CRITICAL ECOSYSTEM PARTNERSHIP FUND

CEPF Final Project Completion Report

Organization Legal Name:	Global Wildlife Conservation
Project Title:	Finding Saola, Saving Saola: Transforming Saola Conservation in Key Sites in Lao PDR and Vietnam
Grant Number:	64172
CEPF Region:	Indo-Burma II
Strategic Direction:	1 Safeguard priority globally threatened species by mitigating major threats
Grant Amount:	$199,070.00
Project Dates:	April 01, 2014 - April 30, 2018
Date of Report:	June 30, 2018

Implementation Partners

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

WWF Greater Mekong: Helped with the local organization of, and participated in, the enforcement effectiveness surveys in the Hue Saola Nature Reserve (SNR) and Quang Nam SNR in Vietnam, and Xe Sap National Protected Area (NPA) in Laos.
Kunming Institute of Zoology: Genetic analysis of leech samples collected during the project.
Lao Wildlife Conseration Assoication: Local organizer for the first survey of Khou Xe Nong Ma Provincial Protected Area (PPA) in Laos
Integrated Conservation of Biodiversity and Forests (ICBF) project, Lao PDR: Crucial partner for helping to arrange government of Lao PDR permission for the surveys in Khou Xe Nong Ma PPA. In addtion, worked with the SWG to field a snare collection team in response to results from the project-supported surveys.
Watershed Management and Protection Authority: Hosted the project-supported "Law Enforcement Strategic Planning Meeting for Nakai-Nam Theun National Protected Area".
Project Anoulak: Helped organize, and participated in, the survey in Nakai-Nam Theun NPA. Organized the enforcement strategic planning meeting.
Asian Development Bank: Funded participation of the principal investigator, Rob Timmins, for the first survey of Khou Xe Nong Ma Provincial PPA.

Conservation Impacts

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

1. The project made a significant contribution toward our understanding of which areas likely remain important for the conservation of saola. This was a result of a combination of direct, on-the-ground assessment of habitat type and quality, and density of threats, such as snaring. As a direct result of the project, increased attention (includinding new donor investment in reserach and protection) is now being directed to Xe Sap NPA and Khoun Xe Nong Ma PPA in Lao PDR.
2. The project allowed us to test the feasibility of using DNA analysis of terrestrial leeches as a means for detection in the wild of saola (and other rare terrestrial species). The result of this project component is the conclusion that the leech method, as currently envisioned, faces technical barriers which need resolution before the method can be widely implemented. This conclusion has stimulated renewed investment in camera-trapping (in response, more than 250 camera-traps, focused on detecting saola, are currently set in the saola's range in Laos and Vietnam) and investment from other donors in eDNA searches through the sampling of stream water in the saola's range.
3. The project resulted in the first intensive survey of Khoun Xe Nong Ma PPA, and recognition of the area as very high priority for protection - possibly of international significance and importance. This has stimulated interest in new investment in the protection of the area.
4. The project had significant national capacity-building achievements, particularly in Lao PDR, for biodiversity conservation.
5. The components of the project taken together resulted in significantly improved understading of the status, conservation issues, and potential solutions in key areas of the Annamite Mountians.

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

Impact Description	Impact Summary
Improved protection of Saola, in particular at Nakai-Nam Theun, Xe Sap and Khoun Xe Nong Ma.	The project contributed significantly to Strategic Direction 1.1: Transform pilot interventions for core populations of priority species into long-term conservation programs. As a direct result of pilot interventions of the project, there is now a new protection strategy for Nakai-Nam Theun NPA (the largest protected area in the Annamites), a new and continuing partnership between the ICBF project and the SWG for protection of Khoun Xe Nong Ma (KXNM), and expansion of protection efforts, with new investment, in Xe Sap NPA. All of these efforts are focused on conservation of saola.
There will be improved understanding and alignment of the methodologies of both leech collections and rapid protection assessments among several members of the SWG.	This was achieved, and perhaps most importantly with the young Lao conservation biologist, SWG member Chanthasone Phommachanh. Chanthasone led or co-led (with Rob Timmins) all of the project's fieldwork in KXNM and in the additional site of Phou Sithon. In addition, SWG member Andrew Tilker implemented the surveys in Xe Sap NPA, under the guidance of Rob Timmins, and significantly expanded his understanding of both methodologies. Others SWG members who,

