CEPF SMALL GRANT FINAL PROJECT COMPLETION REPORT

Organization Legal Name:	University of East Anglia
Project Title:	Measuring the effectiveness of conservation interventions for white-shouldered ibis in Cambodia
Date of Report:	10/11/10
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CEPF Region: Indochina

Strategic Direction: 1. Safeguard priority globally threatened species in Indochina by mitigating major threats

Grant Amount: $13,942.68

Project Dates: 1st November 2009 – 31st October 2010

Implementation Partners for this Project (please explain the level of involvement for each partner):

BirdLife International *in Indochina* Cambodia Programme
Collaborated closely in the implementation of all project activities at Western Siem Pang IBA. In kind contributions of staff, motorbikes, accommodation and other equipment facilitated the collection of data. Also provided further logistical, administrative and technical support.

BirdLife International, Cambridge
Dr Nigel Collar continued to provide supervision of the PhD, particularly at the design stage of this project.

Forestry Administration of Cambodia
Provided technical support at five of the sites involved in this project, including assistance in the collection of data.

Local villagers in Siem Pang district
Seventy households participated in livelihood assessments spanning 12 months, and further individuals participated in detailed interviews and focus groups. Thirteen local men were trained and employed as white-shouldered ibis nest guards.

Ministry of Environment of Cambodia
Provided technical support at Lomphat Wildlife Sanctuary and Kulen Promtep Wildlife Sanctuary.

People resources and Conservation Foundation (PRCF)
Collaborated closely at Lomphat Wildlife Sanctuary in this and a separate CEPF project focusing on white-shouldered ibis. Assisted in implementing routine ibis monitoring and nest finding at this site. Regular communication ensured the work was complementary and not duplicated between the two projects. UEA staff provided technical advice to PRCF to assist with their CEPF project.

Wildlife Conservation Society (WCS) Cambodia Program

Undertook identical nest survey and protection protocols at Kulen Promtep Wildlife Sanctuary to complement this project's activities at Western Siem Pang IBA. Provided technical and logistical support also.

WWF Cambodia Program

Are partners to UEA through an MoU and assisted with research activities contributing to Hugh Wright's PhD but not to this project specifically. A delay in WWF obtaining funding prevented them from carrying out field activities for much of this project's duration.

Out of these partners, only the local people in Western Siem Pang IBA benefitted financially from this project's funds (through salaries and per diems received).

Conservation Impacts

Please explain/describe how your project has contributed to the implementation of the CEPF ecosystem profile.

This project has contributed directly to Strategic Direction 1 and Investment Priority 1.1, "*Identify and secure core populations of 67 globally threatened species from overexploitation and illegal trade*". White-shouldered ibis *Pseudibis davisoni* is a Critically Endangered waterbird occurring within the Indochina region and has been identified by CEPF as a species requiring conservation action. This project further identified the whereabouts of core populations of white-shouldered ibis and the reasons for its patchy distribution. The project also made the first tangible attempts to protect the largest known population by implementing nest guarding at Western Siem Pang IBA.

This project is making significant advances in securing the core populations of white-shouldered ibis by coming to robust, scientific conclusions on the species' ecology and effectiveness of conservation interventions. In the coming months the project's results will be disseminated to all relevant stakeholders in Cambodia. In-depth discussions and technical advice will enable the uptake of these findings into conservation practice. This knowledge base will be the project's key contribution and legacy to white-shouldered ibis conservation.

The project findings will also discuss the relevance of an innovative conservation strategy that addresses both threats to rural communities' natural resource use and to white-shouldered ibis. By sustaining an extensive grazing system, conservation can benefit both the local people and threatened waterbirds simultaneously. Too often conservation mitigates human activities and compensates communities in order to conserve biodiversity. This scenario provides a genuine opportunity to provide mutual benefit to both. This element of the project contributes to Investment Priority 2.1.

Please summarize the overall results/impact of your project against the expected results detailed in the approved proposal.

