

CEPF SMALL GRANT FINAL PROJECT COMPLETION REPORT

Organization Legal Name:	University of East Anglia (UEA)
Project Title:	Conservation ecology of white-shouldered ibis and local livelihoods
Date of Report:	29/11/09
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CEPF Region: Indochina

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

Grant Amount: \$19,999.25

Project Dates: 28th December 2008 – 31st October 2009

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

BirdLife International, Cambridge, UK – provided co-supervision of PhD activities, particularly during the planning stage, and provided technical advice in the field.

BirdLife International *in Indochina* – provided in-kind contributions in the form of administrative and logistical support, and facilitated the project team to work at Western Siem Pang IBA and Lomphat Wildlife Sanctuary. The Vietnam office took responsibility for press relations work on behalf of the project and provided technical advice.

Forestry Administration of Cambodia – approved and facilitated the project team to work at Western Siem Pang IBA and central section of the Mekong River. Provided a venue and administration for presentations and workshop. Also provided technical advice.

Local villagers in Siem Pang and Lomphat districts – commented and gave approval for activities to take place in their village or commune areas. Several local people at each site were employed and participated fully in project activities including White-shouldered Ibis surveying, local awareness, nest finding, nest monitoring, roost finding, roost counting, fence construction, translation and camping and observation assistance.

Ministry of Environment of Cambodia – approved and facilitated the project team to work at Lomphat Wildlife Sanctuary and Kulen Promtep Wildlife Sanctuary.

Wildlife Conservation Society Cambodia Program (WCS) – crucial partner directly contributing to collection of data by undertaking project activities at Kulen Promtep Wildlife Sanctuary, particularly in monitoring and protection of nests, surveying White-shouldered Ibis habitat use and roost counting. Also provided technical advice and occasionally administrative and logistical support.

World Wide Fund for Nature – Cambodia (WWF) – crucial partner, confirmed by a Memorandum of Understanding, directly contributing to collection of data by undertaking project activities at the central section of the Mekong River, Kratie and Stung Treng provinces. Undertook nest monitoring and protection, White-shouldered Ibis habitat use surveys and roost counts, and also facilitated an exploratory visit to the site by the project team.

Conservation Impacts

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

White-shouldered Ibis *Pseudibis davisoni* has been identified by CEPF as a priority species for investment in Indochina. As such, identifying and securing core populations of this species is an investment priority, and this project has addressed both these things. Through roost counts undertaken simultaneously across Cambodia, and routine consistent monitoring of diurnal activity, this project has made significant steps in identifying globally important populations. Two sites have now been accurately confirmed as core populations, and Lomphat Wildlife Sanctuary, has been discovered as a new substantial population.

In the same way that the CEPF ecosystem profile was developed to provide scientific evidence as a basis for making conservation priorities, research is needed to inform practitioners of the necessary and effective actions for conserving White-shouldered Ibis. This project has assisted in the effort to secure populations by building knowledge of species ecology and providing evidence of the usefulness of different conservation interventions. The former includes knowledge of foraging ecology (diet and habitat selection), breeding ecology (timing, duration, productivity) and population status, while the latter involves the role of land management through grazing (involving local communities) and nest protection techniques. All this information can be used to guide the design and implementation of future conservation activities, helping to ensure that they are successful and efficient.

Beyond Strategic Direction 1, this project is also made a contribution to Direction 2, the development of innovative, locally led approaches to site-based conservation. By investigating the role that local communities have to play in creating suitable foraging habitat the PhD thesis (that results from this project) will assess the potential for a novel conservation strategy. With both the ibis and local livestock systems threatened by development of dipterocarp forests, there is scope for synergistic approach that incorporates the needs of both. Furthermore the use of traditional land practices to sustain biodiversity is an approach not widely applied in the tropics and could prove very valuable. Meanwhile, in the short term, training has provided training to local staff, building local capacity which future conservation projects can benefit from.