	through involvement in the project, significantly increased their understanding of conservation issues in the Annamites, and how to address them, were Camille Coudrat, Chanthavy Vongkhamheng, Luong Viet Hung, Hannah O'Kelly, Troy Hansel and William Robichaud.
Saola will not be lost from any site in which they now occur and will recover to at least 800 free-ranging adults, with at least 3 sub-populations of over 200 adults each in landscapes larger than 1,000 sq km.	The project was directly responsible for raising the profile of Xe Sap NPA and KXNM, and increasing the recognition of their roles in the overall goal of saola conservation (and also conservation of large-antlered muntjac). Results of the project have stimulated increased attention, and new investment, to both areas.
Baseline assessments of protection effectiveness will be used and referenced, as a baseline, in subsequent protection assessment at the project sites in the coming years, and will be replicated in other sites in the saola's range.	The project has laid the groundwork for this. The method has already been replicated in one other area, KXNM, in addition to the four sites that were the original focus of the proposal.

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

Impact Description	**Impact Summary**
From the results in two project sites (Xe Sap and Nakai-Nam Theun), we will have a much better understanding of the efficacy and potential of leech surveys. If the leech surveys work, we will also have much better understanding of the status and distribution of saola in these areas.	Achieved. The project resulted in a much better understanding of the potential of the leech method. Unfortunately, the answer is that the potential to use leeches as tool to detect saola is less than first hoped. Sound protocols were developed for the collection of leeches (in particular, to avoid contamination from other DNA), but more work is needed to improve the 'downstream' methodology of searching for saola DNA in the collected samples (see accompany report on leech protocol).
In two project sites (Xe Sap and Nakai-Nam Theun), PA staff will benefit from rapidly improved understanding of the location of likely saola priority areas. We anticipate that this will result in changes to where and how often they deploy existing patrols. -Snare densities in some of the highest priority saola areas will decline.	Achieved. The project directly resulted in a comprehensive review of, and changes to, how and where patrolling is done in both Nakai-Nam Theun (see included report) and Xe Sap NPAs. Please see further below for information on snare densities.
Nakai-Nam Theun National Protected Area, Laos (400,000 ha), Xe Sap National Protected Area, Laos (150,000 ha), Hue Saola Nature Reserve, Vietnam (15,500 ha) and Quang Nam Saola Nature Reserve, Vietnam (15,800 ha), clear understanding will be achieved of the progress (and gaps) toward the goal of zero hunting threats in key areas for saola. Depending on the protocol and methodology developed by	Overall, achieved across all four sites. However, it was deemed not feasible with available resources (and not of significantly added value) to attempt a quantitative assessment.

the project, this could involve a quantitative assessment (e.g., quantitative estimate of snare density).	
Skills in both saola surveys and rapid protection assessment techniques will be expanded amongst of several members of the SWG (and national and local counterparts). This will likely transfer to other sites.	The most important impact in this regard was the capacity-building achieved under the project for SWG member Chanthasone Phommachanh. The project provided an exceptional opportunity for Chanthasone to work side-by-side for an extended period with biologist Rob Timmins – on development of survey strategy, on survey planning and implementation in the field. As a direct result of both the experience Chanthasone gained, and the aptitude he demonstrated in the course of the project, the SWG has now hired him full-time to lead all of our fieldwork in Lao PDR. Other SWG members who benefited are noted further above. National counterparts whose understanding and skills improved as a result of the project are: Silakone Manyvone (GoL) Somxay Vonphilath (Khammouan Provincial Forestry Office) Pakham Outhanikone (WWF) Thien Le Quoc (WWF) Khamkeo Thor (SWG field team)
The genetic analyses of collected leeches will search not just for saola DNA, but other non-human vertebrate DNA. This could immediately and significantly increase our understanding of the distribution of other little-known and threatened species of the Annamites.	Seventy-five species of other wild vertebrates were apparently detected, including a number of threatened species, but some of these identifications need further confirmation. Details are provided in the accompanying technical report on the results of the leech analyses.
The Khoun Xe Nong Ma survey will be conducted in close collaboration with the Integrated Conservation of Forests and Biodiversity project, and the results and recommendations of the survey shared fully with them. We anticipate that this will significantly influence the focus of their management interventions in Khoun Xe Nong Ma	This was achieved, to a high degree. For example, during one of the CEPF-funded field surveys of KXNM, the survey team sent out a satellite text message, recommending the immediate assembly of a snare removal team, to be deployed in the area they were surveying. This team was quickly organized and deployed by ICBF. The results of the project surveys have also increase ICBF's understanding and appreciation of the importance of KXNM, and the SWG is working with ICBF to expand the scope of protection there.
Snare densities in some of the highest priority saola areas will decline.	We have data from three of the project's four focal areas from 2014 (start of the project) through 2016 (end of the main phase of the project) – Hue SNR, Quang Nam SNR, and Xe Sap NPA. For Nakai-Nam Theun, we have data for only the first two years, due to an upheaval in the management of NNT after 2015 (most senior staff were let go from NNT's management body, the Watershed Management and Protection Authority, and consequently most management activities suspended). Although there is a general trend

