

## 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. 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>	Samundra Ambuhang Subba
<b>Project title</b>	Assessing the genetic status, distribution, prey selection and conservation issues of Himalayan wolf ( <i>Canis himalayensis</i> ) in Trans-Himalayan Dolpa, Nepal
<b>RSG reference</b>	10322-1
<b>Reporting period</b>	12 months
<b>Amount of grant</b>	£6000
<b>Your email address</b>	<u>dedicated_sam@hotmail.com</u>
<b>Date of this report</b>	11 <sup>th</sup> September 2012

**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
To investigate the taxonomic status of the canine.			Fully achieved	The most important finding of this project was to investigate the wolf's genetic uniqueness and we could finally state that it is a Himalayan wolf similar to that found in India and not Tibetan wolf of Mongolia and China. With two out of 10 samples had successful DNA extraction I recommend the future researchers to collect larger samples and proper extraction technique.
To examine its prey through the method of scat analysis			Fully achieved	The result doesn't give a strong assessment on the prey's biomass consumption % and frequency % as the samples were less however it clearly reveals which animals it preys upon.
To assay the ongoing conflict between wolf and human			Fully achieved	This result clearly signifies the real status going on against the wolf which I also personally observed in the field but for a more accurate result, data should be collected from compensation records which have not been implemented so far in Dolpa.
To assess the distribution pattern of Himalayan wolf in Dolpa district, Nepal			Fully achieved	The distribution model highlights the suitable regions for Himalayan wolf however it could have been further enhanced by camera trapping which was not allowed by the government. Furthermore, all the regions were not surveyed due to limited time and resources. However, with additional period could bring up analogous result more or less.

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

**i. Bureaucratic apathy**

I had not known that the government of Nepal have prohibited individual researchers/students to conduct any extensive research which basically involves camera trapping, genetic analysis, GPS radio telemetry and others. Initially, I faced a difficult situation to not be allowed with installing camera traps, so therefore in order to achieve my objective I decided to use only direct and indirect sign survey complemented with GIS analysis. Since for general distribution of the wolf these methods

were sufficient. However, after my experiences I realised that for accurate and better distribution we require GPS radio telemetry.

Personally, I think this rule set out for the individual researchers prevents the chance of broadening our understandings towards the natural world as there is so much yet to learn and organisations cannot alone cover this broad field. Furthermore, it also weakens the decisions we make for proper management of biodiversity. For now, in Nepal, I recommend the future researchers to have their project affiliated with organizations as this is the only solution till now.

I was also not allowed to work in two government labs which were equipped with instruments needed to conduct prey analysis through hairs. I was told that any student/outsider are strictly prohibited to work and since the samples cannot be taken abroad by the help of Rufford fund I managed to buy my own instruments and worked at home. I realised that for planning every research project we need to consider the rules of government and need to carefully plan our objectives on how we achieve them without any difficulties.

