІ ШАБҮ КЕЗІНДЕ ЖІЛДІЛАМБЫҒА БІТІН КҮЛ САЗА КЕЗІДЕ СІЗІМ САЗА ДІБІН АСТЕДІ

Е

БҮ ТҮРІН КЕЛЕТІН ДЕРІН ОҒАЙ ӨТЕ ДАЛДЫ. БІДІ СІЗІМ САЗАҒА ЖЕРІН СӨЗІРЕТ. ТІБІ СІЗІМ ДІБІНІ ТІ. ЖАРҒА БІТІСІЗ ҚАРҒЫС. 70% ДІБІНІ ТЕНІСТЕН ТҮСЕ ДІДАДЫ

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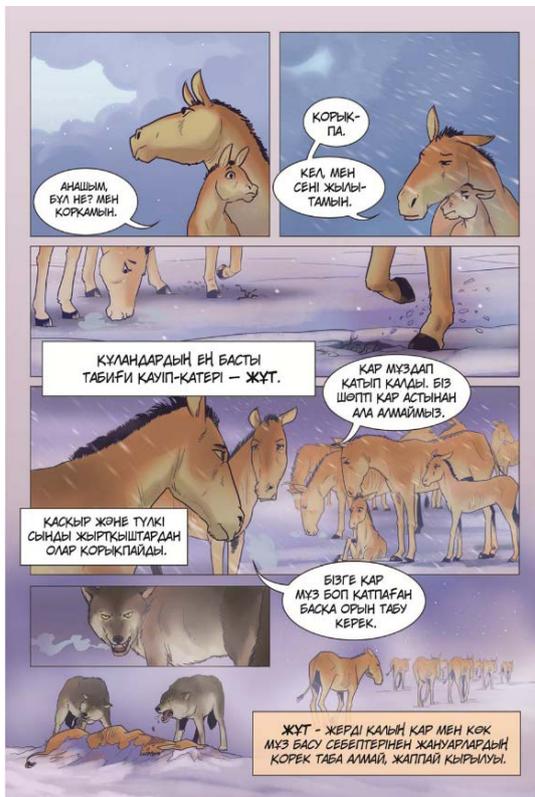
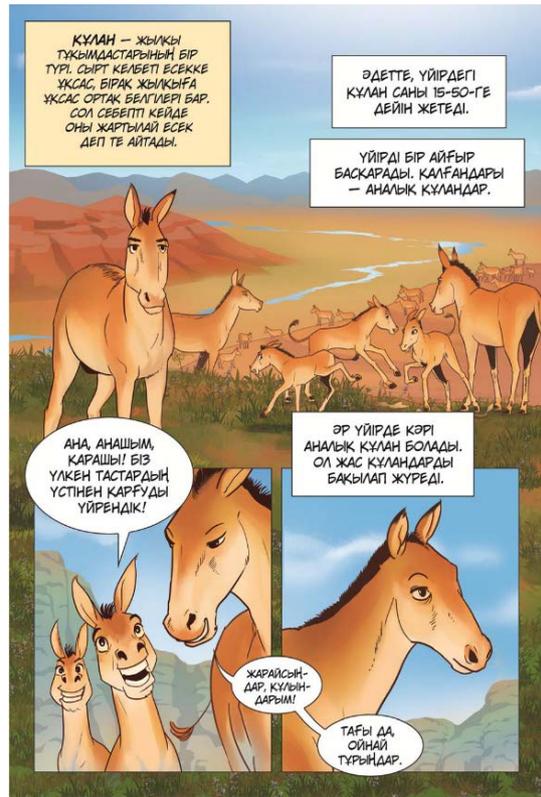
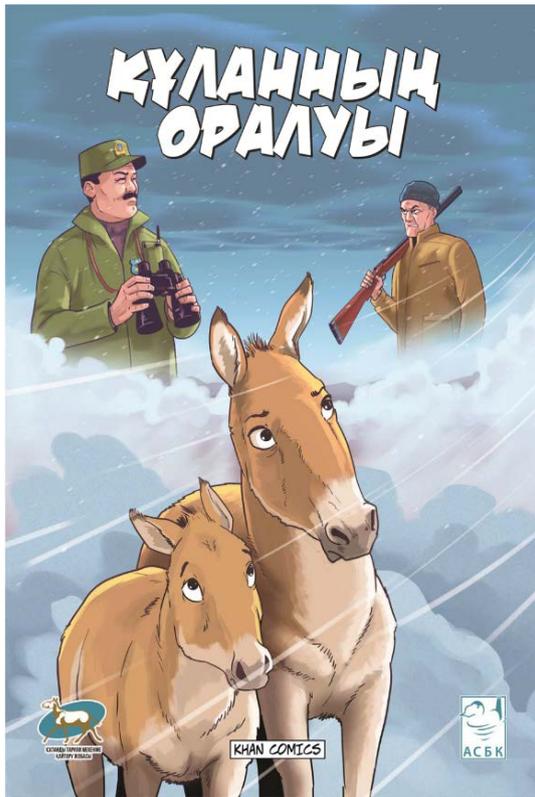
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ҚЫСТА ЗОСЫН ТЕРЕДІККЕ ДЕРІН ҚАЛДЫ ТЕРБІНІ КӨЗІН ТАСАЛТ ЖЕДІ

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Астана қ-сы, Бейбітшілік к-сы, 18 үй, 406 кеңсе
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Norwegian Institute for Nature Research

NINA head office

Postal address: P.O. Box 5685 Torgarden,
NO-7485 Trondheim, NORWAY

Visiting address: Høgskoleringen 9, 7034 Trondheim

Phone: +47 73 80 14 00

E-mail: firmapost@nina.no

Organization Number: 9500 37 687

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