Although this project has predominantly addressed a species outcome of the CEPF investment strategy, its results also have implications for site and corridor outcomes. The conservation value of sites in the Mekong watershed has been demonstrated more clearly now the population of this critically endangered species is better understood. The site along the Mekong River itself in Stung Treng/Kratie province, and Western Siem Pang IBA beside the Sekong River, Stung Treng province, are both of vital importance yet currently unprotected, under-resourced and under-financed. The data from roost counts, providing information about distribution of ibis, is also informative of the value of connectivity between sites in the watershed of the Mekong,

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

Stakeholder participation

The approved proposal described plans to research several main aspects of White-shouldered ibis ecology and local livelihoods; the majority of these were completed to level greater than expected. Consulting stakeholders took place throughout the project and was particularly important at the project's start. A presentation in December 2008 gave relevant governmental and

non-governmental organizations a briefing of the project's plans. This was followed by a day-long workshop focusing specifically on White-shouldered ibis research and conservation, held on 3rd February 2009 and involving representatives from BirdLife International Cambridge, BirdLife International in Indochina, FA, MoE, WCS, WWF and UEA. At this event the parties agreed to facilitate White-shouldered Ibis research and collaborate in this species' conservation - an important milestone in the efforts to prevent the further decline of this species.

On arrival in the main project site, Western Siem Pang IBA, approval for the work was gained from the district, commune and village authorities and the local FA division. This was followed by village meetings at 6 villages, where local people learnt about the project's plans and had the opportunity to express their concerns. Once these stakeholders were satisfied with the project plans (particularly the use of small, temporary exclosures), the project work began. Results of the project were presented and discussed to relevant organizations at the end of October 2009. Such efforts to communicate with stakeholders are unprecedented for PhD research in Cambodia.

Monitoring White-shouldered Ibis

A survey recording White-shouldered Ibis sightings and use of foraging habitat was implemented at five sites across north and eastern Cambodia. Data collection was implemented in May at Kulen Promtep Wildlife Sanctuary (KPWS), Lomphat Wildlife Sanctuary (LWS), the "central section" of the Mekong River, Monduliri Protected Forest and Western Siem Pang IBA. This is one more site than originally planned, and represents the majority of the known White-shouldered ibis population and extra potentially suitable habitat. Data collection now continues, although this survey is suspended at the Mekong River until WWF can secure further funding. The same survey protocol was used at all sites to gain consistent data. Preliminary results indicate that White-shouldered Ibis is using seasonal pools (*trapaengs*) in the dry (and breeding) season, but in the wet season they use a mixture of open forest, grasslands (*veal*) and fallow rice fields. Continued data collection in the next 18 months can confirm this reliance on a mosaic of human-impacted habitats.

Roost counts were another key part of the project's monitoring activity. This project implemented the country's first simultaneous roost count across four provinces, on a monthly basis during the wet season (July to October). A total of 21 roost sites were found, using a combination of ranger searches and roost reward schemes involving local people. The count of 3rd-4th July proved very worthwhile, gaining the highest number of White-shouldered Ibis ever recorded (310 birds). This minimum certain number probably exceeds the BirdLife (2009) estimate of 50-249 mature individuals, and corroborates Timmins' (2008) estimate of fewer than 500 birds. The roost counts were also significant in indicating that Western Siem Pang IBA (over 161 birds), the central section of the Mekong River (up to 99 birds), and LWS (up to 76 birds), are the three most globally significant populations (respectively) known to date. The fact that the two largest populations are at currently unprotected sites is a finding that warrants considerable attention.

Foraging ecology and grazing

Another component of the project proposal was using observations to determine foraging ecology. 190 hours of observation time yielded 49 hours of foraging data, a very satisfactory volume of data for such a scarce species. This indicated the ibis's preference for damp and saturated substrates around *trapaeng* margins, particularly those with low vegetation height. The ibis does not utilize the pool itself, unlike other large waterbirds found in this ecosystem. Visits to 115 *trapaengs* confirmed that in Western Siem Pang IBA in the mid-late dry season, these habitats are abundant, suggesting that they are not limited by suitable habitat here. Habitat availability in the early wet season also appears not to be limited, as the ibis preferred forest (demonstrated by Wright et al. 2009) was abundant in 95 random plots in the forest.

Amphibians were the most utilized prey item providing 65% of total fresh biomass consumed; mole-crickets were the next largest source at 10%. 21 *trapaengs* were prey sampled using soil cores to assess abundance of these prey types. Comparing the sampled prey with the ibis's catches indicates that the birds were not selecting a particular prey type at *trapaengs*, instead they were most probably feeding on whichever type of prey was most abundant in the habitat.

This is a strategy common among ibis species and again may illustrate that foraging ecology is not a constraining factor, at least not in Western Siem Pang IBA.

A total of 14 exclosures were constructed at Western Siem Pang IBA, with 6 at *trapaengs*, 6 in dipterocarp forest and 2 focusing on earthworm mound-dominated forest. Each exclosure measured 6m x 6m and excluded livestock; forest exclosures also excluded forest understorey fires which occur very frequently in the dry season. Each exclosure has been compared to a nearby control plot. Forest exclosures showed marginal increase in vegetation height and cover in the absence of fire and grazing, and worm mound activity does not appear to have changed in the absence of these practices.