#### **ii. Choosing the right time to conduct researches in Himalayas**

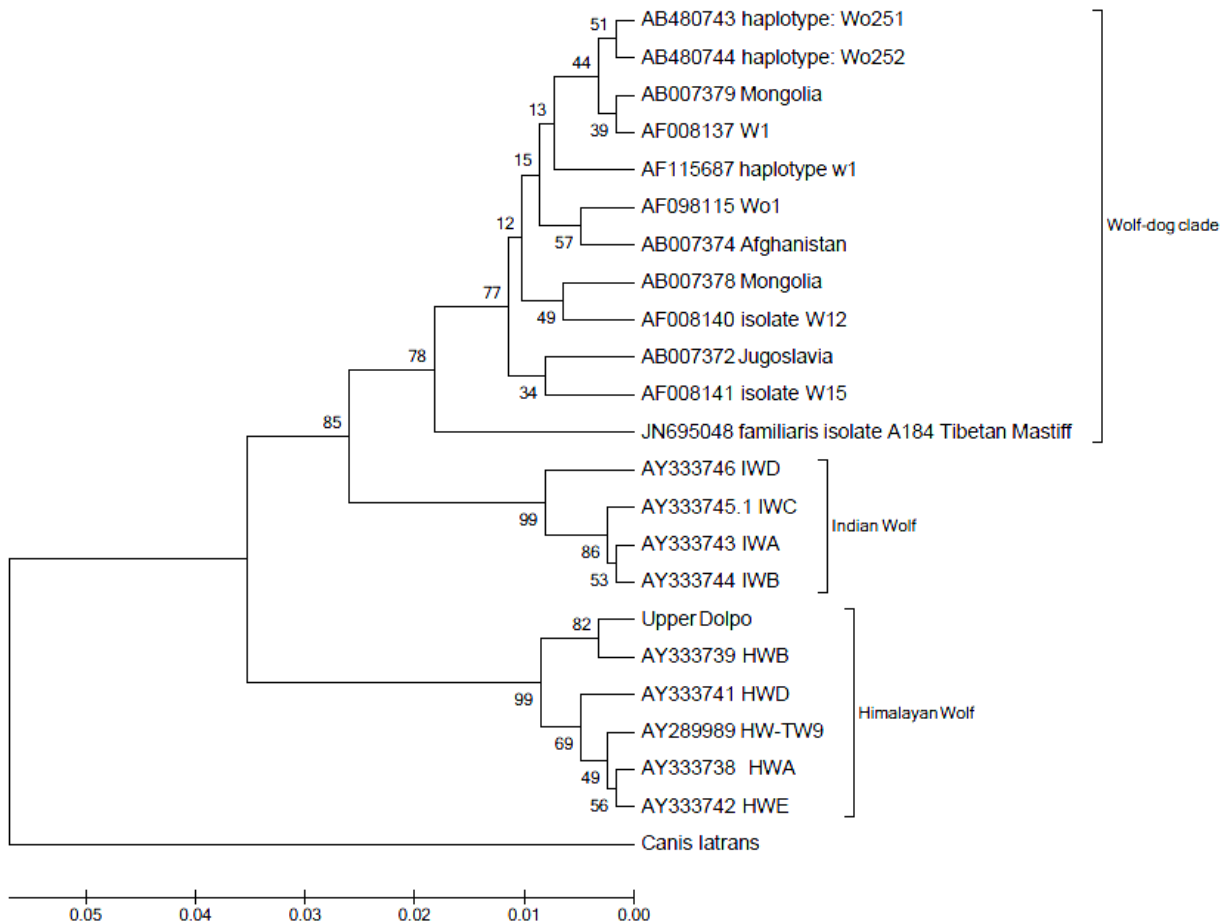
In places like Dolpa which is one of the most remote area of Nepal and the Himalayas itself, conducting research in winter season is a huge challenge however an intriguing opportunity to understand how wild animals interact with their hostile habitat. With limited resources and unaware of the climatic difficulties in winter like the locals hibernating until the season passes away and no logistics to conduct such operations, we had to limit our time period for 2 months. I believe building research station could make such objectives possible in Dolpa. By going to the area, I realised the best season to conduct operation is during April-September. Had we conducted during that period we could have covered all the wolf habitable areas. Nevertheless 2 months were enough to conduct my baseline research.

Apart from these difficulties there were many minor unforeseen obstacles in the field which were handled pretty well, and I learnt that in many situations we need to improvise and be flexible in tackling whatever hindrances arise.

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

#### **i. Taxonomic status**

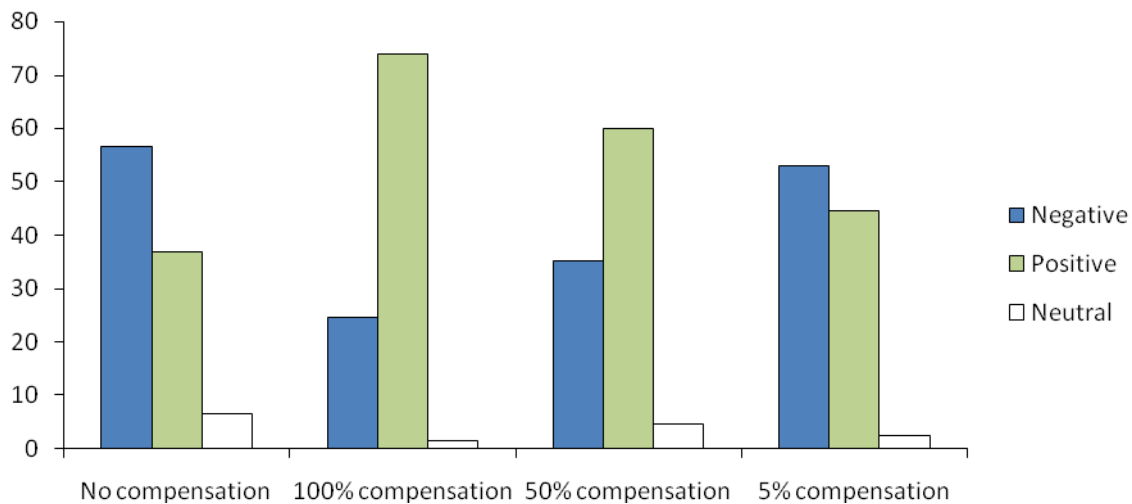
The wolf living in the Himalayas of western Nepal was a big mystery on whether it belonged to general wolf-dog group or a much genetically unique species resembling Himalayan wolf of India. By the genetic analysis conducted in a lab in Kathmandu and further analysis in Lund University, we can now confirm that these wolves are Himalayan wolf (*Canis himalayensis*) which have been geographically isolated from the other wolf population and could have genetically drifted from the common gray wolves we see today. Indian researchers have also hypothesized that Trans-Himalaya was the centre of wolf evolution and this species could be the father of all gray wolves (*Canis lupus*). This study has evidently raised its conservation profile as it is a unique species and there could be only few populations surviving.



