

## The Rufford Foundation

### Final Report

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

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other 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. 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. Please note that the information may be edited for clarity. 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](mailto:jane@rufford.org).

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
<b>Your name</b>	Rinzin Phunjok Lama
<b>Project title</b>	Abundance, Distribution and Conservation Initiative of the Pallas's cat ( <i>Otocolobus manul</i> ) – the new cat species for Nepal
<b>RSG reference</b>	15225-1
<b>Reporting period</b>	August 2014 – July 2016
<b>Amount of grant</b>	£5,820
<b>Your email address</b>	<a href="mailto:phunjok@hotmail.com">phunjok@hotmail.com</a>
<b>Date of this report</b>	19 August 2015

**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
Presence/absence survey of Pallas’s cat			√	
Abundance of Pallas’s cat			√	
Distribution of Pallas’s cat			√	
Conservation threats of Pallas’s cat			√	
Conservation Initiative		√		Due to the lack of time and budget, I was not able to conduct the extensive conservation programme. However, I took some conservation classes in local school and try to aware the locals about Pallas’s cat in the area

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

Previously I had planned to survey all the areas of Annapurna Conservation Area between 2,900 m to 5,100 asl to know the presence/absence of Pallas’s cat but later on I realised that due to the large area ~5000 km<sup>2</sup> and limited time and budget, to survey the whole potential habitat of the cat in Annapurna region was impossible. Therefore, among the three major Trans-Himalayan valleys in Annapurna region, I selected one Trans-Himalayan Manang Valley to conduct this survey and my decision worked well and now I have revealed the first detailed and comprehensive data not only on Pallas’s cat but also on other sympatric carnivores, herbivores and endangered bird species in Manang valley of Annapurna Conservation Area.

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

The three most important outcomes of the project are:

- ❖ Abundance and distribution of Pallas’s cat and other sympatric carnivores in Manang valley

Using remotely triggered camera traps, I explored the Pallas’s cat presence/absence and carnivore diversity in trans-Himalayan Manang valley. The camera trap survey was carried out between from December 2014 to May 2015 and consisted of a total survey effort of 1940 camera trap days in 20 camera trap sites. The camera trap sites were distributed along the altitudinal gradients ranging from 3512 m asl to 5073 m asl (Table 1).

The study revealed a total of six carnivore species: snow leopard (*Panthera uncia*), golden jackal (*Canis aureus*), red fox (*Vulpes vulpes*), Pallas’s cat (*Otocolobus manul*), yellow-throated marten (*Martes flavigula*) and mountain weasel (*Mustella altaica*). Pallas’s cat is the new cat species for Nepal. I assumed the independent picture of each species at each camera trap locations in every 60

minutes which I call here a PERIOD. Based on the independent pictures (One record of each species per location per PERIOD), the yellow-throated marten appeared the most abundant species (RAI = 37.25) followed by red fox (RAI = 31.17), snow leopard (RAI = 20.24), Pallas's cat (RAI = 7.29), golden jackal (RAI = 2.02) and mountain weasel (RAI = 2.02) (Table 2).

My camera traps survey has revealed important information about the carnivore diversity and their abundance index which will be crucial for planning future surveys and understanding detailed ecology, behaviour and conservation threats to these carnivores in the area. These preliminary findings will also be helpful for protected area managers to implement the effective conservation actions for these carnivores to regulate the high-altitude ecosystems in the region.

Table 1: The name, GPS location and elevation of camera trap sites

SN	Location name	UTM		Elevation
		Northing-Y	Easting-X	
1	Angumilepche	3176447	209771	4644
2	Angumilepche Ridge	3176379	209995	4706
3	Gangapurna Lake	3174499	208579	3512
4	Ghunsang Base	3176400	792712	3742
5	Gyanjang	3178656	792504	4031
6	Gyanjang Pu	3180565	208145	4523
7	Kyarken	3177571	790890	4340
8	Mephra Ridge	3175678	207363	3842
9	Pocho Tong Base	3175432	210239	3859
10	Ponga Ridge	3175644	208207	3963
11	Praken	3175449	209224	3992
12	Pripche	3177809	207704	4590
13	Pripche Po Ridge	3178799	208123	4895
14	Puchen Base	3177076	790524	4436
15	Shing Tong	3175954	209947	4218
16	Shya Kang	3176188	791686	4232
17	Tangtisa	3175514	208982	3988
18	Thorkya Ridge	3175796	209346	4250
19	Thorkya	3176219	209088	4263
20	Yaphur	3181250	207392	5073

Table 2: Relative Abundance of carnivores in Manang valley

SPECIES	RELATIVE ABUNDANCE
Golden jackal	2.02
Mountain weasel	2.02
Pallas's cat	7.29
Snow leopard	20.24
Red fox	31.17
Yellow-throated marten	37.25

❖ Occupancy estimation

I) Naive occupancy of Pallas's cat and other carnivores in Manang valley

The estimation shows that the endangered snow leopard has the highest naive occupancy, followed by red fox, yellow-throated marten, Pallas's cat, mountain weasel and the golden jackal (Table 3). Probably the reason for higher naive occupancy for snow leopard is due to its large home range and rapid visit of camera trap sites. For the more correct estimation of naive occupancy for such large carnivores, we should consider designing a grid according to species home range.