Objective 1: To understand factors limiting the current white-shouldered ibis distribution

Understanding why the white-shouldered ibis distribution is so patchily distributed could be key to understanding its rarity and its conservation requirements. This objective has been met and implementation exceeded expectations. Originally the project planned to contrast environmental conditions at Preah Vihear Protected Forest (a site with few ibis) with Western Siem Pang IBA (the site with most ibis). This was expanded to also include Mondulkiri Protected Forest (a site with few ibis) and Kulen Promtep Wildlife Sanctuary (containing a moderate population). Sixty-five trapaengs were surveyed in each site in the mid-late dry season to see the extent of available foraging habitat. Further data on livestock number, human population and environmental factors has been collated. Expanding the focus to four sites has enabled an analysis covering a much larger proportion of white-shouldered ibis' range, creating more robust conclusions.

Analysis of this data has taken two parts. The first has taken the results from UEA's previous research into ibis foraging ecology, and then assessed the availability of suitable trapaeng habitat at these four sites. Preliminary results are indicating that the best site for ibis (Western Siem

Pang IBA) has up to 32 % more suitable habitat than the other three sites. This probably relates to a higher density of buffalo and cattle and the greater impact of grazing. The other three sites have similar moderate-high availability of suitable trapaeng habitat, suggesting the difference in ibis abundance between these sites is not caused by this factor. The difference in habitat availability between Western Siem Pang and the other sites suggests that feeding intake could be 29 % higher here than elsewhere, with very likely positive effects for breeding productivity.

The second part of the analysis is bringing together data on a range of variables (including human population, livestock abundance, wet season habitat extent, rainfall and assumed hunting pressure) from up to eight separate sites in Cambodia to look for other patterns in ibis distribution. Preliminary results from this work are suggesting that wet season habitat may also play an important role in determining whether the ibis are occurring, with sites containing more open forest and more fallow rice fields, also containing more ibis. This potential link to human agricultural practices may explain why white-shouldered ibis has so often been found in fairly close proximity to humans compared to other waterbirds.

The final outcome of this objective will be reports and scientific papers, summarising the finalised results and using them to form conservation recommendations. This element of the project is on schedule and publications of these papers (as well as the PhD thesis) is expected in early 2012.

Objective 2: To determine the causes of nest failure and effectiveness of nest protection

This project has achieved the first physical protection of white-shouldered ibis at the most important site for the species. Nest guardians were applied to white-shouldered ibis nests in Western Siem Pang IBA, marking a substantial step-up in the conservation activity at this site. A record 24 ibis nests were found in the 2009-2010 season, and 20 of these were included in the study of the effectiveness of nest guarding. Half of the 20 nests were protected using nest guardians employed from the local community, and all nests were monitored to determine final nest outcome (success or failure). Breeding success was very high this season, with only 17 % of nests failing and a 40.4 % improvement of chick survival rate compared to the previous season. This is good news for the ibis but preliminary results suggest that chick survival was not improved by the deployment of nest guards. In partnership with this project, WCS undertook an identical protocol at Kulen Promtep Wildlife Sanctuary, but only three nests were found at this site this season and all of these succeeded.

Nest cameras were successfully deployed at four nests in an attempt to determine the importance and identity of natural nest predators. Substantial logistical problems were overcome to install and maintain these camera systems, with theft, fire, adverse weather, trampling by livestock and damage by wild animals all causing threats to this activity's success. Unfortunately no predation events were recorded by the cameras. Predation can vary considerably between years, and it is plausible that lower predation this season may have caused the higher nest success but also the failure to capture a predator event. The cameras did provide useful information on chick provision rate however, and now the technique for the camera installation has been perfected this can be used in future seasons.

Implementing nest guards at Western Siem Pang has not only improved the protection afforded to white-shouldered ibis but also increased the capacity of local staff. Personnel received training sessions and gained extensive experience, including: finding ibis nests; recruiting and training nest guards; routine checking of nest guard activities; enforcing survey protocols and monitoring unprotected nests. They also learnt to prioritise their work schedule – important when the status of nests can change daily. Now, with the next breeding season just about to begin, the staff are about to use their strengthened capacity as they independently embark on a new season of nest finding and protection with little extra assistance. This project outcome also strengthens BirdLife International's application to gain the site protected status, and will be a platform from which further conservation actions can be taken when this status has been achieved.

