Department for Environment Food & Rural Affairs

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Illegal Wildlife Trade (IWT) Challenge Fund
Half Year Report

(due 31st October 2018)

Project reference:	IWT044
Project title:	Critical evidence to drive a reduction in Cambodia's ivory trade
Country(ies):	Cambodia
Lead organisation:	Fauna & Flora International
Collaborator(s):	Royal Government of Cambodia, Royal University of Phnom Penh, Royal Zoological Society of Scotland
Project leader:	Regine Weckauf
Report date and number (e.g. HYR1):	31st October 2018, (HYR2)
Project website/blog/social media:	*http://www.fauna-flora.org/explore/cambodia/*

1. Outline progress over the last 6 months (April – Sept) against the agreed project implementation timetable (if your project has started less than 6 months ago, please report on the period since start up to the end September).

Planned Project Implementation Timetable: *Financial Year Apr 2018 – Sept 2018. Key Q2-Q3 activities and milestones.*

1.1 Biannual ivory surveys of markets, vendors, and intelligence gathering to identify the supply chain networks – drawing on data mining of national reports and surveys, informant networks and triangulated interviews
1.2 Produce national map of trading hotspots and networks
1.3 Gendered surveys of consumers and vendors to better understand the links between poverty and the ivory trade
1.4 Provide intelligence to law enforcement on ivory trade networks
1.5 Use existing Asian elephant population genetic data from 250-300 previously collected samples to generate genotype data on a genetic marker system
2.1 Establishment of species identification testing (Asian/African) and testing of samples to establish species provenance (mtDNA test)
2.2 Production of Cambodian elephant reference genetic data from existing samples testing
2.3 Investigation of geographic origin of Asian ivory found in Cambodia
2.4 Establishment of individualisation and sexing tests to allow for seizure inventory
2.6 Strengthen professional links of the lab with regional and international wildlife forensics/ elephant genetics network
3.3 Work with the Forestry Administration/CITES Authority to encourage implementation of the National Ivory Action Plan, and close legislative loopholes to facilitate arrest and prosecution of ivory traders
3.4 Engage and train airport border controls and the Forestry Administration/CITES Authority to improve airport screening for ivory products entering and leaving Cambodia

Actual Project Implementation Timetable: *Financial Year Apr 2018 – Sept 2018. Key Q2-Q3 activities and milestones.*

1.1 - As mentioned in our Annual Report 1, our team members have increasingly been recognised by shop owners and as such we see the need to adapt the frequency of our surveys to once per year. This challenge coincides with seeing our IWT TA moving on from her role. As this role has specific needs it

might prove challenging to fill as well as result in the new role holder similarly being recognised in the future. Additionally taking into account the expected growing political pressure to address ivory markets, we are now discussing different options of including other staff members and/or hiring consultants to carry out surveys. We will be submitting a change request soon to address this. We have continued our online and media survey over the last 6 months and will share results again in the Annual Report.

1.2 - We delivered a first version of our national map of trading hotspots and networks in our Annual Report 1 in April 2018. This map undergoes ongoing changes and we will provide an updated version with the Annual Report 2.

1.3 - As mentioned under 1.1, no ivory market surveys took place in the reporting time period. However, we started and finalised research investigating the underlying relationship of poverty to the illegal wildlife trade in ivory. The data collection, analysis and write up of results were led by an MSc student from the Durrell Institute of Conservation and Ecology of the University of Kent. The specific aims of the study were: (1) to develop a socio-demographic profile of ivory vendors operating in Cambodia's major ivory markets (2) evaluate vendors' perceptions, level of knowledge, and attitudes towards ivory trade, consumers, and market trends (3) identify cultural, social and economic values of ivory (4) assess the degree and nature of local- and foreign- demand for ivory in Cambodia. Key findings indicate that a growing number of Cambodians are buying ivory, alongside the driving Chinese market, and that rarity and expense are the values most associated with ivory among consumers. Wealth, regardless of nationality, appears to be a shared trait among buyers. The full report will be shared with the Annual Report 2.

Additionally, a Gender Training has successfully taken place for all project and partner staff (RUPP).

1.4 - Information gathered during our surveys at the start of the year (see Annual Report 1) was shared with the Forestry Administration (through soft and hard copies of the report and personal meetings), Cambodian customs officers (through hard copies of the report distributed during a UNODC led 3-day training on ''Risk profiling to enhance interception of Illegal Wildlife Trade'' in August). We also provided an Ivory Identification Training to the officers of the Wildlife Rapid Rescue Team (WRRT) of the Forestry Administration and Wildlife Alliance. The training ended in a sharing session discussing specific shops, workshops, and emerging new products, as well future training needs. We are in constant contact with the WRRT to ensure information feeds directly into enforcement wherever possible.

