Newsletter

January 2019

Seized ivory,
Credit: Martin Middlebrook

The UK government hosted an international conference about the illegal wildlife trade from 11 to 12 October 2018. The conference brought together global leaders to help eradicate illegal wildlife trade and better protect the world's most iconic species from the threat of extinction.

Find out more here or follow #endwildlifecrime on social media for the latest news and information.

The Illegal Wildlife Trade (IWT) is a serious criminal industry worth up to £17 billion each year, threatening both wildlife and people. Funded by the UK Government, the IWT Challenge Fund tackles the illegal wildlife trade and, in doing so, contributes to sustainable development in developing countries. It funds projects which address one or more of the following themes:

- developing sustainable livelihoods and economic development, to benefit people directly affected by IWT
- strengthening law enforcement
- ensuring effective legal frameworks
- reducing demand for IWT products

Department for Environment Food & Rural Affairs

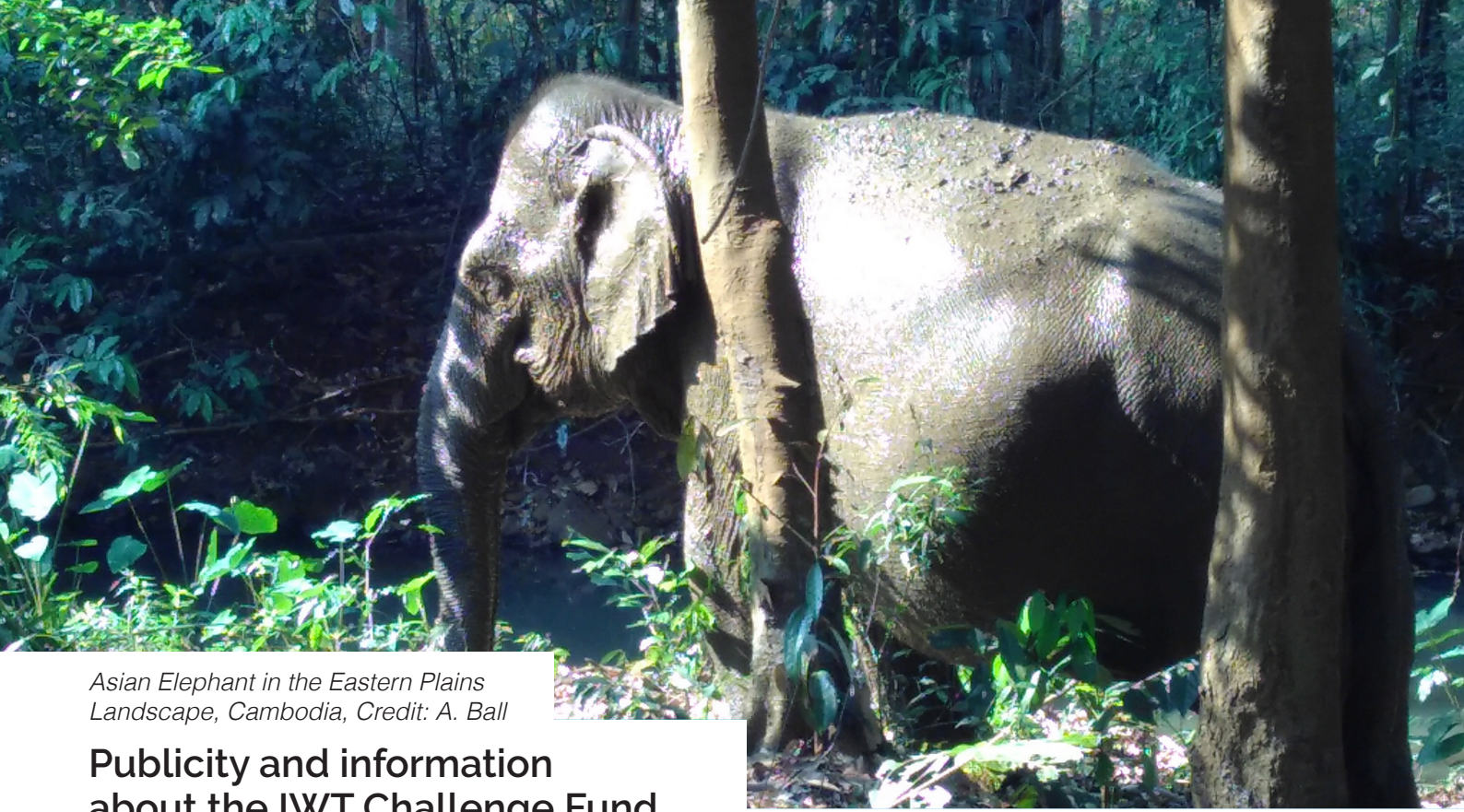Funded by UK Government

#endwildlifecrime

gov.uk/government/collections/ illegal-wildlife-trade-iwt-challenge-fund

Stockpile Management System technology being tried in South Sudan, Credit: Stop Ivory