	of decreasing collections of snares (especially after the first year of implementation of the enforcement assessment components of the project, 2015), it is difficult to drawn conclusions from the data, even when corrected for effort (snares/patrol day). For example, would an increase in snare collection indicate less effective enforcement (increased setting of snares), or more (rangers have adapted their strategy, and have become more effective at finding snares)? It is our belief and conclusion that the project's activities have improved protection in some of the project areas (in particular NNT, Xe Sap and KXNM), but we lack definitive evidence of this.

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

Significant progress toward the project's short-term and long-term impacts was achieved.
Two main challenges were faced:

- **Sometimes slow pace of government permission for the surveys in Khoun Xe Nong Ma PPA. Nothing was particularly amiss in this – this is simply a common (albeit not inevitable) occurrence for a new project working in a new area in Laos, especially in a remote border area.**
- **Slow pace of the process of collecting leeches, sending them to a lab, and analyzing them for the presence of threatened species DNA (see details in accompanying report).**

Were there any unexpected impacts (positive or negative)?

There were four unexpected positive impacts:
1. The attraction of funding support from the Asian Development Bank for the first survey of Khoun Xe Nong Ma.
2. The attraction of new funding (from Wildlife Reserves Singapore and Global Wildlife Conservation) for increased protection of Xe Sap NPA, in response to results of the project's survey there.
3. The ongoing close partnership that developed between the ICBF project in Khou Xe Nong Ma PPA, and the Saola Working Group. The partnership between the two groups, for protection of KXNM, continues today.
4. With CEPF's blessing, we were able to use project funds to complete leech collection surveys in an additional site, Phou Sithon Endangered Species Conservation Area, in Bolikhamxay Province, Lao PDR.
We experienced no significant negative impacts.

Project Components and Products/Deliverables

Describe the results from each product/deliverable:

Component		Deliverable		
#	Description	#	Description	Results for Deliverable
1	Xe Sap NPA leech survey.	1.1	Report of the field survey, to WWF, the SWG, CEPF and in verbal or translated form, the Xe Sap management partners.	Completed.
1	Xe Sap NPA leech survey.	1.2	improved protocol for leech surveys, incorporating experience from this and previous CEPF-supported projects.	Report completed, with assessment of potential for a better protocol.
1	Xe Sap NPA leech survey.	1.3	Analysis and report of leech results from KIZ's genetics lab, with recommendations for PA managers and future surveys.	Report completed.
2	Xe Sap NPA rapid protection assessment.	2.1	Protocol for rapid protection assessments.	Completed, and reported in the Methods section of the Saola Nature Reserves assessment report.
2	Xe Sap NPA rapid protection assessment.	2.2	Report and recommendations to WWF (and the SWG and CEPF), for WWF to share with	Completed.

			counterparts and management partners in Xe Sap.	
3	Xe Sap NPA saola assessment.	3.1	Report of assessment results, with map showing probable saola distribution.	Completed.
3	Xe Sap NPA saola assessment.	3.2	Law enforcement patrolling plan and strategy, developed with WWF and based on probable saola distribution map.	Completed, through collaborative meetings, and a successful proposal to external donors (Wildlife Reserves Singapore and Global Wildlife Conservation) to fund improvements to patrolling in Xe Sap.
4	Nakai-Nam Theun NPA leech survey,	4.1	Report of field survey, for WMPA, SWG and, in final form, CEPF.	Completed.
4	Nakai-Nam Theun NPA leech survey,	4.2	improved protocol for leech surveys, incorporating experience from this and previous CEPF-supported projects. There will also be transfer of training and practice in the protocol to Dr. Chanthavy Vongkhamheng, conservation advisor to	Completed to the extent possible, given the realization of the limitations of the leech method during the course of the project.

