

## CEPF Final Project Completion Report

<b>Organization Legal Name:</b>	BirdLife International
<b>Project Title:</b>	Re-Wilding Western Siem Pang: Ecological Restoration in the Deciduous Dipterocarp Forests of Cambodia
<b>Grant Number:</b>	64047
<b>CEPF Region:</b>	Indo-Burma II
<b>Strategic Direction:</b>	1 Safeguard priority globally threatened species by mitigating major threats
<b>Grant Amount:</b>	\$250,000.00
<b>Project Dates:</b>	May 01, 2014 - October 31, 2018
<b>Date of Report:</b>	January 02, 2019

### Implementation Partners

List each partner and explain how they were involved in the project

**This project was implemented by BirdLife International Cambodia Programme. There were no other implementation partners. BirdLife works in Western Siem Pang Wildlife Sanctuary in collaboration with the Stung Treng Department of Environment and within the framework of an MoU with the Ministry of Environment.**

### Conservation Impacts

Summarize the overall impact of your project, describing how your project has contributed to the implementation of the CEPF ecosystem profile

**The open deciduous dipterocarp forests of northern and eastern Cambodia are globally irreplaceable for biodiversity conservation. The substantial declines occurring in herbivore biomass within the eco-region due to hunting of wild ungulates and changing animal husbandry patterns are likely impacting the structure of these forests. These impacts may be particularly pertinent at seasonal waterholes where it is hypothesized that grazing by ungulates is important for maintaining micro-habitat diversity utilized by globally threatened large water birds such as the Critically Endangered Giant ibis *Thaumatibis gigantea* and White-shouldered ibis *Pseudibis davisoni*. To test this, we experimentally grazed eight waterholes in the globally significant Siem Pang Wildlife Sanctuary in northeastern Cambodia with two herds of domestic water buffalo over three dry seasons and compared their micro-habitats with ten control**

waterholes. During the dry season, the physical characteristics of all waterholes changed predictably and consistently, irrespective of whether they were controls or grazed by our buffalo. We found few consistent differences between control waterholes and those grazed by buffalo, although there was some evidence that grazed waterholes retained water and saturated mud, the latter a critical habitat for ibis, for longer into the dry season. However, we could not arrive at definitive conclusions about the effect of water buffalo activity on waterhole structure in deciduous dipterocarp forests in Cambodia from our data and it is possible that the densities of buffalo we employed were not sufficient to significantly or detectably influence this. This experiment was unique and had never before been undertaken in Cambodia or in a dry forest ecosystem elsewhere in the Mekong basin. Although the results were inconclusive they mark an important contribution to the management of waterholes in the dry forest ecosystem and provide a basis for future research.

Planned Long-term Impacts - 3+ years (as stated in the approved proposal)

Impact Description	Impact Summary
The Deciduous Dipterocarp Forest of Western Siem Pang in North Cambodia is restored, complete with robust and healthy populations of globally-threatened waterbird and dry forest mammal species	The long term impact of the project was that deciduous dipterocarp forest of Western Siem Pang Wildlife Sanctuary is restored, complete with robust and healthy populations of globally-threatened waterbird and dry forest mammal species. The time frame for this was given as three plus years but a more realistic timeframe based on our experience would be 25-100 years. The buffalo grazing experiment undertaken by this project can be viewed as a small but important first step in understanding waterhole ecology and management.

Planned Short-term Impacts - 1 to 3 years (as stated in the approved proposal)

Impact Description	Impact Summary
Stabilized populations of Giant Ibis and White-shouldered Ibis at Western Siem Pang Stabilized populations of other threatened waterbird species e.g. Lesser Adjutant, Greater Adjutant and Black-necked Stork at Western Siem Pang Ecological integrity of a sub-set of trapeangs at Western Siem Pang is improved for the benefit of a range of globally-threatened waterbird species Trapeang management protocols produced with relevance to other sites in Cambodia that support ibis populations Capacity of at least two graduate-level Cambodian conservationists is improved, with a focus on ibis conservation and ecological restoration Potential for the	Of the short term impacts it is difficult to say with certainty whether populations of Giant Ibis and White-shouldered Ibis, and Lesser Adjutant, Greater Adjutant and Black-necked Stork at Western Siem Pang Wildlife Sanctuary have stabilised. For example during the lifetime of the project the number of successful Giant Ibis nests found has increased year on year. The trend in numbers of fledging young Giant Ibis has also increased. Clearly modifying a small number of waterholes (eight) could have no bearing on reproductive success since there are in excess of 200 in the wildlife sanctuary. A more likely explanation is improved observer skill and coverage. Greater Adjutant is only a seasonal visitor and the numbers reaching the wildlife sanctuary fluctuated from year to year. Only a single pair of Black-necked Stork is known to nest in the wildlife sanctuary.