Specific intelligence on shop owner details, individual's identities identified as implicit in the trade, as well as general data collected through our undercover surveys have been shared with our contact in the Immigration and Customs Enforcement unit of the U.S. State Department Homeland Security. These data as well as the sting camera recordings have also been shared with WCS Cambodia program who is currently extracting more information through their IMB i2 Analyze system.

1.5 - See 2.2

2.1 - Two mitochondrial DNA SNP-based tests to determine the species origin of ivory samples have been implemented in the RUPP laboratory. The first test determines if a sample is either from an African or Asian elephant and the other indicates whether a sample is from Asian, African or Mammoth ivory. All 15 confiscated pieces of Ivory found in Cambodia have been tested with both assays. Subsequent sequencing of all 9 samples that have been identified as African elephant has been conducted. A segment of the Cytochrome B region that matches to the region sequenced in the Loxodonta Localiser (Ishida et al. 2013) database was sequenced. This has allowed us to gain insight into the likely geographical origin of these 9 ivory samples.

2.2 - A 130bp DNA sequence of the mitochondrial d-loop has previously been produced from 335 faecal samples collected in two wild Cambodian elephant populations. Permissions to produce sequence data from an additional population is being finalised as well as the permission to sequence an additional DNA fragment for samples from all three populations. This is currently being conducted to produce a ~250bp DNA fragment that overlaps with previously published mitochondrial sequences that have been collected from wild Asian elephants across eight countries. This has been completed for 190 faecal samples collected by FFI in the Cardamom Mountains during 2016. These will provide the start of a mitochondrial DNA database of elephants within Cambodia. Official permissions are being finalised for the use of the two other faecal DNA sample-sets collected in the Cambodian Eastern Plains Landscape. Both of which will be sequenced at the same ~250bp d-loop region.

The testing of SNP markers for potential use in producing an Asian elephant genetic database has started. The RZSS Wildgenes laboratory has compared the amplification ability of two different SNP genotyping chemistries, Taqman and KASP, on 5 SNP assays. The Taqman assays amplify more rapidly

than the KASP assays however there was no difference in the ability to generate a genotype between the two. Both Assay types amplified all DNA samples extracted from blood and buccal swabs (45/45 assays). However, both the KASP and Taqman assays failed to amplify in 31% and 34% (KASP & Taqman respectively) of the tests involving DNA from faecal samples. Ivory samples failed to amplify in almost all SNP assays (80% & 90% failure for KASP and Taqman respectively). Therefore, both Assay types had similarly lower abilities to genotype degraded DNA samples. As the cost of KASP assays is substantially lower we decided to conduct all future work using this chemistry and will attempt to optimise their ability to amplify DNA from ivory samples.

The second training workshop at the RUPP conservation genetics laboratory occurred in July 2018. RZSS staff transferred the protocols for testing of 20 SNP markers using KASP chemistry as well as providing training in the use of the genetic software Geneious. The 20 SNPs are now being tested in the faecal and Ivory DNA samples for potential use in creating a genetic database for Asian elephants. To help with this testing, good quality DNA samples have been sourced within Cambodia.

Two blood samples have been donated by WWF and the ELIE Foundation from captive elephants within Mondulkiri province in Eastern Cambodia. The RUPP technicians have extracted DNA from these samples and are now using them to test the SNP markers. The ELIE foundation have also agreed to provide more samples in the future which will allow us to build up a picture of the genetic variability of the SNPs in Cambodian elephants.

2.3 - Two out of the 13 ivory samples obtained within Cambodia have been positively identified as from Asian elephant. A previously published reference mitochondrial database is available for African elephants however less focus has been placed on triangulating Asian elephant ivory. It is likely this will be more difficult due to large historical movement of domesticated Asian elephants. This potential greater genetic mixing may make mitochondrial DNA sequences less geographically isolated and therefore with limited capacity to triangulate origins. Once the Cambodian reference genetic data has been collected we will test the potential of mitochondrial DNA sequences for this. However, a SNP based test is an alternative option. To develop a SNP based method for investigating geographic origin, a sample set from across the wider Asian elephant range will be required. We currently have contact with a group with samples from Myanmar for potential collaboration and will need to gain access to a larger reference data set in years 2 & 3 for this to be successful. This final aim is likely to be the most difficult as transfer of elephant samples across borders is hugely restricted and is highly political. It will also require the willingness of multiple governments to back the production of a regional database that is already in varying degrees of progress across SE Asia. A key component for success could be developing protocols that are compatible with methods already being developed within SE Asia.

2.4 - As mentioned above 20 SNP genotyping assays have been ordered and transferred to the RUPP laboratory. The potential of these to identify individuals is currently being trialed at RUPP. An elephant sexing test has been designed and ordered that should theoretically sex all elephant species. This test is currently being verified at RZSS with four known sex individuals. If successful, this test will be transferred to the laboratory in RUPP within the next few months.