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Asian Elephant in the Eastern Plains Landscape, Cambodia, Credit: A. Ball

Publicity and information about the IWT Challenge Fund

For more information about the IWT Challenge fund, please visit
gov.uk/government/collections/illegal-wildlife-trade-iwt-challenge-fund

If you would like any further information about the IWT Challenge Fund,
please email the team at **IWT-Fund@ltsi.co.uk**

If you would like to submit an article about your project for a future edition of the IWT Newsletter, please email an article of no more than one side of A4, alongside any pictures, to **IWT-Newsletter@ltsi.co.uk**

Publicity and referencing IWT Challenge Fund

We kindly remind project leaders that if they are publicising their work then it is important that they make every effort to recognise UK Government support through the IWT Challenge Fund. This is important as it helps us to ensure the IWT Challenge Fund retains a high profile and to secure continued Government funding.

A detection rat with the training tank in the background, Credit: APOPO

Introduction

Welcome to the latest edition of the Illegal Wildlife Trade Challenge Fund Newsletter!

The technological advances of the 21st Century have allowed for medical miracles and for greater efficiency in everyday life. Technology has been applied to numerous areas of modern life and shows no signs of slowing down. This edition of the IWT Challenge Fund Newsletter focuses on innovative ways that technology is being used to tackle wildlife crime.

The battle against illegal wildlife trade is a difficult one and often puts those involved in tackling it in the direct line of danger. Advances in technology could allow those brave individuals on the front lines to work smarter and more effectively without having to risk their own lives. The implementation of technology within conservation may have been sluggish in the past, however new progress could mean that those working to protect targeted species have a fighting chance.

The project articles in this Newsletter highlight ingenious ways that technology is being implemented through IWT Challenge Fund projects - from using novel detection systems, to digitising databases and utilising advances in genetic technology, to give those fighting against wildlife crime the upper hand in our ever evolving world.

Young african giant pouched rat pre-training, Credit: APOPO

Ratting on wildlife crimes

The Endangered Wildlife Trust's (EWT) Wildlife in Trade Programme, together with our partner APOPO, has been training African Giant Pouched Rats (*Cricetomys ansorgei*) to detect pangolin and species from the hard wood genus *Dalbergia*, commonly known as ebony.

This project is generously funded by the UK IWT Challenge Fund and the US Fish and Wildlife Service. This project was developed in recognition that international sea ports are known routes for smuggling large volumes of wildlife. They represent a particularly challenging environment for law enforcement officials as current methods of screening shipping containers are expensive, time consuming, and potentially disruptive to port operations. The aim of our project is to test a novel detection system suitable for the port environment – using African Giant Pouched Rats to detect pangolins scales and ebony in shipping containers.

> " we have successfully trained the African Giant Pouched Rats to detect wildlife products "

The project consists of four main parts – initial training followed by three feasibility studies. Firstly, we need to determine whether the rats can smell the wildlife products. Indication training begins by using surrogate targets. Once the rats have mastered these targets pangolin and ebony samples are introduced. As a result, we have successfully trained the African Giant Pouched Rats to detect wildlife products. All of the rats are currently working at the advanced stage of discrimination training, which involves identifying the target substances at three different odour concentrations while ignoring the non-targets (10 substances commonly found in seized shipping containers) when they appear in any of 10 different positions within the line cage apparatus.

After the initial training we progressed to three feasibility studies. The first study aimed to determine if the rats were capable of finding new target specimens. We introduced new samples of pangolin scale and African hardwood to the rats and found that after some training they were able to detect these new samples. This meant that when the rats are deployed, they will be able to detect any pangolin or ebony, not only the individual species they were originally trained on.