In summary, the project was successful in implementing the planned nest activities. The robustness of results will be improved by continuing this work into another breeding season at both Western Siem Pang IBA and Kulen Promtep Wildlife Sanctuary next season (for which funding is already secured). The 2010-11 season will provide a bigger sample of nests, as well as

potentially different natural and social conditions that could influence nest success. This extra data will be analysed in 2011 to make final conclusions on the importance of natural versus human predators and the effectiveness of nest guarding. These conclusions will be provided in reports and scientific papers, which are expected to be released and submitted for publication in early 2012.

Objective 3: To examine positive and negative influences of local livelihoods on white-shouldered ibis

Conservation can potentially benefit from a synergism between white-shouldered ibis and the livelihoods of local people. The project attempted to quantify the importance of livestock and grazing practices to both ibis and people. To investigate the value for local livelihoods, the household economies of 70 families in Siem Pang district were assessed over a twelve month period. Families included both native Laos and Khmer speakers, residing in riverside fishing and forest-based villages. Respondents in each household participated in two, in-depth interviews between November 2009 and May 2010. These quantified natural resource use and household production (subsistence or monetary) for the rice and dry seasons. This was supplemented with 17 key informant interviews with members of the community ranging from teachers to government officials, villagers and tradesmen.

Preliminary results of the economic assessment show that livestock contribute a significant amount to the livelihoods of local people. Part of this value stems from the capital associated with owning livestock and the opportunity to sell livestock at times of need (for example an emergency, special event or to purchase a high-cost good). A very significant part of livestock's value however comes from draught power and the role of buffalo and/or cattle in ploughing, tilling and transporting for rice agriculture. 80 % of the interviewed households cultivated rice and 84 % of these used livestock in the process. The overall contribution of livestock to household economies in comparison to other livelihood activities proved hard to assess accurately. This was largely due to a very high level of illegal activities that proliferated in the 2009-2010 dry season and were impossible to record accurately. Nevertheless, there is no doubt that livestock are currently a fundamental part of these people's livelihoods.

To understand the role of livestock in creating foraging habitat for white-shouldered ibis, trapaeng habitat was surveyed in the early dry season of 2009 and contrasted with surveys from the late dry season earlier that year. Results show that the extent of suitable habitat is less in the early dry season compared to the late dry season. However, this may have more to do with greater coverage of water (which the ibis do not feed in) rather than a lack of grazing impact earlier in the season. Western Siem Pang appears quite ubiquitously grazed and therefore this survey did not detect a strong grazing effect. The importance of grazing is better understood by comparing Western Siem Pang to other sites in Cambodia, as was shown under Objective 1.

This project has demonstrated that both people and ibis benefit from the existence of an extensive grazing system in dry dipterocarp forests. This provides an opportunity to create an innovative conservation strategy that simultaneously addresses the needs of local communities and the surrounding wildlife. Forthcoming reports and scientific papers will provide the finalised results from this study and propose conservation actions that can utilise this win-win scenario.

Please provide the following information where relevant:

Hectares Protected: N/A
Species Conserved: White-shouldered ibis
Corridors Created: N/A

Describe the success or challenges of the project toward achieving its short-term and long-term impact objectives.

The project's short-term goals were successfully achieved, and all project activities were implemented meeting or exceeding the expectations at the project planning stage. This second CEPF project on white-shouldered ibis has substantially broadened the topics of research that UEA is investigating. In particular, expanding the research focus from Western Siem Pang to sites all across north and east Cambodia has enabled a much more thorough understanding of the factors affecting the white-shouldered ibis population as a whole, and this is very valuable to conservation. Implementing the first species-specific protection of the ibis at its most important site has also been a very worthy success of this project.

