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.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Hugh Wright
Project title	Identifying nest predators to guide the conservation of critically endangered white-shouldered ibis
RSG reference	15.09.09
Reporting period	November 2009 – June 2011
Amount of grant	£5600
Your email address	hugh.wright@uea.ac.uk
Date of this report	29th June 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
Training local staff to install and maintain nest cameras			X	Staff were intensively trained and undertook drills before deploying cameras on active nests. Consequently camera installations went very smoothly. Local staff were able to maintain and uninstall camera systems independently.
Installation of nest cameras at white-shouldered ibis nests			X	Cameras were installed at a total of 9 nests, providing a total of 315 days of footage.
Analysis of images to identify nest predators			X	Southern Jungle Crow *Corvus macrorhynchos* was formally identified, for the first time, as a nest predator and scavenger at ibis nests.
Dissemination of results to project partners		X		Regular communication with project partners was maintained throughout. Final results and recommendations will be presented to project partners at a workshop in early 2012 which will lead to the full achievement of this objective.

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

The sheer number of technical and logistical challenges provided difficulties beyond those anticipated. Minimising disturbance to the birds; finding climbable nest trees and sufficiently visible nests; preventing human, livestock and wild animal interference; protecting against forest fires and finding reliable supplies of electricity with which to charge batteries all had to be addressed. A precautionary approach was used to prevent disturbance to birds and local people were employed to guard the camera systems from human interference (these forests are in constant use by people and field staff raised concerns that risk of theft or damage was high). Persistence, trial and error, and experience were used to overcome the other difficulties. My advice to others undertaking similar projects, involving the application of custom-built technology into an outdoor environment, is that one season may be required to develop the most effective protocol, especially if you are new to the equipment or it is being applied to a new environment.

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

- Identification of a white-shouldered ibis nest predator. Our nest cameras made the first formal confirmation of a nest predator at an ibis nest, recording a southern jungle crow *Corvus macrorhynchos* removing a young ibis chick from a nest. This species was also captured scavenging

eggs from an abandoned nest and witnessed predating eggs from another, non-camera nest. This outcome is a step towards better understanding the role of natural predators at ibis nests, and highlights the need for further research into: the importance of this species as a nest predator; whether preventing human disturbance at nests could reduce the chances of an adult ibis leaving the nest unattended and open to aerial predators; and the ecology of the southern jungle crow population in the dry forest ecosystem.

- Improving capacity of local field staff at Western Siem Pang IBA. Training and in-the-field experience from this project has given local staff new strengths in applying technology to monitoring of threatened biodiversity. Staff developed skills and awareness of using nest camera systems, minimising disturbance to wildlife while making interventions, planning and undertaking a strict work schedule, working as an efficient team for high-pressure and severely time-limited activities (camera installations).

- Developing a protocol for nest camera use in the dry forest environment. Nest cameras had never been deployed in this habitat or to large tree-nesting waterbirds in Cambodia before. The physical conditions, lack of infrastructure and the necessity to prevent any undue interference at nests provided many challenges. A safe and efficient protocol for nest camera use was devised that can now be replicated to this and other species in Cambodian dry forests.

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

Nest finding, camera installation and camera maintenance all relied on a team of local field staff. Three local villagers were employed full time for the two breeding seasons and three others were employed on an ad hoc basis when camera installations took place. These local people received intensive training as described above. A total of 12 local people were employed to guard nest camera systems once they were deployed at nests. Guards worked from dawn until dusk for every day that the nest was active. Their salaries made a substantial contribution to their household income in that season and their skills as nest observers were also developed. The wider community benefitted from a nest-finding reward scheme, which provided small cash rewards ($8 USD) to people who found and reported active White-shouldered Ibis nests.

5. Are there any plans to continue this work?

Nest finding and nest monitoring will continue in the 2011-12 breeding season at Western Siem Pang IBA. Local field staff will now record crow activity when conducting nest monitoring to assess how widely crow predation is taking place and what factors may have an influence (such as distance to settlement, level of human disturbance and proximity to agricultural land). Little is yet known about the relative importance of corvids to other potential predator species, particularly mammals, so field staff will continue to be vigilant for evidence of mammalian predation when nests fail. BirdLife International and the University of East Anglia (UEA) remain motivated to continue white-shouldered ibis research; a forthcoming meeting in early July 2011 will discuss future research priorities at which I shall encourage further application of nest cameras beyond the completion of this PhD.