> **We introduced the rats to masking agents commonly used in smuggling to ensure they can detect the pangolin scale and ebony through the masking agent**

The second study focused on the rat's ability to sniff out hidden wildlife products. We found that they were able to, but this training is still ongoing. We introduced the rats to masking agents commonly used in smuggling to ensure they can detect the pangolin scale and ebony through the masking agent. The results so far are very positive.

The final study aims to deduce if the rats could work effectively in an operational environment. To properly inform this study, we recently hosted a workshop with law enforcement agencies from Tanzania and South Africa and we will be commencing this study in 2019.

African Giant Pouched Rats have been proven to be highly effective in detecting landmines and tuberculosis, and our project focuses their amazing detection skills to identify wildlife products, giving rise to a novel and cost-effective method to detect wildlife contraband.

This article features project IWT039 "A novel system to detect illegal wildlife in shipping containers", led by Endangered Wildlife Trust, which works in Tanzania.

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The participants at the recent workshop in Dar es Salaam, Credit: EWT

A daytime camera image of an intruder collecting firewood, Credit: DNPWC

Technology guarding the wildlife in Western Nepal

The Western Terai of Nepal is a prime biodiversity hotspot, home to globally threatened wildlife like rhinos, tigers, pangolins, and wild elephants. The Western Terai Complex (WTC) includes three protected areas: Banke, Bardia and Shuklaphanta National Parks. The forested landscapes in between these parks act as a habitat corridor for the wildlife living here. ZSL has been supporting WTC's protected areas to strengthen law enforcement using state-of-the-art conservation technology, funded by the Illegal Wildlife Trade Challenge Fund, since 2017.

WTC is large and ensuring wildlife protection across the landscape requires major human and financial resources. Furthermore, the difficult terrain makes patrolling a challenging task and poachers often take advantage of this, choosing to operate in the least accessible areas.

ZSL is supporting the development of conservation technology to help ensure effective protection of wildlife across the WTC through the introduction of Rapid Response Networks. GSM-enabled cameras, equipped with thermal and motion sensors and deployed in key vulnerable locations, capture images of everything passing by. Because these cameras use infrared light invisible to human eyes, they can capture images at night without being noticed by poachers.

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Rapid response in action in Shuklaphanta National Park

During the night of 15 June 2018, the surveillance cameras of Shuklaphanta National Park relayed an image to the nearest Park Office. Two poachers had made a kill and had crossed the path of the camera on their way out of the park. Within 30 minutes, two teams of trained park rangers and Nepal army staff were scrambled to the camera location. Within 90 minutes the team intercepted the poachers. The team were successfully able to arrest one of the individuals but the other managed to escape, leaving his musket behind in the process. Based on the surveillance camera images and the interrogation of the arrested poacher, the other poacher was arrested within a week.

"At around midnight I got a call from our team saying that one of the poachers had been restrained with a gun and a dead hog deer", Gopal Bahadur Ghimire, the Acting Chief Conservation Officer recalls, *"it was a rare incident where a high-threat offender was arrested from the jungle at night within a few hours of information being received".*

A human-detection algorithm then processes these images to provide instant threat alerts to dedicated protected area officers whenever potential poachers are deducted. Anti-poaching units are then rapidly deployed to arrest poachers, in many cases arriving before they kill

ZSL staff installing the GSM enabled surviellance camera, Credit: ZSL

any wildlife. For the first time, these cameras give park management the opportunity to get the upper hand in the fight against poaching and illegal wildlife trade.

These Rapid Response Networks have been welcomed by protected area managers. The technology has helped protected areas to protect iconic species. "With these cameras installed, we can maintain our virtual presence in any part of the park. We can monitor every activity that occurs at those hotspots. All we need is a smartphone with internet access", says Yam Bahadur Rawat, Head of the Rapid Response Command Centre in Shuklaphanta National Park.

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To ensure that these rapid response networks continue to protect wildlife in WTC for years to come ZSL has trained more than 50 protected area staff in the end-to-end management of this new technology

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Through this project Rapid Response Networks have been installed in all three National Parks in WTC, and they have already enabled several arrests. The benefit of this technology is not only in directly enabling the arrest of poachers. It also strongly deters potential poachers, who have an increased fear of arrest due to the camouflaged cameras spread across the forest.

