

## Final Evaluation Report

---

Your Details	
<b>Full Name</b>	LI Xueyang
<b>Project Title</b>	Common Leopards on the Tibetan plateau: Common or Not So Common?
<b>Application ID</b>	28294-1
<b>Grant Amount</b>	£4912
<b>Email Address</b>	lixueyang@pku.edu.cn
<b>Date of this Report</b>	2021/3/16

**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
Local distribution of common leopards will be investigated in Yushu prefecture.				During 2019-2020, 163 interviewees were surveyed, mainly along Tongtian River and Lancang River. We collected the occurrence data of common leopards and did occupancy modelling with the data. The distribution maps of common leopards were drawn with modelling results for recent 5 years and past 20-30 years.
Attitudes towards common leopards and livestock loss due to the species will be assessed.				
At least 1 popular science article about common leopards in Yushu with Shanshui's WeChat public accounts (Shanshui is the local NGO we work with in Yushu).				The article was in Chinese. It was submitted and will be published after editing.

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

The interview survey was carried out in more than 10 villages in Yushu. Some of the villages were covered with more conservation activities including human-wildlife conflict insurance, ecotourism and camera trap monitoring. The interviewees from these areas were more willing to accept the questionnaire survey. The other survey regions however, only covered with limited conservation activities; the interviewees were not used to communicating with 'outsiders' and were more alert towards us.

We tried different methods to tackle the problem. Before the questionnaire survey started, the interpreter would explain our survey goals and our background with more details, to assure that the interviewee fully understood the information they provided would be analysed anonymous and no bad influences towards their lives would be brought by what they answered. Meanwhile, Tibetan tea was favoured by local families, so we bought tea as questionnaire survey gifts.

An even better way would be hiring interpreters from their local communities. In three sites, we hired local interpreters from the village we surveyed. The interviewees were more relaxed when talking to our interpreters.

The unforeseen Covid-19 also delayed this project. We applied for a 6-month extension of this project, and supplemented questionnaire survey in September to November 2020.

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

1. The general distribution and distribution change of common leopards in Yushu prefecture were investigated for the first time.

With this survey, we observed an occupancy rate (which could be interpreted as an indicator of population size) of  $0.65 \pm 0.30$  for common leopards in recent 5 years (2015-2020), while this rate for past 20-30 years (1990-2000) was  $0.58 \pm 0.35$ . The average colonisation rate was  $0.25 \pm 0.11$  and was positively correlated with temperature difference. The results indicated the common leopard population may experience a growth during these years. Conservation activities, which were hard to be detected and measured by the occupancy model applied in this study, however, might pose more influences towards the leopard population growth. Over 90% interviewees attributed the increasing leopard population to gun confiscation and other conservation actions carried out in these years. Not only the leopard population was under growth, from the survey we observed increasing reports for snow leopards, wolves and brown bears, which might also benefit from the changing human activities in these years.

2. The attitudes towards common leopards were positive in general, varied in different sites.

Generally, the attitudes towards common leopards were positive. The average score for common leopards was 4.0 (the full score was 5, for the question 'the importance of common leopard conservation'), which was significantly higher than wolves and brown bears. However, the attitudes were different towards different study sites, varying from 3.3 to 4.5.

3. Increasing population of leopards may bring new issues towards local communities.

The interviewee reported different degrees of livestock loss increase in these years compared with 20-30 years ago. From sites that reported more loss, the attitudes were more negative.

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

We had local herders as interpreter to help us with the questionnaire survey. One of the interpreters exhibited especially interests in wildlife conservation and would keep on participating following in-depth survey as local communicator and leader for common leopards in Yushu prefecture.

Based on the preliminary results in Yushu prefecture, we planned to put forward in-depth camera trap survey of common leopards to investigate in population density and dynamics. Interviewees from this project who expressed the willingness would be priorly chosen as monitors for managing camera traps.

#### **5. Are there any plans to continue this work?**

Yes. During this project, we found that the colonisation rate varied in different sites and local herders from different sites held different attitudes towards common leopards. In Baizha forestry, herders from three villages there all showed relatively negative attitudes towards common leopards compared with other sites because of livestock loss. Recent study provided a practical way to reduce the livestock loss due to ambush predators (Radford et al, 2020). We plan to carry out a project to alleviate human-wildlife conflicts there using methods mentioned in Radford et al.

Meanwhile, more detailed survey of population dynamics of common leopards needs to be done. Snow leopards also occur in our study area. Two leopard species with similar niche may cause interspecific competition. Common leopards, compared to snow leopards, are more adaptable and aggressive, but how they coexist when sympatric, and if snow leopards will be squeezed out by common leopards remain unknown. During this project, sites with obvious common leopard occupancy increase could be candidate sites for common leopard population survey.

Radford, Cameron, et al. "Artificial eyespots on cattle reduce predation by large carnivores." *Communications biology* 3.1 (2020): 1-8.

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

The results will be illustrated in one popular science article, which is finished and under editing.

We also plan to publish the results on peer-review journals, the results are under discussion currently.

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

The grant was used during October 2019 to November 2020. It was anticipated to be used during October 2019 to February 2020. The fieldwork of this project was delayed due to Covid-19, so we changed the field plan and elongate the project to finish data collecting. The main expense of the grant was in the field.

**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
Travel	3600	3350	-250	400 were spent on flights from Beijing to Xining. The car rent cost 2100. The fuel cost 850.
Food and accommodation	1012	1102	+90	We bought Tibetan tea as gifts for the interviewee, and vegetable/meat for host herder families.
Camping equipment	300		-300	We stayed in the workstation or herders house during the field trip. We brought vegetable and meat for herders instead of giving money.
Payment for field guide		460	+460	We hired additional local guides as interpreter and driver during the field trip. The field guides worked for 30 days in the field in total.
<b>TOTAL</b>	<b>4912</b>	<b>4912</b>		1 sterling = 9.01 RMB (2021/3/4)

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

This project for the first time provides basic and general information of common leopards in Yushu prefecture, Qinghai-Tibetan plateau. However, due to the large study scale, it's hard to describe a specific common leopard population and its influence towards the local ecosystem or community on a particular site. The site level study to understand the common leopard population dynamics, the resource utilisation, and relationship with local communities help us extrapolate and design more specific conservation activities.

**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?**

The logo was used on the poster during an academic meeting held by School of Life Sciences, Peking University and I attached it with the report, note that the results shown in the poster was periodical. During the survey, we would inform our interviewees that the project was supported by the Rufford Foundation.

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

**Li Xueyang**, PhD student in Peking University, the leader of the project.

**Li Peiyun**, Shanshui conservation staff. She works in Yushu workstation, mainly taking charge of ShanShui's community monitoring and camera trap system for snow leopards. She is very experienced in the field. She helped with communication of local communities and field logistics.

**Dr. Xiao Lingyun** helped with setting up the framework of this survey.

**Gengqiudanzhou**, the local guide we hired. He translated and drove in the field.

**Quyingsangji**, the local guide we hired for survey. She translated in the field.

**Danzengqiuji**, the local guide we hired for survey. He translated in the field.

**12. Any other comments?**

Though Covid-19 has delayed the project, everyone learnt a lot in this project. During the project, we got not only a general understanding of common leopards on the plateau, but observed new problems brought by leopard increase needed to be tackled. We want to apply for the 2<sup>nd</sup> stage grant, to better investigate the common leopard populations and provide possible solutions to human-wildlife conflicts caused by common leopards.