Final Evaluation Report

Your Details	
Full Name	Bizhanova Nazerke
Project Title	Population and conservation status of the Turkestan lynx (*Lynx lynx isabellina* Blyth, 1847) in the Kazakh part of the Northern Tien Shan
Application ID	29126-1
Grant Amount	£5,500
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Date of this Report	13th of February, 2021

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Analytical review				We have analysed all the literary sources and data of the Institute of Zoology (reports, archives, field diaries, etc.) on the distribution and diet of the Turkestan lynx in the past, from the 1930s to the 2000s. According to the analysis, the Turkestan lynx was confirmed to be a very rare species within all northern Tien Shan. Currently, within the project area, the lynx populations in the Ile-Alatau and Kungey Alatau Mountains are relatively the most stable due to the fact that their habitats are located in protected areas (PAs) (Almaty Nature Reserve, Ile-Alatau National Park, Kolsai Kolderi National Park). Regarding diet, there are two main prey: tolai-hare and roe deer. In the gorges where the hare populations are scarce, the main prey becomes the roe deer.
Determining the distribution of the Turkestan lynx in the Northern Tien Shan Mountains				For a reliable assessment of the distribution of the lynx, we used the data obtained by our research group since 2013 (overall, for 7 years). Compared to sporadic studies in 2013, we obtained several times more data in 2020 due to more systematic research and an increase in the number of camera traps, thanks to the start of this project and collaboration with PAs. In total, 74 camera traps were used. We have confirmed that the lynx occupies almost all large gorges of the northern Tien Shan and has relatively stable populations in the Ile-Alatau and Kungey Alatau. Among the other ridges of the northern Tien Shan (Terskey

				Alatau and Uzynkara), which went beyond our project, we confirmed the presence of lynx as a result of short field studies.
Assessing the effect of prey base and feeding habits on the patterns of lynx's movement, daily and seasonal activity				We analysed the data from camera traps on the occurrence of lynx and the main prey (including data we collected since 2013). With a sampling effort of 8,278 camera-days, we obtained 383 frames, with independent captures of lynx (n = 53) and its prey base – of tolai-hare (n = 96), roe deer (n = 39), Siberian ibex (n = 91), wild boar (n = 28), red deer (n = 64), red squirrel (n = 90). During route surveys in the lynx habitats, data on the prey were also collected (registration of tracks and visual observations, recording of the lynx hunting the roe deer). There is some overlap in the altitude and spatial distribution, as well as daily activities of the lynx and its prey base, in particular, of tolai-hare and roe deer. The lynx occupies mostly middle part of the forest belt (1500-2500 m above sea level – 66,6% of occurrences). Depending on the season, the prey that mostly occupy different habitats and altitude ranges and have different activity peaks compared to those of the lynx, make up less percent of the lynx's diet.
Study of interspecific competition between lynx and other carnivores				We obtained data on other large carnivores of the northern Tien Shan (distribution, habitats, diet and rhythms of activity), which can be enemies or competitors for the lynx (wolf, snow leopard, brown bear, fox etc.). It has been determined that most large carnivores (in particular, wolf and snow leopard) share the same habitats and their diet is relatively similar. In the near future, we plan to continue working in this direction in order to assess the competitive relationship between them.

Identification and evaluation of the impact of major threats, and preparation of recommendations for the conservation of the Turkestan lynx in the mountains of the Northern Tien Shan based on this first year				The major threats are habitat degradation and fragmentation, winters with heavy snow, poaching, loss of prey base, conflict with livestock farmers (retaliatory killing due to livestock depredation). Degradation and fragmentation of the lynx habitat is observed near the metropolis of Almaty due to urbanisation (the city border expands in the mountain direction from year to year) and the construction of various infrastructure in the mountains for the tourism industry. Based on the results obtained, the following main recommendations were proposed for the protection of lynx habitats: • creating a protected area with a reserve regime in the mountains of Uzynkara (Ketmen) and Terskey Alatau in the near future. • increasing the area of existing PAs in the Kazakh part of the Northern Tien Shan by 1190 km^2 by expanding the Almaty reserve by 275 km^2 (+ 38%), the Ile-Alatau National Park by 455 km^2 (+ 23%), the Kolsai Kolderi National Park by 460 km^2 (+ 28%). • creating a network of ecological corridors between the existing PAs of the northern Tien Shan for preservation and maintenance the natural integrity of landscapes. • in the existing protected areas, it is necessary to adjust the functional zoning taking into account the modern distribution of the Turkestan lynx. • assessing the scale and causes of poaching in relation to lynx and its prey species and introducing an effective system to combat this phenomenon, including resolving conflicts with