A challenge to the short-term success of the project has come in the susceptibility of data collection to variable natural and social conditions. This is an inherent risk in studies where only a snapshot of time is available to conduct the study, and when only low sample size is available (the case for nests). A sudden improvement in nest productivity, perhaps due to reduced predation, and a dramatic increase in illegal activities (namely timber extraction) both provided unexpected circumstances that have impacted the quality of the data. Thankfully the impacts of this can be mitigated by continuing the research into a further field season (2010-11).

The project's longer-term impacts are now being achieved. Capacity building at Western Siem Pang has enabled staff members to now embark on a nest protection scheme run largely independently of external assistance. This involves the staff planning and carrying out complex work routines, and handling more responsibility than they have had in the past. This project's m most substantial long-term impact will come from the findings and knowledge based developed in reports, scientific papers and a workshop scheduled for the coming months. These are discussed further in *Sustainability/Replicability* section below.

Were there any unexpected impacts (positive or negative)?

Expanding the remit of Objective 1 by surveying more sites than originally planned had positive impacts for knowledge of white-shouldered ibis populations and awareness amongst stakeholders. This was particularly the case in Mondulkiri Protected Forest where a white-shouldered ibis population may well occur but has not been documented as yet. Undertaking a wide-ranging habitat survey provided an opportunity to assess the potential of this site, and a short report was provided to WWF and the Forestry Administration of Cambodia, recommending where further surveys should be undertaken. Staff and local people encountered during the work were taught about the importance of white-shouldered ibis and encouraged to report them.

Visiting several sites in quick succession in the mid-late dry season also provided an unexpected new insight into what factors may determine the distribution of white-shouldered ibis. It quickly became apparent how the dipterocarp forest itself varies in canopy cover and density between sites, and how the extent of fallow agricultural fields differs as well. This has led to a new hypothesis that availability of wet season habitat could be an important factor. The importance of fallow fields will have particular relevance to future conservation activity involving local communities.

Finally, the project gained unexpected attention from the Cambodian media and was featured in a two-page spread in the national lifestyle magazine *Angkor Thom*. This is a very widely read and popular magazine in Cambodia and so the conservation need of white-shouldered ibis received wide publicity.

Lessons Learned

Describe any lessons learned during the design and implementation of the project, as well as any related to organizational development and capacity building. Consider lessons that would inform projects designed or implemented by your organization or others, as well as lessons that might be considered by the global conservation community.

Project Design Process: (aspects of the project design that contributed to its success/shortcomings)

Discussing aspects project activities with relevant experts at the design stage is a way of ensuring project success at the implementation stage. Experts can give advance warning of problems so they can be anticipated and dealt with quickly. This project benefitted particularly from nest camera experts, who were able to provide training in how to troubleshoot technical problems that could occur in the field. This was invaluable at the design stage because implementation took place at a remote site where communication with experts in other countries was very difficult. Designing the nest protection study with the help from WCS, who already have several years experience of this activity, was also very useful.

While project design should be as thorough as possible, it also needs to have flexibility to adapt to the local conditions in which it becomes implemented. While it is good practice to base a conservation protocol on other existing protocols in the region, the local conditions at the site level may require some differences in methodology. For example, it was intended that nest guards in Siem Pang would be paid the same rate as nest guards in Kulen Promtep Wildlife Sanctuary (where WCS implement nest protection). This proved impossible however because people in Siem Pang can earn much more in a day in the forest (mainly through illegal activities which are more common at this site). This meant that nest guard salaries had to be set higher in Siem Pang than at the sister site.

Project Implementation: (aspects of the project execution that contributed to its success/shortcomings)

By far the most important lesson I have learnt during this project is the importance of being reciprocal in working relationships with partners and collaborators. As this project forms part of a PhD study initiated by a university based in a country external to the project location, a good relationship with the conservation NGOs and government departments working in the country is critical for the project's success. However to develop a good working relationship it is very important that you are willing to give time and help back when necessary, for example in providing technical advice or helping in fundraising and proposal writing. Failure to do this can mean a failure to gain the collaboration that this kind of project needs.

