

Final Project Evaluation Report

We ask all grant recipients to complete a project evaluation that helps us to gauge the success of your project. This must be sent in **MS Word and not PDF format**. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Complete the form in English and be as concise as you can. Note that the information may be edited before posting on our website.

Please email this report to jane@rufford.org.

Your Details	
Full Name	Tamás Cserkész
Project Title	Hidden Biodiversity of Mountain Meadows in East Kazakhstan
Application ID	19267-1
Grant Amount	£4997
Email Address	cserkeszt@gmail.com
Date of this Report	11 June 2017

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
Foundations of an international cooperation				During the expedition, we built contact with researchers from the Al-Farabi Kazakh National University in Almaty, and the Sarsen Amanzholov East Kazakhstan State University in Öskemen (Ust-Kamenogorsk). Our group also had important meetings and discussions with the experts of the Katon-Karagay National Park Directorate, and the Markakol Reserve. One of the group members, has become an external supervisor of a local Kazakh PhD student.
Detailed botanical survey for the habitat of several mammal species				The surveys were done and results are under publication in a peer reviewed journal, and they were included in HMW-7: Handbook of the Mammals of the World (vol. 7 – will be published in 31 Aug. 2017) in a summarised way.
Information about threats to the surveyed populations will be summarized				Threatening factors were assessed and are under publication in the above mentioned publication, and they were included in HMW-7 in a summarised way. These information will be also appear in the IUCN Red List reassessment of some mammal species.
The taxonomic and conservation status			x	A new mammal species was described during the project. The manuscript entitled 'Phylogenetic and morphological analysis of birch mice (genus <i>Sicista</i> , family Sminthidae, Rodentia) in the Kazak cradle with description of a new species" was accepted in the Journal of Mammalian Evolution with minor modifications, and the revised version was submitted at 11.06.2017.

			<p>This paper contains a phylogenetic analysis of several mammal taxa living in this region.</p> <p>We also made a great step towards the better understanding of <i>Oxytropis almaatensis</i> (Fabaceae), a narrow endemic species of the Tien-Shan Mts., which is listed in the Red Book of Kazakhstan. We collected samples of this species at three sites (covering nearly the whole known distribution range), and the genetic diversity plus genetic distance between the populations were assessed using DNA fingerprinting technique. Besides this, we assessed the phylogenetic position with phylogenetic methods (DNS-sequencing) that confirmed its separate taxonomic status. A MS is under preparation to describe our findings.</p>
<p>No Red List distribution information is available or the info is outdated for the majority of taxa, so we plan to collect and share the info.</p>		<p>x</p>	<p>It was planned to visit 10 locations and implementing complete surveys there. One site (the Kegen range, Tien Shan) was omitted because of the inaccessibility of the site, but it was replaced with Sibinsk Lakes, S Altai. Another site (Chingistau Mts) was also skipped because our initial information about the location of this site proved to be wrong, and we had no time to revise the route. On the other hand we could detect a new species, the <i>Sicista pseudonapaea</i> to the fauna of China during analysing the collected sequences and comparing them with GenBank data. Altogether small mammals were sampled in nine locations and plants at several (minimum 20) locations. Reassessment of the IUCN Red List of several mammal species is under preparation utilising the dataset collected during the project.</p> <p>We played extra attention to the local Red List plant species <i>Oxytropis</i></p>

				<i>almaatensis</i> which was sampled for genetic studies at three sites. The analyses based on these specimens provided a basic insight into the genetic structure of this highly endangered, strict endemic species of the Tien-Shan Mts.
Awareness raising and education				Our group gave a talk in Almaty for graduate students, and we had important meetings and discussions with the experts of the Katon-Karagay National Park Directorate, and the Markakol Reserve.

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

The project was achieved without any significant deviations from the original plans.

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

- a) New species detected in Kazakhstan and introduced for the scientific community. Images were taken on animals which were never photographed before, and these photos were submitted to the HMW-7: Handbook of the Mammals of the World (vol 7) and the website of the IUCN Red List. We could detect a new mammal species, the *Sicista pseudonapaea* for the fauna of China during analysing the collected sequences and comparing them with GenBank data.
- b) International cooperative network including two local universities was established for exploring the hidden biodiversity in Kazakhstan. A long term cooperation plan was established for continuing the project. A nice achievement is that one of the team members has become the external supervisor of a Kazakh PhD student at the Al-Farabi Kazakh National University from Almaty.
- c) Forty mammals and 70 plants were sampled, and thorough habitat descriptions were made in E Kazakh Mountains. We also made a great step towards the better understanding of *Oxytropis almaatensis* (Fabaceae), a narrow endemic species of the Tien-Shan Mts., which is listed in the Red Book of Kazakhstan. We collected samples of this species at three sites (covering nearly the whole known distribution range), and the genetic diversity plus genetic distance between the populations were assessed using DNA-fingerprinting technique. Besides this, we assessed the phylogenetic position with phylogenetic methods (DNS-sequencing). Another plant species of high conservation interest was included indirectly. The inclusion of the Kazakh endemic *Ferula soongorica* from Katon-Karagay (E Kazakhstan) made it possible to trace the phylogenetic position of the IUCN Red Listed, Hungarian

species *Ferula sadleriana*—DNA studies have indicated the closest relationship with this species, and hint at the central Asian steppic origin of the enigmatic Hungarian plant.