**Figure 1.** A UPGMA tree based on 500 bootstraps (software MEGA 5.0) of about 330 bp of the control region. The sequence from this study is called Upper Dolpo.

## ii. Threats

By the questionnaires conducted in wolf-affiliated regions of Dolpa, the hostility between the local communities and the canine was apparent where 59% of local populations believed that it should be completely exterminated from Dolpa. Loss of natural prey and habitat fragmentation has compelled the wolf to predate on livestock and as a consequence it has imposed a threat to themselves from local's retaliatory killings. In addition, it was also clear that wolf was the main predator responsible in livestock depredation (71%) than snow leopard (29%) and due to the marginal economy locals have directly/indirectly participated in wolf's cub killing (46%). This study has shown that wolf is in dire situation by the lack of initiative and knowledge from the concerned organizations and the government.



**Figure 2.** Attitudes of Local people towards Himalayan wolf in Upper Dolpo with respect to amount of compensation

### iii. Empirical evidence

Prior to the completion of this project, Nepal did not have any hard evidence of the wolf's occurrence and its status apart from opportunistic anecdotes. Now we do have, although not comprehensive but a baseline or a possible blueprint to further extend its research and implement quick conservation strategies. This study will help in drawing up the interest within conservation biologists and take a strong initiative. However, much needs to be done and further researches and conservation campaigns should be built from this baseline study.

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

One of the primary objectives of this project was to examine the local's attitudes towards the wolf. Two Village Development Committees (VDCs) were selected for the interview where 1/3<sup>rd</sup> and 1/5<sup>th</sup> of local people representing their respective household were interviewed directly in Bhijer and Dho respectively. Forest guides were also the representatives of those villages who had directly participated in the transect survey on the quest to find the wolves and its indirect signs. The questionnaire interviews had laid out a convincing impression on most of the villagers that it will bring an effective solution towards the ongoing conflict and to compensate their livestock losses. Since this project was principally focussed for research objective and to develop a blueprint, locals will be benefitted on the upcoming projects. Local involvement is crucial for the preservation of this species and others; thus they have to be considered on the future wolf projects.

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

During the period of my stay in Dolpa and upon the completion of this project, I realised that this project is just a beginning to uncover the unknown existence of this resilient predator and to implement a strategy where wolf and humans could co-exist with little conflict. Prior to the completion of this project and upon the completion there has been a growing interest among the biologists of Nepal where few of them have planned to conduct research on Himalayan wolf. I along

with some colleagues in WWF Nepal, FON (Friends of Nature) and a student of University of Zurich, Switzerland have been discussing on the possibility of conducting another extensive research (PhD/research project) by widening the area and objectives.

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

The thesis developed for this project has already been shared with most of the biologists and conservationists of Nepal by email and Facebook. I also managed to share with professors and researchers of Lund University and Grimso Wildlife research station in Sweden. This project is also on the online Lund University thesis archive. A personal discussion with wildlife researchers on the ongoing situation about the Himalayan wolf and its possibility to extend future projects will also be conducted very soon. I along with my supervisor am also working to publish some of the important findings of this research in scientific journals to make it credible and available to everyone. In addition, I'm also planning to write a few articles concerning this matter to publish it in newspapers and magazines. This could broaden the chances of taking an interest by the concerned organisations and researchers and aware the general public.