			NNT.	
4	Nakai-Nam Theun NPA leech survey,	4.3	Analysis and report of leech results from DNA lab, with recommendations for WMPA and future leech surveys.	Completed (exclusive of recommendations for WMPA on this topic, since the leech method faces constraints).
5	Nakai-Nam Theun NPA protection assessment.	5.1	Report of protection assessment results to WMPA (and the SWG, WMPA's external monitors, and CEPF), with patrolling recommendations.	Completed, through a survey report, a workshop with WMPA on the survey results, a workshop presentation, and a workshop report.
6	Nakai-Nam Theun saola assessment.	6.1	Report to WMPA of saola assessment results, with map showing probable saola distribution, and recommendations.	Completed.
6	Nakai-Nam Theun saola assessment.	6.2	A revised patrolling and protection strategy for NNT (and in particular the saola areas) drafted collaboratively by staff of WMPA, members of	Completed.

			the SWG (in particular Timmins and Robichaud) and possibly members of WMPA's International Monitoring Agency.	
7	Hue SNR protection effectiveness assessment,	7.1	Report of protection assessment results to WWF (and the SWG), for WWF to share with counterparts and management partners in Hue.	Completed.
7	Hue SNR protection effectiveness assessment,	7.2	Patrolling and law enforcement recommendations, by WWF and partners, to reduce threat levels to the SWG's "zero threat" goal in key forest compartments in the Hue SNR.	Partially completed, through discussions and recommendations in the project's assessment survey reports.
8	Quang Nam SNR protection effectiveness assessment	8.1	Report of protection assessment results to WWF (and the SWG), for WWF to share	Completed.

			with counterparts and management partners in Quang Nam.	
8	Quang Nam SNR protection effectiveness assessment	8.2	Patrolling and law enforcement recommendations, by WWF and partners, to reduce threat levels to the SWG's "zero threat" goal in key forest compartments in the Quang Nam SNR.	Partially completed, through discussions and recommendations in the project's assessment survey reports.
9	Management of sub-grants to WWF, Kunming Institute of Zoology (KIZ), Project Anoulak (PA) and Lao Wildlife Conservation Association (Lao WCA).	9.1	Contracts and/or MoUs (as appropriate) signed between GWC and WWF, GWC and KIZ, GWC and PA ,and GWC and Lao WCA for implementation of the sub-grant components.	Completed.
9	Management of sub-grants to WWF, Kunming Institute of Zoology (KIZ), Project Anoulak (PA) and Lao Wildlife Conservation	9.2	Component workplans and budgets prepared by WWF, KIZ, PA and Lao WCA and submitted to GWC.	Sufficiently completed.

	Association (Lao WCA).			
9	Management of sub-grants to WWF, Kunming Institute of Zoology (KIZ), Project Anoulak (PA) and Lao Wildlife Conservation Association (Lao WCA).	9.3	Both periodic and annual (as required by CEPF) financial and narrative activity reports submitted by WWF, KIZ, PA and Lao WCA to GWC, one month in advance of the due date of such reports to CEPF from GWC.	Completed.
10	Rapid assessment field survey of Khoun Xe Nong Ma Provincial Protected Area, Khammouane Province, Lao PDR, focusing on the area's likely overall importance to saola conservation, and conservation of other threatened Annamite endemics.	10.1	Survey report.	Completed.
11	Collaborative enforcement and protection strategy meeting between management and field staff of	11.1	Written recommendations to WMPA, to improve its effectiveness in protecting the highest	Completed.

	the Watershed Management and Protection Authority (WMPA) of Nakai-Nam Theun National Proected Area and members of the Saola Working Group		priority threatened species in NNT NPA	