All exclosures in *trapaengs* showed greater vegetation cover and height than the controls, despite a wide variety of *trapaengs* conditions chosen for the study. This is the first scientific evidence of an effect that has been hypothesized for over a decade. Given the habitat preference of White-shouldered Ibis at *trapaengs* (above), it is also evidence that grazing directly contributes to the creation of suitable foraging habitat at *trapaengs*. This result will now be verified by surveying *trapaengs* with varying grazing intensity to see if there is an effect on habitat availability. Monitoring will also continue in exclosures to assess successional changes.

Nest monitoring and protection

Breeding ecology and the success of White-shouldered Ibis nests was studied using 24 nests monitored in 2008-09 season, comprising of 13 nests found at Western Siem Pang IBA (using a successful nest reward scheme), 6 nests found by WWF at the Mekong River and 5 located by WCS at KPWS. WCS also provided data for nests from 2005-2008. This data shows that White-shouldered Ibis nest between November and May, with the nesting cycle (excluding nest building) taking approximately 70 days. An average of 1.9 chicks fledged per successful nests, although some nests successfully fledged 3 chicks.

Mayfield estimation methods demonstrated that White-shouldered Ibis nest success rates were poor. Data from the 2008-09 season found only a $41\% \pm 0.34$ (\pm standard error) success rate, while all available data (ignoring site and year as confounding factors) showed only a $45\% \pm 0.27$ success rate. Data quality at Western Siem Pang IBA was sufficient to break these rates into different nest stages, demonstrating that the incubation and brooding stages had only a $35\% \pm 0.29$ success rate, while the nestling stage after brooding was 100% successful. Not only is there low productivity of White-shouldered Ibis nests (in a highly populated site), it also appears that it is during the egg and young-chick stages that failures are occurring. Circumstantial evidence suggests predation may be the cause of this problem, with large-billed crows a probable predator. This preliminary evidence suggests that nest success may be a more critical issue for conservationists to address than foraging ecology.

Two forms of nest protection have previously been attempted for White-shouldered Ibis; human nest guards and plastic baffles. The scarcity of nests makes a scientific test of both of these interventions unfeasible. It was decided to postpone a robust case-and-control test of a nest protection method until further information had been gathered about breeding ecology and nest failure. With a season's worth of data collected it now possible to decide the most valuable study, which will be a test of the nests guarding approach, combined with nest cameras to identify predator species.

The project has still managed an insight into effectiveness of nest protection, using WCS data for nests with plastic baffles (applied for the nestling stage only). Comparing the nestling stage success rate for 11 baffled nests in KPWS 2005-09 ($79\% \pm 0.33$), with the rate for 13 unprotected nests at Western Siem pang IBA 2008-09 ($72\% \pm 0.26$), shows only a very slight increase success. This preliminary finding suggests baffles may not be an effective method of nest protection, although the result must be interpreted cautiously due to possible variation between sites and seasons.

Local livelihoods

As planned, a household questionnaire was undertaken at Western Siem Pang IBA to provide

information on forest and trapaeng use, and links with ibis ecology. A total of 258 households participated, of which 52% claimed to use trapaengs, and 80% claimed to using the forest. Of particular interest was the ownership of livestock which was high; 71% of households owned buffalo (average of 2.9 ± 3.1 standard error per household) and 42.2% owned cattle (average of 2.66 ± 6.1). These results indicate the shared dependence of ibis and the local community on the dipterocarp forest landscape, and more specifically the importance of livestock to the people as well as to the ibis. In addition to the proposed activities a questionnaire was carried out with elderly residents of Siem Pang district to discuss the history of the landscape and White-shouldered Ibis. This has suggested that White-shouldered Ibis may have been hunted quite significantly during the 1970s and 1980s.

Building of local capacity

Finally, provision of training to local staff was another intended result that was successfully met. The coordinated survey for White-shouldered Ibis sightings and habitat use provided the opportunity to train local staff in a range of skills. At Western Siem Pang IBA, LWS and KPWS a total of 14 people received intensive training in bird identification, conservation issues and importance, GPS use, bird surveying and also roost counting. Monthly follow-up visits to Western Siem Pang IBA and LWS during were successful and reinforcing this training. Staff at Western Siem Pang IBA also received many days of in-the-field training in nest monitoring and habitat surveying.