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

The grant provided by Rufford was used for the whole timescale as planned. However, due to some unforeseen difficulties we had to shift the time period of survey to a shorter period and extend genetic and prey analysis to a longer period. The grant that got saved due to shorter survey period and no camera trap equipments were adjusted in other unanticipated and important matters which are stated in the budget table. Overall, RSG was critical to run the whole research and was one of the main reasons behind finishing the project on time.

#### 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
Fund transfer charge by Bank (Standard Chartered Bank, Ktm)		10		
Per diem for researcher for 6 months @ 4.3/day	774	186	588	The proposed budget was allocated for 6 months but were used only for 2 months
Honorariums for Forest guides (2) for 6 months @ 6.87/day	2473	746	2307	Same as above
Stipend for Field assistant (1) 6 months @6.87/day	1236	435	801	Same as above
Camera trap units	1309	0	1309	
Batteries @ 8.5 X 6 months	51	29	22	Same as above
Stationery	53	51	2	

Communication (post, fax, telephone) @ 10.3 X 6 months	61	81	-20	Internet was also included
Life and accident insurance for field assistant	43	0	43	No accidents occurred
Flight tickets (2) to Field airport (2 return trips)		421		
Transportation charges from airport to field (2 sites) and back to the airport (porters/horses hire)		588		
Flight tickets from Ktm-Sweden (1 return trip)		833		
Lab charges (equipment including one binocular microscope)		202		
Inverter		120		To compensate the delay in work due to the ongoing energy crisis in Nepal
Other equipment (Binocular, kitchen items, luggage safety)		137		
First aid kit		35		
Per diem for researcher (genetic lab works including transportation costs) * 5 months		687		Includes lunch and transportation costs
Sweden living costs for 1 month		589		For genetic data analysis, publication and presentation
Species ID of 17 scats samples @ £50/sample		850		Genetic confirmation of the scats of wolf which were used for prey analysis
<b>Total</b>	<b>6000</b>	<b>6000</b>	<b>0</b>	

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

This project was only a baseline study, so therefore I feel there should be implementation of more researches focussing on broader objectives and area. This project was only aimed at Dolpa where they are still known to be occurring in the more western region of Nepal like Humla district. Investigating its ecology and genetics are fundamental approach towards understanding this resilient and mysterious predator. We know that Himalayan wolf are genetically unique species through mitochondrial DNA study but to confirm it as different species we need to look at its nuclear DNA as well. Tiger genome project and snow leopard genetic project has been undertaken in Nepal and it would be very interesting to assay wolf's genetic status as well.

Looking at the present scenario of wolf-human conflict where humans are exterminating the wolf by a conventional approach (killing wolf cubs only). However, this could change in a couple of decades where local people will be equipped to carry a gun and chances of wolf survival will be slim in these remote places. In Taplejung (KCA), Nepal WWF Nepal has engaged local people in various types of income generating programs like sewing, accounting and kitchen gardening (WWF Nepal 2001). In the long run this would enhance their socio-economic conditions and the ecosystem as well, allowing enough space for wild ungulates to populate and restore the wolf's natural prey numbers in order. However, this is only possible over a long period of time. Meanwhile an immediate short-term livestock management strategies like training Tibetan mastiffs to guard the livestock during and after grazing, building high stone corrals and advanced horse management could reduce the conflicts. All in all, this campaign will be most effective if the whole community and other stakeholders take the responsibility and lead from the very beginning for a successful conservation approach (Jackson and Wangchuk 2004; WWF Nepal 2001). In Nepal, conservation campaigns have been most successful with community involvement (e.g KCA) and therefore with technical help/education and initiative funds from donors/NGOs/government the ecosystem could be restored in near future.

**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?**

I have used the logo in my thesis and it certainly has received publicity to all those biologists, professors and conservationists who has read it and also other interested parties who will read it in the future.

**11. Any other comments?**

I would like to take this opportunity to personally thank RSG for providing me the chance to conduct and complete this research which has taught me many new different knowledge and skills. I know there's still more to learn but it has developed me in lot of ways and also in becoming a useful conservation biologist. I will use my experiences for the upcoming research challenges confidently.