To ensure that these rapid response networks continue to protect wildlife in WTC for years to come ZSL has trained more than 50 protected area staff in the end-to-end management of this new technology. "The response from the ground is exciting and we have plans to expand the coverage of these cameras to other National Parks as well", says Bhagawan Raj Dahal, ZSL Nepal's Transboundary Tiger Manager.

This article features project IWT041 "Strengthening Community Anti-poaching and Ecotourism in the Western Terai Complex", led by ZSL, which works in Nepal.
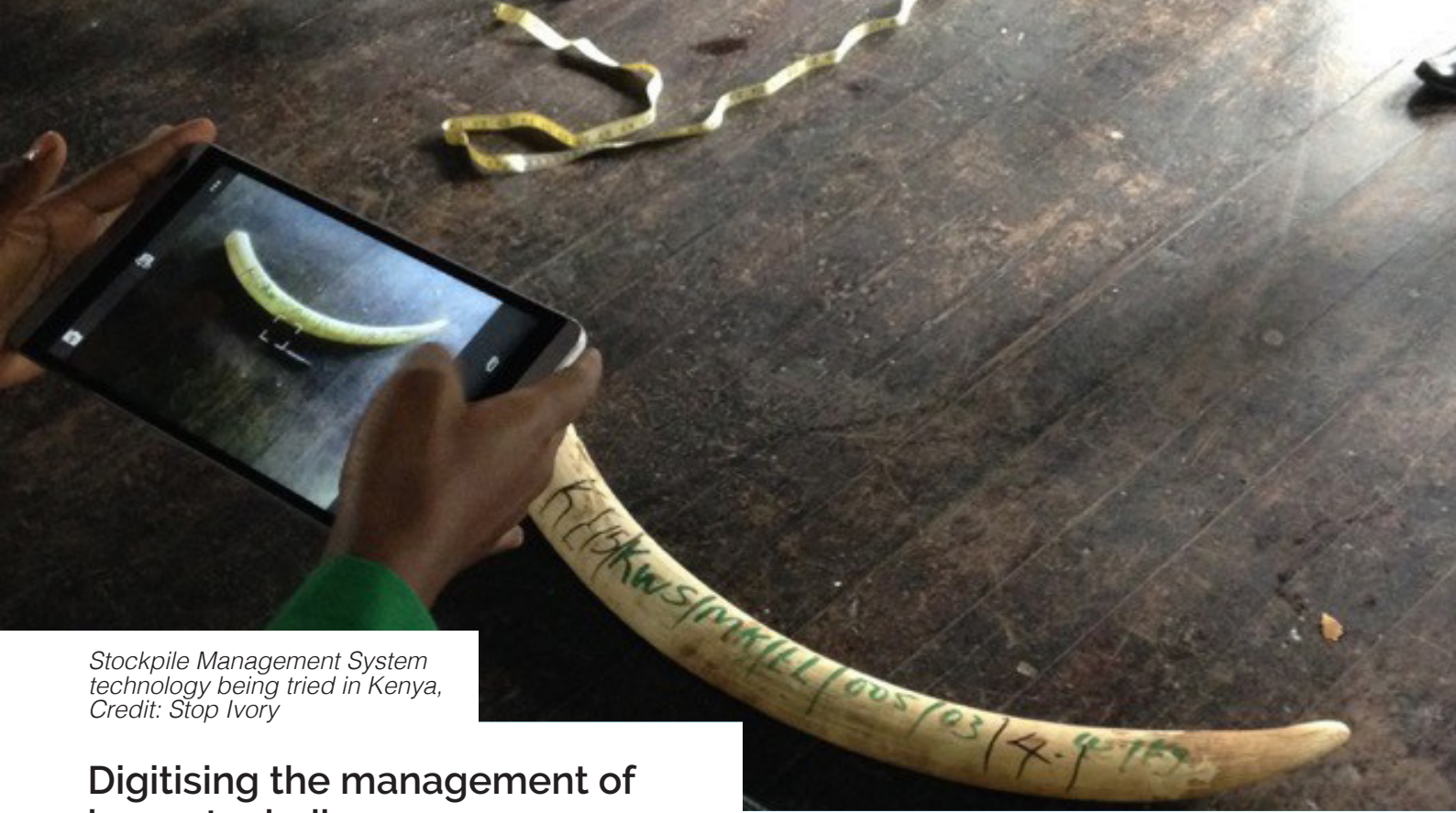
Stockpile Management System technology being tried in Kenya, Credit: Stop Ivory

Digitising the management of ivory stockpiles

There's more to saving elephants than arresting poachers out in the bush. At Stop Ivory we work with the 19 African countries of the Elephant Protection Initiative (EPI) to meet their commitment to 'Keep Ivory out of Economic Use', and we believe a pre-requisite for this is the effective management of national ivory stockpiles.

