Project Update: September 2018

Research problem

There's a real conservation need for monitoring methods that are both cost-effective and robust, especially when monitoring rare mammals across large scales. Interviews with local communities are being increasingly used as a potentially cost-effective and robust way to gather species population data. This work will use mixed methods to develop a survey method that combines local knowledge with occupancy analysis for monitoring multiple threatened and cryptic species, for use by local NGOs and other conservation practitioners in a high conservation priority area in Cameroon. This will allow conservation practitioners and local communities to collaborate, gathering robust data to guide future species conservation.

We use local knowledge to collect vital information on species distribution and threats in and around the Dja Faunal Reserve. We want to quantify the status of, and threats to, hunted species in the region; identify ways for local communities and conservation practitioners to work together on monitoring and in doing so, improve a potentially valuable interview-based monitoring method.

Methods

Using mixed methods, we gather data on species distribution, relative abundance and threats, while also developing the method with a better understanding of biases that affect interview data. The outcome is of tangible conservation benefit; highly valuable data on rare and hunted mammals in a poorly understood region and an improved rapid and cost-effective monitoring method for rare and cryptic species across challenging environments that incorporates local people and their knowledge.

Progress so far

Of the 11 monitoring indicators, we have completed five and a further four are in progress. Below is an update of our activities and progress:

Activity	Completed?	Notes
Data on hunting pressure and threats to 12 rare or and/or hunted mammals used by conservation practitioners to target conservation around the Dja Faunal Reserve.	YES	Interview, hunter diary and camera trap data have all provided valuable detections of species of conservation importance, such as the critically endangered (Gorilla), chimpanzee, the endangered forest elephant and the vulnerable giant pangolin. Hunter diaries have proven highly valuable for gathering in-depth data on patterns of hunting offtake and distribution.
Number of camera trap days: 40 camera traps at 1km2 intervals for 30 days	YES	In the end, 30 cameras were set for 60 days in both villages, totaling 3600 camera trap days. We decided that fewer cameras over a longer time

in two villages (2400 camera trap days)		period made more sense in this case, providing us with more camera trap days than originally planned for.
Reliability of camera trap data: Camera trap data compared to existing studies in similar habitats close to this study site.	IN PROGRESS	Estimates from the literature are currently being collected via a literature search. The most recent and robust estimates will be identified for use as a comparison to the camera trap and interview data
Number of interviews conducted: 900 interviews conducted.	YES	All willing adults in both villages have been interviewed. There were fewer adults in one of the villages as originally thought, as many had gone to work in the neighboring timber concession. Total interviews in each village total: Season 1: 62 + 106= 168 Season 2: 69 + 123 = 192 Season 3: 73 + 120 =193 Season 4: 67 +126 = 193 TOTAL INTERVIEWS = 746 A number of informal interviews regarding bushmeat consumption and preferences, which seek to add context to the hunting offtake data have also been conducted (circa 35 informal interviews, in the process of transcription).
Reliability of interview data: Results from social surveys compared to data from camera traps and daily-diary data	IN PROGRESS	Data analysis from village 1 is almost complete. We are in the process of analyzing the camera trap data for the second village, which will be completed by November. Comparisons of occupancy and density estimates are currently being analyzed, with some interesting preliminary results regarding the precision and accuracy of the data from camera traps and social data.
Number of daily diary sheets: 6-9 months of data completed by 10-12 local villagers (c. 1800-2160 days total)	YES	10 hunters competed daily hunter diaries for 9 months in village 1 and for 7 months in village 2. We have a total of 4350 days' worth of daily hunter diary data, providing a really detailed and valuable insight into the composition of offtake, the effort hunters have to go to and trends in hunting methods.

Local capacity building via agricultural extension workshops	IN PROGRESS	2 workshops have been held to share information on simple methods for improving yields via natural methods, such as using a tobacco leaf solution to prevent green fly and new grafting methods to allow faster germination and fruiting of wild mango, a key livelihood source that villages did not know could be grown in their farms. My research team identified key people in both villages who they feel will best be able to help others learn these new methods. Further workshops and follow ups are being planned for the next few months.
Capacity building of research team	YES	All the research team attended a full day training with the ZSL camera trap team, to teach them the correct way to set camera traps and optimal camera trap survey design. The team are now confident in setting camera traps and have a good level of practical experience in doing so, which they can take on to future jobs. All team members have been assisting me with data preparation and analysis.
Recommendations on survey design	NOT YET	When all the results are completed we will be able to draw some recommendations for survey design. A short report outlining optimal survey design, cost/benefit against other methods and methods for engagement with forest dependent communities would be most helpful for conservation practitioners. I plan to do this as soon as I have finished my PhD.
Wider engagement	IN PROGRESS	I have presented the preliminary results of this work at a workshop on methods to best monitor pangolins, held in Cambridge by the IUCN pangolin specialist group. I have also presented at the ECCB in Finland. One of my team was going to come to the UK to attend the SCCS conference but was not granted a visa, despite being awarded full funding to attend SCCS and spend a month in my lab at

		Oxford to work with me on a paper. We were very disappointed but will try again next year.
		I am returning to Cameroon in October for some meetings. I intend for us all to give a presentation at the University about the research and preliminary findings to MSc and undergraduate students. I am in contact with The Conversation Africa and The Conversation UK. Both are keen to publish a piece on our work when we are ready.
Published papers	**NOT YET**	We are working on it! Next year hopefully. Aiming for Methods in Ecology and Evolution, Conservation Biology and Ecology & Society.