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

Two novel methodologies were applied in the course of the project:
1. Intensive collection of leeches in an attempt to detect saola through genetic analysis of leech blood meals. Further details on this method are included in a separate report with this final report.
2. Rapid, independent expert assessment of enforcement effectiveness. Enforcement teams themselves should not be the sole assessors of their effectiveness (e.g., by reporting the impacts they encounter per unit of patrol effort), due to obvious issues of conflict of interest. Independent assessment of the effectiveness of protection efforts is essential. Such assessment should evaluate two parameters - the frequency of impacts, and the state of biodiversity; the latter is necessary to verify that reduction of a perceived threat to biodiversity results in, is linked to, a positive response in the biodiversity of interest. There are benefits to doing such surveys qualitatively and thus rapidly, rather than quantitatively. These benefits include much lower cost, and faster feedback to management. The rapid, qualitative assessment was the method employed across four protected areas in the saola's range during the project, and further details on the method can be found in the accompanying reports of these surveys.

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

Perhaps the most significant lesson-learned is that capacity-building is most often best done not by training, but by close, in-the-field, extended mentorship – with the right people. This project yielded substantial capacity-building benefits for conservation in the region, particularly in Lao PDR, without the benefit any structured trainings as components of the project.
Another important lesson-learned is that drawing together partnerships for the conservation of an area of high conservation value is both readily possible, and highly advantageous. In the past in the region, NGOs commonkly assumed an attitude of exclusive 'territoriality' around their support to protected areas. This project was able to go easily and quickly beyond that, forming collaborative partnerships in the project areas between the SWG and Lao WCA, WWF, WCS, and the ICBF project (and also relevant government agencies). This provides a good model for the future, and other areas.

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's main achievement in sustainability is the heightened attention brought by the project to the value of KXNM. Other partners, such as the newly founded Asian Arks, are already seeking avenues to support KXNM long-term.
The somewhat disappointing results of the leech surveys have stimulated increased investment in other detection methods (e.g., sampling of eDNA from stream water is being used for the first time in the Annamites), and at the same time, stimulated attention to improvement of the leech method, and to find technical solutions to bring it to feasibility.
The project also stimulated new, and hopefullly sustained, investment in the protection of Xe Sap NPA.

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

None required.

Additional Comments/Recommendations

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

Foremost, we are deeply grateful for the patient, consistent support of Jack Tordoff, and for his suggestion to apply for a project extension for the KXNM surveys. This proved to be one of the most significant and valuable components of the project.

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$)
$281,700.00

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 investm*ent or successes related to this project)

A:
Direct funding: $14,450 from Wildlife Reserves Singapore, $1,500 from Zoo Zlin (Czech Republic) and $40,000 from Global Wildlife Conservation for expansion of patrolling in Xe Sap (one new patrol team, and a new full-time patrolling supervisor).
$16,000, direct funding from Beauval Nature for eDNA surveys in KXNM.
$45,000 (approximately), direct funding from Asian Development Bank, for surveys of Khoun Xe Nong Ma.
$1,200, direct funding, from Henry Vilas Zoo for enforcement effectiveness workshop in Nakai-Nam Theun NPA.
$18,000, direct funding, from Saola Working Group, mainly for surveys in KXNM and leech analyses.
$48,600, in-kind, from Kunming Institute of Zoology for construction of a special clean lab space for leech analyses, and staff costs for project and subgrant communication and administration.
$27,000, in-kind, from WWF Greater Mekong for field staff (and office support costs) for the enforcement effectiveness surveys Hue SNR, Quang Nam SNR and Xe Sap NPA.
$19,200, in-kind, from Global Wildlife Conservation for staff costs for grant administration, accounting, and financial reporting.
$4,000 (estimated), in-kind, from Project Anoulak, for support to surveys and workshop in Nakai-Nam Theun NPA.
B:
$46,750 (40,000 euros) recently pledged to the SWG by Beauval Nature, for additional saola detection surveys, a donation stimulated in significant measure by the encouraging results of the project's KXNM surveys.

C:
As a direct result of the project, the newly established NGO Asian Arks is considering KXNM as a focus for substantial, long-term conservation investment.

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.

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

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