2.5 - A standard operating procedure has been drawn up for the receipt, archiving and storage of ivory samples in the RUPP laboratory. Training in the use of Microsoft Access Database for RUPP laboratory samples is ongoing.

2.6 - The full-time RUPP staff member, Darith Sieng, and Trang Ngyun of FFI gave presentations at a workshop facilitated and organised by FFI at the Phnom Penh Office. It involved presenting the initial results of the ivory genetic testing to law enforcement officials and training in the differences between ivory and common replicas/substitutes. We also conducted a RUPP conservation lab open session in July 2018. Conservation NGOs working within Cambodia were invited to a presentation session in the RUPP Biology Department, which included talks from the two RUPP staff members working on the IWT project. The staff gave updates on the ivory and elephant population genetic work that has occurred in the lab with the aim of showcasing the laboratory's capacity and develop contacts with other NGO's who may require the use of genetic resources in the future. The visitors were also taken on a tour of the Conservation Genetics laboratory providing an opportunity to ask questions about the ongoing projects.

The initial results of the ivory genetic work at RUPP were presented at the European Congress of Conservation Biology in Jyvaskyla, Finland, in June this year by an RZSS member of staff. FFI staff have also attended multiple conferences to disseminate and highlight the IWT work. Most notably, the 55th Annual Meeting of the Association for Tropical Biology and Conservation (ATBC) in Kuching, Sarawak, Malaysia, Southeast Asia during which the project was presented in the main conference room on Wildlife Trade.

Phnom Tamao Wildlife Rescue Center has allowed RUPP staff to collect mouth and faecal swabs from their 4 captive elephants. Phnom Tamao is engaged with caring and rehabilitating animals, including those rescued from the illegal wildlife trade and is an important link for the Conservation Genetics laboratory to maintain.

3.3 - Key findings of our first year have been presented during a recent CITES Secretary visit to the Forestry Administration/CITES Authority following the expression of concern by the CITES Standing Committee (SC) over Cambodia's limited progress in the implementation of the National Ivory Action Plan. Having been threatened with suspension of all commercial trade in CITES-listed species if no demonstrable progress would to occur by the next SC meeting in October, the Ministry of Environment recently issued a new law (Praka No. 240) which extends protection to African elephants and 11 other non-native species, effectively closing the gap in its wildlife legal framework. Listing of the African elephant critically closes the legal loophole we have highlighted during our research and certainly marks an important milestone. We will continue to work with the Forestry Administration to ensure that this step will be implemented effectively on the ground.

3.4 - See 1.4 regarding the Ivory Identification Training we hosted for the Forestry Administration, and the support we provided for the training on IWT risk profiling targeting customs officers. The Ivory Identification Guide that was designed by the project team alongside the training has been shared through governmental agencies and with the two NGO's (WCS and WA) engaged in direct law enforcement.

2a. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

The project has seen the departure of its Project Lead and IWT Technical Advisor. The change of Lead has been addressed and a change request has been submitted and granted. We will soon be submitting a change request addressing the departure of the IWT TA as well as the frequency of our ivory market surveys (see 1.1). The latter will result in a change of the timetable of project activities but will not impact the overall proposed project outcome. It is hoped that the needed budget changes will be straight forward as in that the budget reserved for the IWT TA role will directly go towards its replacement or a consultant carrying out the surveys.

The transfer of a Cambodian elephant blood sample to collaborators outside of the country is necessary if we are to progress on developing a SNP panel with increased resolution, that includes markers relevent to Cambodian elephants. The progression of a CITES permit application for this sample has been incredibly slow. If we are unable to secure one in the next couple of months this part of the project will not occur within the timeframe of the project. In this instance, the project will progress with the smaller panel of SNP markers.

2b. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?

Discussed with LTS:	Yes/**No**
Formal change request submitted:	Yes/**No**
Received confirmation of change acceptance	Yes/**No**

3a. Do you currently expect to have any significant (e.g. more than £5,000) underspend in your budget for this year?

Yes ☐ **No** ☐ X Estimated underspend: £

3b. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year.

If you anticipate a significant underspend because of justifiable changes within the project, please submit a rebudget Change Request as soon as possible. There is no guarantee that Defra will agree a rebudget, so please ensure you have enough time to make appropriate changes if necessary.

4. Are there any other issues you wish to raise relating to the project or to IWT Challenge Fund management, monitoring, or financial procedures?
N/A

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document. Additionally, if you were funded under R4 and asked to provide further information by your first half year report, please attach your response as a separate document.

Please note: Any planned modifications to your project schedule/workplan can be discussed in this report but should also be raised with LTS International through a Change Request.

Please send your **completed report by email** to Victoria Pinion at IWT-Fund@ltsi.co.uk. The report should be between 2-3 pages maximum. **Please state your project reference number in the header of your email message e.g. Subject: IWT001 Half Year Report.**