Table 3: Species naive location occupancy proportion

Species	Fraction of locations Occupied	Number of locations Occupied (20)
Snow leopard	0.550	11
Red fox	0.500	10
Yellow-throated marten	0.500	10
Pallas's cat	0.300	6
Mountain weasel	0.250	5
Golden jackal	0.200	4

II) Occupancy estimation of Pallas's cat when probability of detection is considered as constant for all sites and survey occasions

For this preliminary occupancy analysis, I did not consider including site specific and survey specific covariates which might further affect our detection probabilities at each site and thus affect our occupancy estimation. The model likelihood for Pallas's cat occupancy estimation without incorporating covariates is given in Table 4.

Table 4: Model likelihood for Pallas's cat occupancy estimation

Model	AIC	deltaAIC	AIC wgt	Model Likelihood	no.Par.	-2*LogLike1
group, Constant P	175.94	0.00	0.5000	1.0000	2	171.94
psi(.), p(.)	175.94	0.00	0.5000	1.0000	2	171.94
1 group, Survey-specific P	200.63	24.69	0.0000	0.0000	19	162.63
psi(.), p(Survey)	200.63	24.69	0.0000	0.0000	19	162.63

Table 5: Site occupancy for Pallas's cat based on the above model (Model has been fit using the logistic link). Psi-conditional = [Pr (occ | detection history)]

	Site	psi-cond	Std.err	95% conf.	interval
1	Angumilepche	1.0000	0.0000	1.0000	- 1.0000
2	Angumilepche Ridge	1.0000	0.0000	1.0000	- 1.0000

3	Gangapurna Lake	0.0370	0.0374	0.0049	- 0.2308
4	Ghunsang Base	0.0000	0.0000	0.0000	- 0.0001
5	Gyanjang	0.1163	0.0873	0.0243	- 0.4101
6	Gyanjang Pu	0.3293	0.1388	0.1253	- 0.6272
7	Kyarken	0.4078	0.1210	0.2050	- 0.6477
8	Mephra Ridge	0.0014	0.0019	0.0001	- 0.0199
9	Pocho Tong Base	0.0000	0.0000	0.0000	- 0.0003
	Site	psi-cond	Std.err	95% conf.	interval
10	Ponga Ridge	0.0000	0.0000	0.0000	- 0.0003
11	Praken	0.0000	0.0000	0.0000	- 0.0003
12	Pripche	1.0000	0.0000	1.0000	- 1.0000
13	Pripche Po Ridge	0.0000	0.0000	0.0000	- 0.0001
14	Puchen Base	0.2409	0.1225	0.0786	- 0.5412
15	Shing Tong	0.0227	0.0237	0.0029	- 0.1582
16	Shya Kang	0.0000	0.0000	0.0000	- 0.0001
17	Tangtisa	1.0000	0.0000	1.0000	- 1.0000
18	Thorkya Ridge	1.0000	0.0000	1.0000	- 1.0000
19	Thorkya	1.0000	0.0000	1.0000	- 1.0000
20	Yaphur	1.0000	0.0000	1.0000	- 1.0000

In the above result, we can see that the probability of Angumilepche, Angumilepche Ridge, Pripche, Tangtista, Thorkya Ridge, Thorkya and Yaphur occupied by Pallas's cat is 100%. So these specific sites are of special concern for Pallas's cat conservation. Our estimation can further be improved by incorporating potential site covariates in our next analysis.

- ❖ Globally highest altitudinal record of Pallas's cat, Mountain weasel and Yellow-throated marten

The mountain weasel, Pallas's cat and yellow-throated marten were detected up to the elevation of 5073 m asl in the area (see Table 6 – the yellow highlighted line shows the highest elevation record for the species). This is the new highest elevation record for all three species.

Table 6: Species by camera trap location with GPS points and elevation

	UTMe-w	UTMn-s	Elevation
<b>Golden jackal</b>			
Location			
Gangapurna Lake	208579	3174499	3512
Kyarken	790890	3177571	4340
Ponga Ridge	208207	3175644	3963
Pripche	207704	3177809	4590
<b>Mountain weasel</b>			
Location			
Angumilapche Ridge	209995	3176379	4706
Kyarken	790890	3177571	4340
Pripche	207704	3177809	4590