				livestock breeders. • strengthening ecological education of the population and popularising measures for the conservation of the Turkestan lynx and its habitats. carrying out systematic research and monitoring of populations of wild animals using modern methods: automatic cameras, satellite tracking, genetic analysis, etc. • expansion of international and interregional cooperation in the study and conservation of transboundary ecosystems of the northern Tien Shan with neighbouring countries – the Kyrgyz Republic and People's Republic of China.

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.

Due to quarantine, the access to the mountains was limited from 16th March to 11th May 2020. We also had difficulties meeting with a number of researchers and collecting information on the lynx due to the pandemic. Nevertheless, once most limitations were removed, we resumed our field work. In addition to purchasing the camera traps and winter tents, buying separate parts (motion sensors, triggers, etc.) for more improved camera trapping and some clothing for field work were considered necessary. We also spent more days in the field in order to collect as much data as possible.

3. Briefly describe the three most important outcomes of your project.

1) Obtaining data on the distribution of the lynx in the northern Tien Shan (in particular, assessing the gorges of Ile-Alatau and Kungei Alatau Mountains; confirming the present habitats of the lynx in the ridges of Terskei Alatau and Uzynkara Mountains).

2) Assessing the daily and seasonal activity, and altitude distribution of lynx and its prey base.

3) Evaluating the possible threats, doing educational work in protected areas, through media (interviews, newsletters etc.).

4. Briefly describe the involvement of local communities and how they have benefitted from the project.

During the project period, we educated approximately 30 school students from High Tech Academy on the importance of wildlife in general and rare carnivores in particular, and over 100 university students from al-Farabi Kazakh National University on the conservation of the Turkestan lynx in particular. We worked with the teaching staff of al-Farabi Kazakh National University and created and approbated curriculum on the topic of studying and conservation of Turkestan lynx and other rare mammals for field practice 2020 and worked it out with approximately 200 university students during this practice (July-August 2020) in Ile-Alatau National Park.
For the staff of three protected areas (five people in Almaty Nature Reserve, 25 people in Ile-Alatau National Park, 20 people in Kolsai Kolderi National Park), we provided training sessions on the use of camera traps.

5. Are there any plans to continue this work?

Yes, we plan to continue monitoring studies on the Ile-Alatau and Kungei Alatau ridges, and to study the ridges of Kyrgyz, Terskei Alatau and Uzynkara in more detail, as well as conduct research on taxonomy of lynx.

6. How do you plan to share the results of your work with others?

We present and will present the results through articles and abstracts, participating in international and regional conferences, seminars and forums, presenting the report results and conservation recommendations to the protected areas and government officials, posting on social media, providing interviews to local TV and newsletter reporters.

7. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?

The Rufford Small Grant was used within one year, starting February 2020 and ending in February 2021.

8. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Daily expenses in expedition	2125	2345	+220	4 expeditions in total

Car depreciation	320		-320	
Petrol AI-92	395	124	-271	Petrol checks
Bushnell Trophy Cam HD*	1995	2089	+94	8 camera traps, external battery kit for wireless triggers 2x, wireless triggers 2x, wireless PIR motion sensors 2x, camera connecting cables 2x
7 Memory cards for camera traps	85	115	+30	16 memory cards
15 packs of 8 Lithium Batteries	210	138	-72	96 batteries
4 winter tents**	370	277	-93	Winter tent Tramp Peak 2 V2 Gaiters Manaraga Salomon boots X ultra mid winter
Total:	**5500**	**5088**	**-413**	Planned to be used for publication payment

Note to the budget: 1 GBP = 478,65 KZT (5,500 GBP = > 6,978,80 USD = > 2,632,572 KZT)

* In addition to camera traps, parts for camera trapping were necessary.