direct conservation management of two Critically-Endangered ibis species is demonstrated to a wide range of national and regional level stakeholders, including Cambodian government partners	
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Describe the success or challenges of the project toward achieving its short-term and long-term impact objectives

**The long term impact of the project was that deciduous dipterocarp forest of Western Siem Pang Wildlife Sanctuary is restored, complete with robust and healthy populations of globally-threatened waterbird and dry forest mammal species. The time frame for this was given as three plus years but a more realistic timeframe based on our experience would be 25-100 years. The buffalo grazing experiment undertaken by this project can be viewed as a small but important first step in understanding waterhole ecology and management.**

**Of the short term impacts it is difficult to say with certainty whether populations of Giant Ibis and White-shouldered Ibis, and Lesser Adjutant, Greater Adjutant and Black-necked Stork at Western Siem Pang Wildlife Sanctuary have stabilised. For example during the lifetime of the project the number of successful Giant Ibis nests found has increased year on year. The trend in numbers of fledging young Giant Ibis has also increased. Clearly modifying a small number of waterholes (eight) could have no bearing on reproductive success since there are in excess of 200 in the wildlife sanctuary. A more likely explanation is improved observer skill and coverage. Greater Adjutant is only a seasonal visitor and the numbers reaching the wildlife sanctuary fluctuated annually. Only a single pair of Black-necked Stork is know to nest in the sanctuary. Choosing species as indicators of success for a project of such short duration was never realistic.**

**The ecological integrity of a sub-set of waterholes at Western Siem Pang Wildlife Sanctuary was probably improved for the benefit of a range of globally-threatened waterbird species because increased grazing and wallowing pressure is correlated to increased waterbird use but this was difficult to prove during the experiment.**

**The waterhole management protocol produced again provides a contribution to the literature and a basis for future conservation practitioners.**

Were there any unexpected impacts (positive or negative)?

**The project has helped thinking on the role of domestic water buffalo in waterhole management and informed thinking on ungulate carrying-capacity in the dry forests. A future project should look at domestic water buffalo movements and use of the dry forests.**

## Project Components and Products/Deliverables

Describe the results from each product/deliverable:

Component		Deliverable		
#	Description	#	Description	Results for Deliverable
1	The impact of different buffalo densities on ibis foraging microhabitats at trapeangs is clarified and the ecological integrity of a subset of trapeangs in Western Siem Pang is improved for the benefit of two Critically Endangered Ibis species	1.1	At least 16 project trapeangs for the experimental manipulation of domestic buffalo densities established in Western Siem Pang's Deciduous Dipterocarp Forest	Completed.
1	The impact of different buffalo densities on ibis foraging microhabitats at trapeangs is clarified and the ecological integrity of a subset of trapeangs in Western Siem Pang is improved for the benefit of two Critically Endangered Ibis species	1.2	Cadre of at least 6 biodiversity monitoring officers, the majority hired from local communities, are maintained for the duration of this project, and fully trained in waterbird species identification, monitoring techniques, and basic data collection	Completed.
1	The impact of	1.3	By year 2,	Impossible to determine

	different buffalo densities on ibis foraging microhabitats at trapeangs is clarified and the ecological integrity of a subset of trapeangs in Western Siem Pang is improved for the benefit of two Critically Endangered Ibis species		relative proportions of ibis dry-season foraging microhabitats increases in 20% of project trapeangs (based on 2013 baselines)	
1	The impact of different buffalo densities on ibis foraging microhabitats at trapeangs is clarified and the ecological integrity of a subset of trapeangs in Western Siem Pang is improved for the benefit of two Critically Endangered Ibis species	1.4	By year 3, Ibis use of trapeangs increases in 20% of project trapeangs during the dry season, measured by presence/absence data and compared against 2013 baselines	Impossible to determine
1	The impact of different buffalo densities on ibis foraging microhabitats at trapeangs is clarified and the ecological integrity of a subset of trapeangs in Western Siem Pang is improved	1.5	Project database and standardised data-sheets produced	Completed

	for the benefit of two Critically Endangered Ibis species			
1	The impact of different buffalo densities on ibis foraging microhabitats at trapeangs is clarified and the ecological integrity of a subset of trapeangs in Western Siem Pang is improved for the benefit of two Critically Endangered Ibis species	1.6	Compliance with CEPF Social Safeguard Policies monitored and reported to CEPF	Completed
1	The impact of different buffalo densities on ibis foraging microhabitats at trapeangs is clarified and the ecological integrity of a subset of trapeangs in Western Siem Pang is improved for the benefit of two Critically Endangered Ibis species	1.7	Minutes from FPIC consultation meetings with local communities at Western Siem Pang	Completed
2	Conservation benefits of using domestic buffalo to manage trapeangs in deciduous dipterocarp	2.1	Peer-reviewed scientific paper on the impacts of using domestic buffalo to manage	Completed and published in the December 2018 issue of Cambodia Journal of Natural History.