Shya Kang	791686	3176188	4232
Yaphur	207392	3181250	5073
<b>Pallas's cat</b>			
Location			
Angumilapche	209771	3176447	4644
Angumilapche Ridge	209995	3176379	4706
Kyarken	790890	3177571	4340
Pripche	207704	3177809	4590
Tangtisa	208982	3175514	3988
	UTMe-w	UTMn-s	Elevation
Yaphur	207392	3181250	5073
<b>Red fox</b>			
Location			
Angumilapche	209771	3176447	4644
Angumilapche Ridge	209995	3176379	4706
Ghunsang Base	792712	3176400	3742
Kyarken	790890	3177571	4340
Ponga Ridge	208207	3175644	3963
Praken	209224	3175449	3992
Pripche	207704	3177809	4590
Shing Tong	209947	3175954	4218
Shya Kang	791686	3176188	4232
Thorkya Ridge	209346	3175796	4250
<b>Snow leopard</b>			
Location			
Angumilapche	209771	3176447	4644
Angumilapche Ridge	209995	3176379	4706
Ghunsang Base	792712	3176400	3742
Mephra Ridge	207363	3175678	3842
Ponga Ridge	208207	3175644	3963
Praken	209224	3175449	3992
Pripche	207704	3177809	4590
Pripche Po Ridge	208123	3178799	4895
Shing Tong	209947	3175954	4218
Shya Kang	791686	3176188	4232
Thorkya Ridge	209346	3175796	4250
<b>Yellow-throated marten</b>			
Location			
Angumilapche	209771	3176447	4644
Angumilapche Ridge	209995	3176379	4706
Ghunsang Base	792712	3176400	3742
Pocho Tong Base	210239	3175432	3859
Ponga Ridge	208207	3175644	3963
Pripche	207704	3177809	4590
Pripche Po Ridge	208123	3178799	4895
Shing Tong	209947	3175954	4218

Shya Kang	791686	3176188	4232
Yaphur	207392	3181250	5073

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

One local citizen scientist from Manang was employed and involved as a project team member who installed all the camera traps in the study area. Two forestry and one zoology student from Tribhuvan University were trained in camera trapping methods in the field site. Now they all are capable of handling camera traps in the field and managing camera traps data from the field. These students are now interested to apply for Rufford Foundation and other potential donors to run their own cat research project in Nepal. The local herders were informed about the Pallas's cat and the secondary level students and teachers of one local school were benefitted from conservation education classes.

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

Yes, I will continue the monitoring and conservation of the Pallas's cat in Annapurna Conservation Area.

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

The popular news article about this project had already been published in our national newspapers (Please see the section 10 of this report). I already submitted an article entitled "**Historical evidence of Pallas's cat in Nyeshyang valley, Manang, Nepal**" to CatNews. Based on the findings of the project and to share the results among the students and scientific communities around the world, I have just submitted an abstract to the scientific committee of the Student Conference on Conservation Science (SCCS) – Beijing 2015. I hope my abstract will be selected by the committee and I will be attending and present my works in November 2015 in Beijing, China. I am also planning to publish 2-3 scientific articles in the international peer-reviewed journals as soon as possible. The findings of the project will also be shared to the forest and conservation area managers and other interested and related authorities.

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

The Rufford Foundation grant was used during August 2014 – July 2015. This period is more or less similar to the actual length of the project.

**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
Travel	£400	£450	-£50	The difference was due to the increase in fare
Food and Accommodation	£1,620	£1,700	-£80	The difference was due to the increase in food items in

				the remote field sites
Field Allowances	£900	£900	0	
Field Equipments	£2,100	£2,000	+£100	I bought the cheaper 20 camera traps @£100. The cameras will be continuously used to monitor the Pallas's cat and other endangered carnivores in Nepal Himalaya.
Data management, analysis and reporting	£800	£800	0	
<b>Total</b>	£5,820	<b>£5,850</b>	-£30	The difference was covered by the internal fund of my organization Global Primate Network-Nepal.

Exchange Rate: £1 = NRS 150

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

Manang valley is the potential habitat for Pallas's cat. However, due to the year-round heavy grazing in its habitat, its habitat has been degraded. Therefore, the community outreach and conservation programmes should be started soon to ensure the survival of this rare cat in this area. Herder communities should particularly be educated about the Pallas's cat in the region. Since the status and information on this cat is still largely unknown in Annapurna Conservation Area and other parts of Nepal Himalaya, besides the conservation activities, regular monitoring of the cat using camera traps, sign survey and interviews will help to generate the ecological and behavioural data on the species.

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

I did not use RSG logo because I did not publish any materials during the project period. However, I have acknowledged the Rufford Foundation in the news those were published in our national media about my Rufford Funded Pallas's cat project. Please find all the link of the news below:

26 June 2015, the Kathmandu Post

News title: The Last Shangri-la

<http://www.ekantipur.com/saturday/2015/06/26/features/the-last-shangrila/277775.html>

9-15 January 2015, Nepali Times

News title: Nepal's Good Luck Cat

<http://nepalitimes.com/article/Nepali-Times-Buzz/nepal-pallas-cat,1934>

11 December 2014, The Kathmandu Post  
News title: Study on rare Pallas's cat begins

<http://www.ekantipur.com/the-kathmandu-post/2014/12/11/nation/study-on-rare-pallas-cat-begins/270730.html>

The Rufford Foundation will be fully acknowledged in the journal articles, conferences and scientific meetings.

**11. Any other comments?**

I thank the Rufford Foundation for funding my Pallas's cat project and I am hoping for similar support in the future.