The Rufford Small Grants Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford Small Grants Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. 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. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Buuveibaatar Bayarbaatar
Project title	Survival and mortality of calves in Mongolia
RSG reference	7909-1
Reporting period	Final report
Amount of grant	£5978
Your email address	buuveibaatar@gmail.com
Date of this report	17 August 2011

1. Please 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
Estimate calf survival by determining the proportion of newborn animals that survive			X	During 13-24 June 2010, a total of 36 animals were successfully collared (18 females and 18 males) and monitored for their survival and mortality. Annual survival rate for the marked animals in 2010 was 0.66 and it was averaged 0.50 during last 3 years.
Evaluate cause-specific mortality of calves, including predation, possible role of litter size, birth weight, birth date, and habitat choice on subsequent survival			X	Cause-specific mortality of marked saiga neonates were raptors, foxes, and lynx. Most predation was by raptors, such as golden eagles and cinereous vulture. Covariates providing the best model fits included year, litter size, and body weight, suggesting that environmental conditions influence twinning rates and body mass may play a key role in neonate survival rate in the first year.

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

We had a difficulty to monitor marked animals during the winter due to cold temperature (-40^{0}C), deep snow, and frequent blizzards. However, we managed to continue our monitoring effort and data was collected at least 2 times per a month during this extreme period.

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

- For saiga neonates monitored in Sharga Nature Reserve, western Mongolia, during 2008–2010, male and single calves were heavier than those of female and twins, respectively. However, there was no significant difference in seasonal and annual survival rate between male and female or singletons and twins. Litter size and birth mass varied among years, and there was a negative relationship between these variables.

- Multiple regression models suggest that summer precipitation in previous years and spring mean temperature explained inter-annual variations in twinning rate. Thus, our results support the idea that females give birth to twins when in years of good environmental condition and single offspring when not. We also found that offspring mass increased in years with low twinning rates and single calves had larger mass than twins. Covariates providing the best model fit included year, litter size, and body weight, suggesting that

environmental conditions influence twinning rates and body mass may play a key role in neonate survival rate in the first year.

- We identified three sources of mortality – predation by raptors, foxes (red and corsac, *Vulpes vulpes* and *V. corsac*), and lynx (*Lynx lynx*). Most predation was by raptors, such as golden eagles (*Aquila chrysaetos*) and cinereous vulture (*Aegypius monachus*). Although saiga are an endangered species, our individual–based monitoring in a protected area revealed survival levels compatible with those of growing or stable populations of other steppe antelopes. Our results therefore suggest that saiga populations may recover if protected from poaching and overgrazing by domestic livestock.

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

Local communities have benefitted from the project by two ways. First, herders have enhanced their knowledge about the ecology of saiga antelope and challenges they currently face through formal and informal conversation. Secondly, local communities in study area have received direct benefit from the project as they were involving in capturing, collaring, monitoring of saiga antelope.

5. Are there any plans to continue this work?

The influence of landscape condition on calf survival requires further study with replicate landscapes over larger geographic scales, particularly, the other calving grounds that differ in protection status, human disturbance, and livestock density. Further, more data required, to adequately estimate adult survival and fecundity rates, key parameters in ungulate population dynamics.

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

I have completed a master's thesis titled "Factors affecting survival and cause-specific mortality of saiga calves in Mongolia" using data from this project within Wildlife and Fisheries Conservation Programme at University of Massachusetts (UMass) Amherst. Electronic copy of the thesis will be available to public through UMass Amherst e-library in the near future. In addition, a manuscript of scientific article based on the thesis has been submitted to Journal of Mammalogy in order to disseminate our research results to scientific community and which is currently under review.

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

Rufford funds were used to support the collaring (~ a month) and monitoring (5 months) of marked saiga calves to document their survival and mortality in western Mongolia. However, we monitored marked animals throughout the year since the radio-collars have battery life of >1200 days. Currently, a total of 26 saiga calves are being monitored for their survival and movements and we have scheduled to collect data as frequent as possible until the collar battery dies off.

8. Budget: Please 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.

Item	Budgeted Amount	Actual Amount	Difference	Comments
VHF-radio collar	£1.275	£1.118	+£157	We purchased radio-collars at discounted rate from ATS, so we transferred the saved money to calf monitoring.
Food and accommodation	£319	£319	0	
Vehicle rental	£1.116	£1.116	0	
Vehicle benzene and maintenance	£893	£893	0	
Motorcycle benzene and maintenance for calf monitoring	£478	£1253	-£775	We initially proposed to monitor collared animal for 5 months and budgeted accordingly. However, we realised that collecting data on survival and mortality for longer period would be vital so that we extended our monitoring effort up to 12 months. Overhead charges associated with calf monitoring was covered by a matched fund from WCS Mongolia.
Saiga ranger's salary for calf monitoring	£956	£1.886	-£930	
Stipend for field assistants – cook, biologist, field technicians during the calf capture	£877	£877	0	Field assistants were paid as we budgeted initially.
Field supplies	£64	£64	0	
TOTAL	£5.978	£7.526	£1.548	*The exchange rate used in the table is $1 = £0.64*

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

Adequate quantities of usable resources are necessary to sustain animal populations, and differential resource selection is one of the principle relationships which permit species to coexist. While livestock numbers have increased since the 1970s in the study area, goats are now the most numerically dominant herbivore and livestock biomass exceeds that of saiga by nearly 50:1. For the future conservation of this species, quantitative identification of interrelation between saiga and livestock is essential. In fact, an understanding of interaction between saiga and livestock is identified as a high priority for saiga conservation of Convention on Migratory Species.

Protected areas one of the most effective tools available for conserving biodiversity given the increasing pressures exerted on the environment by humans. Sharga Nature Reserve (SNR) has been designated in 1992 to protect saiga antelope. The SNR includes approximately 35% of the current range of Mongolian saiga, and is unlikely to be large enough to maintain persistence of this unique species. Protecting saiga antelope may require a system of protected areas linked by corridors that allow movement from one area to another. Yet, there is no information on whether these animals suffer from human impacts with respect to disturbance, elevated livestock density, and domestic dog predation outside of this protected area. Therefore, quantifying saiga calf survival and mortality

as well as movements in both of protected and unprotected areas is crucial to inform decision makers to expand current reserve.

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

The RSGF logo has been used in presentations during the several national and international conferences as well as for the master's project presentation. Also I have acknowledged the RSGF in all publications include a scientific article, progress report, and master's thesis.

11. Any other comments?

Our team appreciate to Rufford Small Grants Foundation for their support towards conservation of critically endangered saiga antelope in Mongolia.