Please provide the following information where relevant:

Hectares Protected:

Species Conserved: White-shouldered Ibis

Corridors Created:

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

The project has exceeded its short term objectives in terms of the number of different activities undertaken and the quantity of data obtained (described above). This has benefitted the long-term impact objectives which have been refined so that follow-up research in the next calendar year addresses an expanded set of relevant questions. In terms of nest protection where the project was not able to entirely fulfill the original proposal, this work is now able to take place immediately following the completion of this project and benefitting from knowledge of what is most relevant. Therefore in the slightly longer term this outcome will still be met.

Long-term objectives are being met and are on schedule and highly likely to succeed as funding has been obtained for up to three years more research and conservation activity and work on this has already begun. Further presentations (the next planned for December 2009 at Ministry of Environment) will continue to disseminate the findings of this project and the results of further research as they develop. Such consultations will continue to keep stakeholders engaged until the PhD thesis is completed and made available with conservation recommendations and scientific papers.

Challenges have nevertheless occurred during the implementation of short-term objectives. While on the whole data quantity has been sufficient, gaining data of high, scientific quality can be a harder task to achieve. The capacity of some local staff and rangers, particularly at KPWS, was significant less than anticipated and this required intensive training plus reinforcement visits to improve. The impact on long-term objectives will be marginal although further simplification of surveys is planned to ensure that the data collect is the most robust as possible.

Were there any unexpected impacts (positive or negative)?

Two unexpected positive impacts occurred during the implementation of the project. The success of the roost counts had knock-on effects for stakeholder and wider public awareness of White-shouldered Ibis and its conservation concern. Two press releases produced by BirdLife International (on behalf of all the organizations involved) were picked up by many Asian press and online news providers, including The Phnom Penh Post which ran the story on the front cover. The presence of the project team at undertaking nest monitoring at Western Siem Pang IBA most probably had a protective effect, although this was unintended. Local people were deterred from raiding nests (an illegal activity) by the routine visits made to check nest status. This effect is positive for the species; however it needs to be carefully considered when interpreting nest success rates that were intended to represent unprotected nests.

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.

As part of a PhD research project specific lessons can be provided here for guidance of future research projects of this nature.

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

- Designing a research project that is guaranteed to be useful to conservationists requires that the research institution works very closely with stakeholders from the very beginning of the planning stage. This will ensure that research projects are not only of an academic nature, although a theoretical aspect may well be required as well to meet requirements of PhD research. Allowing stakeholders to guide the research objectives increases project applicability and will also ensure the student gains relevant, practical conservation experience.
- Research projects will often require that the researcher is absent from the project site/country for lengths of time during the project timescale. If this cannot be avoided (usually university regulations have a limit to time away from the institution) then adequate plans need to be made to continue activities, or at the very least ensure that motivation for the cause is continued throughout the researcher's absence. This will require a great deal of communicative effort on behalf of the project team.
- Creating a multi-year funding strategy for the research project at the start will help to prevent the risk of funding deficits that could delay or diminish important activities. Where possible large single grants should be preferred over multiple small grants, although this often may not be possible. This strategy should also consider the possibilities of research objective change and expansion in successive years of the project which may require more funds than initially expected.

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

- When new activities are being implemented using local staff, or local capacity is being built, the project team has to expect that substantial reinforcement of training is required of the activity is to be successfully or capacity sustained. Single, isolated training events will not provide sufficient impact. Follow-up visits are essential.
- Good rapport and cooperation with stakeholders is crucial to the existence of the research project, particularly at the fieldwork stage. It is essential that the researcher helps stakeholders with various tasks required of them, communicates with stakeholders regularly

about the project activities and is patient when the stakeholder does not always provide what is required. These things will ensure that their cooperation and the feasibility of the research are maintained throughout the project's duration.

- While stakeholders are critical to a research project, the researcher must also attempt to be as self-sufficient as possible in fieldwork. Stakeholders are likely to have a great deal of issues and constraints to contend with and a research project may not be a top priority. For this reason it is advisable that the researcher is able to provide as many of their own logistics as possible. This is not an excuse not to work or communicate with stakeholders but will reduce the risk of project failure.
- Flexible use of time and project budget is essential to overcome contingencies. Attempting scientific research in a developing country is likely to encounter many unexpected problems that arise without any notice. For the project to continuously advance it is important to provide lee-way in schedules and budgets for quick change.

Other lessons learned relevant to conservation community:

- Conservation sites with a limited amount of coordination or supervision on the ground, at the site, cannot be expected to yield good conservation results. Without supervision local staff will fail to provide the results required of them and all conservation activities will suffer.
- It is the nature of research projects that the main objectives may change as new knowledge is gained. Funding bodies, particularly those funding multi-year projects, have to be adaptable to this change, as it is generally enables greater applicability of results.