When attempting challenging tasks it is important to plan adequate time to overcome teething problems. In the case of this project, we deployed nest cameras in a novel situation where they had not been used before. This meant there were a great deal of technical problems to overcome, and also a great deal to learn about the behaviour of the ibis and how they might react to our intervention. Dealing with these issues requires time and may mean results aren't instantly achievable. This can become a problem if not enough time is given to fully implement the task and achieve results. Fortunately this project can benefit from UEA's continuing research programme and gain results from more than one year.

Other lessons learned relevant to conservation community:

ADDITIONAL FUNDING

Provide details of any additional donors who supported this project and any funding secured for the project as a result of the CEPF grant or success of the project.

Donor	Type of Funding*	Amount	Notes
Oriental Bird Club	A	$3253.00	Also providing another $6506.00 for the next two breeding seasons
NERC/ESRC	A	$3567.48	Combination of Overseas fieldwork grant and Research Training Support Grant
Rufford Small Grants Foundation	A	$9,108.40	Towards the cost of nest cameras
ACCB	A	$2,920.24	Also providing another $2,000.00 for the next breeding season
Mohammed bin Zayed Species Conservation Fund	A	$4,995.98	Towards the cost of nest cameras
British Ornithologists' Union	A	$3,190.64	Providing funding for continued nest protection work next season
University of East Anglia	In-kind	$12,149.96	Maintenance grant for PhD researcher's living costs in the UK

Additional funding should be reported using the following categories:

A *Project co-financing (Other donors contribute to the direct costs of this CEPF project)*

B *Grantee and Partner leveraging (Other donors contribute to your organization or a partner organization as a direct result of successes with this CEPF project.)*

C *Regional/Portfolio leveraging (Other donors make large investments in a region because of CEPF investment or successes related to this project.)*

Sustainability/Replicability

Summarize the success or challenge in achieving planned sustainability or replicability of project components or results.

This project has been successfully in achieving planned sustainability, both in terms of research work in the coming months and longer-term sustainability through conservation action. UEA's white-shouldered research programme continues through ongoing surveys at Western Siem Pang, data analysis and write-up of results. UEA will undertake one final fieldwork season to complete the PhD research (funding is already secured), taking place from mid-January to mid-March in 2010. This will focus on implementing the nest protection study, nest camera work and additional livelihood assessment and social study. Funding is already in place for the analysis and write-up stage of this project/the PhD as a whole so this will happen as planned.

Carrying out an extra fieldwork season in the 2010-2011 dry season will considerably strengthen final results and conclusions by creating larger sample sizes and more robust results. Data analysis and final conclusions will continue being made throughout 2011 following this fieldwork. Results dissemination is key to the sustainability of this project and is an aspect that UEA takes very seriously. UEA now plans to provide a presentation in Phnom Penh at the start of the forthcoming fieldwork season (January 2011) to update stakeholders on the research progress and the latest results. A full and comprehensive workshop to present and discuss conservation recommendations is now scheduled for the end of 2011 when the most complete and robust results will have been formulated.

Uptake of this project's (and the overall PhD's) recommendations into conservation practice will be the greatest legacy of this work. The knowledge base provided will enable conservationists to design their activities around robust scientific evidence, and therefore have a greater likelihood of success and preventing the extinction of white-shouldered ibis. The recommendation of a conservation strategy that integrates biodiversity conservation with protection of local livelihoods will have application to conservation more generally within this and other tropical regions. Technical advice is continuing to be provided to stakeholders in Cambodia on a regular basis, namely for PRCF and their CEPF-funded ibis conservation project in Lomphat Wildlife Sanctuary. Technical advice will continue to be provided to all interested stakeholders, and this provides a fast and effective channel for the project's results to become assimilated into practice.

Conservation activity is continuing beyond the completion of this project. UEA has secured funding for nest guarding to continue at Western Siem Pang for another two breeding seasons, providing significant and sustained effort to protect white-shouldered ibis at the most globally important site. Capacity building achieved by this project is enabling nest protection to take place with increasing independence and responsibility by Cambodian nationals. This and the publicity raised for Western Siem Pang by this project are supporting the application to gain this site Protected Forest status.