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

The findings and recommendations from this project, combined with analyses of ibis nest survival rate (another study within the PhD), will be disseminated to key partners including BirdLife International, People Resources and Conservation Foundation, Wildlife Conservation Society and WWF in the next two months. This will help these organisations to plan their conservation interventions at nests for the next breeding season (beginning in November-December). Conservation recommendations from this project and all aspects of the PhD will be formally presented and discussed at a workshop held in Phnom Penh in early 2012. This will involve the project partners, relevant government departments, local stakeholders plus other conservation NGOs developing an interest in conserving this species and dry forests in general. Finally, results of the research into White-shouldered Ibis nest predation and protection will be submitted for publication in scientific journals later this year.

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

The grant was used exactly over the period anticipated, from November 2009 to May 2011.

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
Nest camera systems	£3335.00	£2261.97	-£1073.03	Camera system costs remained as budgeted but co-funding from Angkor Centre for Conservation of Biodiversity and Mohammed Bin Zayed Species Conservation Fund was also used to cover them, hence the underspend in this budget line.
Nest camera installation equipment	£220.00	£86.32	-£133.68	The cost of tools and battery charging in Cambodia was cheaper than originally anticipated.
Staff salaries and insurance	£988.36	£2755.34	£1766.99	Staff costs were much higher than anticipated due to: the need to employ 12 people over many weeks to guard cameras (once installed); and the full-time employment of an extra local field staff member to assist in finding nests, allowing a greater nest sample size and compensating for the scarcity of suitably accessible nest trees for cameras.*
Travel within the fieldwork site	£398.99	£94.92	-£304.07	Motorbikes used for transport remained in good condition so repairs were fewer than anticipated, petrol consumption was also less than originally estimated.

Transportation of camera equipment	£657.65	£400.13	-£257.52	Transportation of equipment of nest camera equipment was straightforward, requiring only coach travel and not hire of a private vehicle.
Total	£5,600.00	**£5,598.68**		

Exchange rates used for conversion from US dollar to £ Sterling follows the average rate at the mid-point of each 6 month period of the project. For November 2009-March 2010: £1 = $1.6163. For April-September 2010: £1 = $1.4710. For November 2010-March 2011: £1 = 1.6123.
** Costs were for the salaries of local staff; the PhD student's travel and subsistence were funded by other sources as stipulated in the original application.*

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

Results of our white-shouldered ibis nest studies to date (from this project and other elements of the PhD research) suggest that both natural predation and human exploitation/disturbance are causes of nest failure, and that failure can be variable between years. Further research is required to determine the extent to which southern jungle crow is a lead cause of nest failure, or simply one of a number of nest predators. The relative importance of natural predation to human exploitation is likely to vary on a site-by-site basis and this also requires further research.

The next best step would be to scale-up this project to undertake a nest camera study at a large sample of nests across different sites, this would provide adequate quantification of threats to enable evidence-based conservation recommendations. Failing this, project managers should be vigilant to both forms of threat and rigorously monitor nests to determine which is likely to be the most significant at their site. Nest protection through use of guardians, plastic baffles or simply through greater awareness-raising in the community could be applied depending on which threats are most substantial.

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 was used in presentations, including a seminar at the UEA and presentations in Cambodia to conservationists and potential major donors at Western Siem Pang IBA. Much greater publicity is anticipated as the PhD moves to presentation and publication stages presentation at scientific conferences and in Cambodia, and the publication of scientific papers. The communications department at UEA has experience in publicising projects of this nature and I intend to work closely with them when results are published. RSGF will be acknowledged in all of these cases and the logo will be included where possible.

11. Any other comments?

I wish to thank the Rufford Small Grants Foundation for funding this element of my research. This work, which I have found challenging but also very rewarding, would not have been possible without the support from RSGF. I will be recommending RSGF to other conservation researches and practitioners.