	forest highlighted to a range of stakeholders (government officers, site managers and conservation practitioners who work in the dry deciduous forest of Cambodia)		trapeangs for the conservation of threatened waterbird species written and published in an open-access journal	
2	Conservation benefits of using domestic buffalo to manage trapeangs in deciduous dipterocarp forest highlighted to a range of stakeholders (government officers, site managers and conservation practitioners who work in the dry deciduous forest of Cambodia)	2.2	Trapeang management protocols, with a focus on the role and application of domestic buffalo, produced and written in both English and Khmer	Completed
2	Conservation benefits of using domestic buffalo to manage trapeangs in deciduous dipterocarp forest highlighted to a range of stakeholders (government officers, site	2.3	Trapeang management protocols disseminated to government officers, site managers, and local communities at relevant sites	Not yet completed

	managers and conservation practitioners who work in the dry deciduous forest of Cambodia)			
3	Conservation status of Giant Ibis at Western Siem Pang clarified	3.1	Accurate Giant Ibis population estimate for Western Siem Pang produced	Completed. A journal paper was published in the Cambodian Journal of Natural History
3	Conservation status of Giant Ibis at Western Siem Pang clarified	3.2	Robust annual census methodology developed	Completed and described in the journal paper.
3	Conservation status of Giant Ibis at Western Siem Pang clarified	3.3	Peer-reviewed scientific paper on the conservation status of Giant Ibis at Western Siem Pang produced	Completed. Journal paper published in the Cambodian Journal of Natural History.
4	Capacity for the conservation management of trapeangs and ibis conservation is improved in undergraduate/ masters level Cambodian conservationists	4.1	At least one undergraduate /masters level Cambodia conservationist to co-author scientific paper on trapeang management	Completed. Eang Samnang was a co-author on the waterhole management paper.
4	Capacity for the conservation management of trapeangs and ibis conservation is improved in undergraduate/ masters level Cambodian conservationists	4.2	At least one undergraduate /masters level Cambodia conservationist to co-author scientific paper on Giant Ibis status at Western Siem	Completed. Ty Srun was the lead author of the paper.



			Pang	
4	Capacity for the conservation management of trapeangs and ibis conservation is improved in undergraduate/ masters level Cambodian conservationists	4.3	At least one undergraduate /masters level Cambodia conservationist to be trained in vegetation/habitat assessment and monitoring techniques for trapeangs.	Completed. Eang Samnang received training.

Please describe and submit any tools, products, or methodologies that resulted from this project or contributed to the results.

**This project developed and published a survey methodology for the Giant Ibis, it developed an experimental technique for waterhole grazing and a protocol for waterhole restoration. All three of these documents are included in this report.**

## 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:

- Project Design Process (*aspects of the project design that contributed to its success/shortcomings*)
- Project Implementation (*aspects of the project execution that contributed to its success/shortcomings*)
- Describe any other lessons learned relevant to the conservation community

**The design of the project could have been improved, for example by preventing grazing at the controll waterholes. Managing the buffalo herd was a challenge as it was difficult to find local stockmen with a sufficient level of knowledge to care for the buffalo. The livelihoods officer was revealed to have insufficient knowledge of stock management. These two factors probalby contributed to high levles of buffalo mortality in the first year of the project, which was also an El Nino year.**

## Sustainability / Replication

Summarize the success or challenges in ensuring the project will be sustained or replicated, including any unplanned activities that are likely to result in increased sustainability or replicability.

**The project has now ended and there are no plans to continue or repeat the experiment.**

## Safeguards

If not listed as a separate Project Component and described above, summarize the implementation of any required action related to social, environmental, or pest management safeguards

**Social safeguard reports were listed as project deliverables and are appended to this report.**

## Additional Comments/Recommendations

Use this space to provide any further comments or recommendations in relation to your project or CEPF

**No further comments**

## Additional Funding

Provide details of any additional funding that supported this project and any funding secured for the project, organization, or the region, as a result of CEPF investment

**Total additional funding (US\$)**

*\$0.00*

### **Type of funding**

*Please provide a breakdown of additional funding (counterpart funding and in-kind) by source, categorizing each contribution into one of the following categories:*

- A Project Co-Financing (other donors or your organization contribute to the direct costs of this 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 funded project)*
- C Regional/Portfolio Leveraging (other donors make large investments in a region because of CEPF investment or successes related to this project)*



No additional funding was leveraged.

### **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](http://www.cepf.net), and publicized in our newsletter and other communications.

1. Please include your full contact details (Name, Organization, Mailing address, Telephone number, E-mail address) below

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