Summarize any unplanned sustainability or replicability achieved.

A key staff member of this project, Sum Phearun, now looks set to begin a productive career in conservation and one that will surely benefit the efforts to conserve biodiversity in Cambodia in years to come. Thanks to the training and in-the-field experience that Phearun received during this and the previous CEPF project, he is now going on to study for a Masters in Biodiversity Conservation and will immediately proceed into work with a conservation NGO.

Safeguard Policy Assessment

Provide a summary of the implementation of any required action toward the environmental and social safeguard policies within the project.

At the planning stage it was highlighted that there might be some involvement of indigenous peoples during project implementation, namely through nest reward and nest guarding schemes. Consultations with village and commune chiefs, plus villages meetings were used (as planned) to spread awareness and gain approval from the people involved. During the running of the schemes, no indigenous peoples actually became involved and so no further action was required.

Performance Tracking Report Addendum

CEPF Global Targets

1st November 2009 – 31st October 2010

Provide a numerical amount and brief description of the results achieved by your grant.
Please respond to only those questions that are relevant to your project.

Project Results	Is this question relevant?	If yes, provide your numerical response for results achieved during the annual period.	Provide your numerical response for project from inception of CEPF support to date.	Describe the principal results achieved from July 1, 2010 to June 30, 2011. (Attach annexes if necessary)
1. Did your project strengthen management of a protected area guided by a sustainable management plan? Please indicate number of hectares improved.	No			Please also include name of the protected area(s). If more than one, please include the number of hectares strengthened for each one.
2. How many hectares of new and/or expanded protected areas did your project help establish through a legal declaration or community agreement?	No			Please also include name of the protected area. If more than one, please include the number of hectares strengthened for each one.
3. Did your project strengthen biodiversity conservation and/or natural resources management inside a key biodiversity area identified in the CEPF ecosystem profile? If so, please indicate how many hectares.	No			
4. Did your project effectively introduce or strengthen biodiversity conservation in management practices outside protected areas? If so, please indicate how many hectares.	Yes	138,137 ha	138,137 ha	The project strengthened conservation management practices at the currently unprotected Western Siem Pang IBA, through nest protection and strengthening of staff capacity.
5. If your project promotes the sustainable use of natural resources, how many local communities accrued tangible socioeconomic benefits? Please complete Table 1below.	Partially			Through research recommendations this project does promote sustainable use of natural resource combined with simultaneous protection of biodiversity. However this project did not provide any tangible socioeconomic benefits to any communities.

If you answered yes to question 5, please complete the following table.

Table 1. Socioeconomic Benefits to Target Communities

Please complete this table if your project provided concrete socioeconomic benefits to local communities. List the name of each community in column one. In the subsequent columns under Community Characteristics and Nature of Socioeconomic Benefit, place an X in all relevant boxes. In the bottom row, provide the totals of the Xs for each column.

Name of Community	Community Characteristics								Nature of Socioeconomic Benefit													
									Increased Income due to:													
	Small landowners	Subsistence economy	Indigenous/ ethnic peoples	Pastoralists/nomadic peoples	Recent migrants	Urban communities	Communities falling below the poverty rate	Other	Adoption of sustainable natural resources management practices	Ecotourism revenues	Park management activities	Payment for environmental services	Increased food security due to the adoption of sustainable fishing, hunting, or agricultural practices	More secure access to water resources	Improved tenure in land or other natural resource due to titling, reduction of colonization, etc.	Reduced risk of natural disasters (fires, landslides, flooding, etc)	More secure sources of energy	Increased access to public services, such as education, health, or credit	Improved use of traditional knowledge for environmental management	More participatory decision-making due to strengthened civil society and governance.	Other
Total																						

If you marked "Other", please provide detail on the nature of the Community Characteristic and Socioeconomic Benefit:

Additional Comments/Recommendations

Information Sharing and CEPF Policy

CEPF is committed to transparent operations and to helping civil society groups share experiences, lessons learned, and results. Final project completion reports are made available on our Web site, www.cepf.net, and publicized in our newsletter and other communications.

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