1) 8 camera traps = 1,401 GBP, tax and shipping from Russia = 200 GBP.
2) external battery kit for wireless triggers x2 = 10 GBP, wireless triggers x2 = 70 GBP, wireless PIR motion sensors x2 = 320 GBP, camera connecting cables x2 = 18 GBP, shipping from the UK = 70 GBP.

** In addition to the tent, a pair of gaiters and trekking boots were necessary. Winter tent Tramp Peak 2 V2 = 131.4, Gaiters = 20.7, Salomon boots X ultra mid winter = 125.2. The amount is given including taxes.

9. Looking ahead, what do you feel are the important next steps?

1) Evaluating features of the Turkestan lynx for subspecies diagnosability
According to Heptner and Sludskiy (1972), the Turkestan lynx is either very close to or identical with the comparably more abundant Altai lynx. In order to determine whether subspecies recognition of the Turkestan lynx is warranted, we will conduct a comparative analysis of the degree of differentiation according to morphological features between Turkestan and the Altai subspecies of lynx. In order to get accurate data, analysis of mitochondrial DNA sequences will be performed.

This is important both taxonomically and to completely determine the conservation status of lynx.

2) Preparing recommendations for the conservation of the Turkestan lynx in the mountains of the northern Tien Shan, considering the data we will have gathered from subspecies diagnosability and all the other data on the lynx we obtained so far.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

We mentioned and used logo of Rufford Foundation in all project-related materials and posts that we published:

Two abstracts were published in the materials of and the results were presented in the international scientific conferences in Kazakhstan and Ukraine. Three newsletters were posted on the website of al-Farabi Kazakh National University, and there are numerous posts on the official social media pages of Wildlife Without Borders and Institute of Zoology, Almaty, Kazakhstan.

We are currently preparing manuscripts to be published in a peer reviewed journal primarily. The results of the project will also be included in the PhD thesis of Nazerke Bizhanova (project leader).

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

The researchers at the Institute of Zoology (IoZ) and Almaty Nature Reserve (ANR), based in Almaty city:

Bizhanova Nazerke – Project leader, Junior Researcher at IoZ, Teacher of zoology at al-Farabi Kazakh National University, planning, conducting field research, collecting data, writing a report and article.

Grachev Alexey – Head of the laboratory of theriology of IoZ, founder of Wildlife Without Borders, conducting field research, collecting data, writing a report and article.

Saparbayev Saltore – Researcher at ANR and Junior Researcher at IoZ, main photographer, conducting field research, collecting data, assisting in writing a report.

Bespalov Maxim – Research assistant and field manager, assisting in the installation and collecting data from camera-traps, actively participating in the tracking of lynx traces.

Bespalov Sergey – Research assistant and field manager, assisting in the installation and collecting data from camera-traps, actively participating in the tracking of lynx traces.

Grachev Yuriy – Leading Researcher at IoZ, PhD in Biology, guidance in planning, assisting in writing a report and article.

Baidavletov Erik – Researcher at IoZ, assisting in writing a report.

12. Any other comments?

We are grateful to the Rufford Foundation for their financial support through the Rufford Small Grants. This support was a great push that we needed to conduct our research in the field more and in a more systematic way, as well as connect more with other mammologists.

We greatly thank our referees Dr. Chirikova Marina, Dr. Philip Riordan, and Prof. Shahrul Anuar Mohd Sah for their constant support. We are very grateful to the Wildlife Without Borders for the co-funding of this project, and, in particular, to WWB Director Dina Konysbayeva, for administering and managing the budget. We thank administration staff, researchers, rangers, hunting biologists of protected areas for their guidance and providing information. We thank the administration of Institute of Zoology and The Department of Biodiversity and bioresources at al-Farabi Kazakh National University for technical support and spreading the word about our project. And all the people who supported us.