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

Botanist and/or zoologist experts together with students of the Al-Farabi and Sarsen Amanzholov Universities (Almaty and Öskemen), and the experts of the Katon-Karagay National Park Directorate were involved in the work around the cities. During the fieldwork there was a direct exchange of knowledge between our team and local participants. On one hand, local knowledge proved to be an invaluable help for the project. On the other hand, our team presented several new scientific sampling methods to the local participants: e.g. collection of plant and animal tissue samples for a population genetic analyses, live-trapping methods of small mammals, etc. Additionally, following our visit to Kazakhstan, a Kazakh PhD student visited Hungary for 4 months where she learned basic DNA techniques what she is currently using back in Almaty to study local species with conservation concerns.

On the Hungarian side, we gave talks at several local organisations' meetings and workshops. Firstly, we have to mention two national parks where our project's results and experiences were presented: first, at the workshop of Bükk National Park (held in Eger-Felsőtárkány at Febr. 16, 2017), which was organised to save the Hungarian birch mouse (*Sicista trizona*); second, the Körös-Maros National Park, which is one of the national parks with the most significant steppic landscapes in Hungary, where a presentation on steppic landscapes and their protection was given in Szarvas at Febr. 22, 2017). We also popularised our results in the scientific community by giving specialised talks at the Conference of the University of Debrecen, the Hungarian Botanical Society, and the 'Csapody Vera' Plant's Friend Group of Budapest (held at Febr. 02, 2017). We also gave a talk in a Hungarian high school for popularising biologist profession with the details of the expedition (held on 5th May 2017). On all of the above talks the logo and the fact of the funding of RF was presented on the slide 'acknowledgements'.

5. Are there any plans to continue this work?

Yes, the expedition of 2018 is under preparation. We should visit the Chingistau Mts., and the Kegen Range, isolated and unexplored mountain ranges of the Tien Shan. This will help us to explore the *Sicista* species of the former, isolated mountain range, and to further explore populations of *Oxytropis almaatensis* in the latter mountain range.

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

Most of the results were integrated into the HMW-7 (in press) and in the phylogenetic paper accepted with minor revisions in Journal of Mammalian Evolution.

We are actively preparing popularising papers and sharing information on dedicated websites. We are planning a popularising article in the Hungarian edition of National Geographic Magazine and several other popularising papers in English, Kazakh and Hungarian in local magazines. However, as common scientific ethic requests, we would like to wait until the publications of our scientific papers with the description of a new mammal species, and the conservation genetics of *Oxytropis almaatensis*, then we can popularise these results and hypothesis for a greater audience.

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

Major amount of the money was spent to meet the cost of travel (air tickets, fuel, rental and accommodation) and for field supply. The grant was used during the whole year, 15 Apr 2016 - 15 Apr 2017, because first the samples were collected along the expedition in May–June 2016, and then the lab works came; lastly the first results were published.

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
visa for 3 person	241	241	0	
air tickets	1383	1410	27	Small difference due to the fluctuating prices.
travel insurance	361	409	48	Small difference due to the fluctuating prices.
car rental	1205	800	-405	Our Kazakh partner could purchase a car at a lower price, and the fuel-cost was also much lower as it was calculated before.
field supply	482	510	28	This cost category was in calculable.
equipment	120	60	-60	Less equipment was necessary as it was calculated before.
accommodation	723	1550	827	We had to spend more nights in accommodations because of the harsh weather conditions and we financed the accommodation of our co-operators as well.

sequencing DNA	482	693	211	We could collect far more samples than expected so the cost of sequencing was much higher, but we were able to cover these costs by an ongoing Grant of one of our team members (G. Sramkó).
TOTAL	4997	5673		

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

First of all we still have to present our results to the wider audience in educational papers, and as a next step we will start to organize a new expedition to north and east Kazakhstan aiming to Chingistau Mts, Tarbagatai Mts. and Kegen Range. The last mountain range is the location where *Oxytropis almaatensis* is expected to occur, therefore it should be searched there. Therefore, we will look for data of two Red listed species (*Oxytropis* and *Sicista cf. tianshanica*) in the same region.

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?

Our group gave talks in Almaty for graduate students and for the experts of the Katon-Karagay National Park Directorate, and the Markakol Reserve where the support of the RSGF was mentioned and the logo appeared. In Hungary several talks (at the Hungarian Botanical Society, at the University of Debrecen, at workshops held at Bükk and Körös-Maros National Parks, plus at a Hungarian high-school) were also given where the support of the RF was explicitly mentioned and the logo appeared. Besides, the support from the RF, and title of our project was highlighted both in the HMW-07, and in the above mentioned scientific paper.

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

12. Any other comments?

We are highly appreciate the generous support we received from the RF! Thank you very much!