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
NERC/ESRC	A	\$2675	Fieldwork grant between the two British research councils, contributing to travel costs of the PhD student.
British Ornithologists' Union	A	\$2972	Research grant to contributing to establishment of white-shouldered ibis monitoring activities.
UEA	In-kind	\$5550	Maintenance grant for living expenses in UK
UEA	In-kind	\$1610	Travel expenses for visit to Phnom Penh by project lead contact

***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.

Sustainability and replicability of the project has succeeded as planned, demonstrated by the immediate continuation of existing studies and establishment of new research activities from 1st November 2009. The PhD research is entering its second year and its scope has been expanded and modified on the basis of knowledge gained during this project. The success in gaining cooperation between all relevant stakeholders has created an ideal platform to ensure the results of this project and the following years of research are assimilated into conservation practice quickly. Further explanation of sustainability success has been given in the description of long-term impact objectives above.

A challenge to sustainability that was overcome related to the sustainability of the project in terms of funding. The global economic recession caused some highly likely funders to withdraw funds for 2009-2010 creating fewer funding opportunities. Given the extra areas of research that the long-term impact objectives aim to address it has been necessary to seek much more funding than originally intended for follow-up work. This challenge is now being met as funding has been confirmed by CEPF, Oriental Bird Club, BirdLife International Cambridge and Angkor Centre for Conservation of Biodiversity, plus pending applications to Rufford Small Grants for Conservation, RSPB/BirdFair Small Research Grants, Mohamed bin Zayed Conservation Fund for Endangered Species and British Ornithological Union.

Tougher challenges to project sustainability have come from beyond the project's responsibility. WWF failed to gain funding to continue activities on the central section of the Mekong River. This has put a temporary halt to all White-shouldered Ibis research and conservation activities at a critical time when assessments and action is needed before settlement encroachment has too great an impact. WWF continue to strive for this funding so the project team is hopeful these activities will resume. NGO staffing decisions have also created a threat to sustainability. BirdLife International *in Indochina* considered removing the site coordinator role from Western Siem Pang IBA. Such action would reverse the already limited capacity at this crucial site. Fortunately it has been agreed that the role will remain, at least in the short term, enabling nest monitoring and nest protection to take place for at least three more years.

Summarize any unplanned sustainability or replicability achieved.

Conservation NGOs working in Cambodia were receptive to technical advice from the PhD research student Hugh Wright, creating a new element of sustainability. This willingness to take on board advice was initially unexpected but as good working relationships developed, particularly with WCS and WWF, discussions and work activities became a mutual activity. As such, advice and survey modification has enabled WCS and WWF to benefit from improved White-shouldered Ibis nest monitoring, nest protection and roost counting protocols. These continue to be in operation and are being expanded for use with other large waterbirds. Similarly, towards the end of the project the research student has become a technical adviser to a ibis

conservation project run by PRCF in Lomphat Wildlife Sanctuary. This will enable the results of this study and further PhD research to be immediately assimilated into conservation practice.

Safeguard Policy Assessment

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

Indigenous peoples were not affected by this project in any way. The only study area containing indigenous peoples was Lomphat Wildlife Sanctuary where monitoring activities did not impact them in any way.

Performance Tracking Report Addendum

CEPF Global Targets

28th December 2008 – 31st October 2009

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, 2008 to June 30, 2009. (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.	Yes	793853 ha	793853 ha	The project strengthened biodiversity conservation at the Lomphat, Mekong from Kratie to Lao P.D.R., Upper Stung Sen Catchment and Western Siem Pang IBA. This was achieved through improving the monitoring and protection protocols for a critically endangered waterbird species, white-shouldered ibis, and providing training to local staff. This consisted only of operations at the site not a strengthened management plan.
4. Did your project effectively introduce or strengthen biodiversity conservation in management practices outside protected areas? If so, please indicate how many hectares.	Yes	140347 ha	140347 ha	This project introduced and strengthened biodiversity conservation outside protected areas, at Western Siem Pang IBA and the Mekong River between Kratie and Stung Treng towns. This was achieved through improving the monitoring and protection protocols for a critically endangered waterbird species, white-shouldered ibis, and providing training to local staff.
5. If your project promotes the sustainable use of natural resources, how many local communities accrued tangible socioeconomic benefits? Please complete Table 1 below.	No			

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

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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