Governments accrue stockpiles of ivory (and other wildlife products) through seizures from poachers or traffickers, natural deaths and legal culling. These stockpiles need to be securely managed to ensure there is no leakage of ivory back into the illegal wildlife trade, so accurate inventories are essential. But we discovered that in many African countries there wasn't a simple tool available for officials to digitally record data from storerooms – instead this was being hand written in ledgers and then typed up, a slow process conducive to both errors and corruption.

Stop Ivory partnered with Save the Elephants, the accountancy firm Ernst and Young and the Kenyan I.T. firm Bityarn Consult to develop an app to digitise the inventory process. This app, known as the Stockpile Management System or SMS, runs through a series of screens, where officials take a photo of and enter data relating to each piece of ivory, ensuring future verification. The data on the tablet is uploaded onto a secure central server, where it is collated and easily viewed and analysed.

Wildlife departments that use the SMS have a complete overview from each storeroom in the country of what is where, facilitating management decisions. The SMS data

fields are tailored for each country's specific needs. It's a simple tool that even someone with limited experience of using a tablet can master in 15 minutes.

The SMS has so far been tried out by eleven countries, with nine now using it to manage their ivory stockpiles, including Kenya, Gabon, Congo, Uganda and Angola. These countries have improved their annual stockpile reporting to CITES, a requirement for member states. The SMS is bringing transparency and good governance to the management of ivory stockpiles. The fight to save the elephant is being conducted on many fronts, and the accurate recording of data is one of them.

This article features projects IWT047 "Developing investigation and prosecution capacity to save Angola's elephants" and IWT058 "Securing Africa's ivory: Developing gold-standard stockpile management systems" led by Stop Ivory.

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Tencent and the National Forestry and Grassland Administration signed a strategy MoU, Credit: Ling Xu

Chinese internet companies take their own innovative approach to combat illegal wildlife trade

Following the formation of Global Coalition to End Wildlife Trafficking Online, Chinese internet companies have developed advanced and evolving technology to combat illegal wildlife trade online.

Tencent, one of the leading Chinese internet companies, adheres to the concept of "Tech for Social Good", and has collaborated with TRAFFIC and other NGOs to develop an express channel, "Tencent for the Planet" for the public to report illegal trade information of wildlife and other commodities. It is a professional and rapid system engaging online users, NGOs, individual identification experts and law enforcement agencies to crack down on wildlife cybercrime. NGOs and individual experts will help filter the data, and the suspicious information on illegal wildlife trade will be further investigated by Tencent. Following this, the actionable information will be submitted to law enforcement agencies. The above steps will take place within 72 hours and informers will receive

> " any online shop with illegal wildlife products for sale will be closed once detected by the operator "

> " NGOs and individual experts will help filter the data, and the suspicious information on illegal wildlife trade will be further investigated by Tencent "

feedback from Tencent simultaneously. A summary of enforcement actions will also be updated monthly on "Tencent for the Planet". To ensure a smooth introduction to the system, Tencent signed a strategic MoU with the National Forestry & Grassland Administration of China on the 19th of December 2018, which was witnessed by TRAFFIC and six other NGOs. Six NGO representatives have been nominated to form an advisory group of "Tencent for the Planet" to detect illegal wildlife trade online.

Alibaba, another giant Chinese internet company, also initiated a mini online campaign to stop illegal wildlife consumption. Taobao and Tmall, two major markets operated by Alibaba, with technical support from TRAFFIC have developed a pop-up page to show the risk in trading illegal wildlife products when endangered species or their products are searched. Any online shop with illegal wildlife products for sale will be closed once detected by the operator.

Mr. Matt Mao, Vice General Manager of Tencent Security Department introduced report findings of IWT, Credit: Ling Xu

TRAFFIC is working with Tencent, Alibaba and other internet companies to promote the application of Standard Operation Procedures (SOPs) in their daily work, which aims to help the internet companies detect, combat and prevent illegal wildlife trade online. The relevant training events will be facilitated to further enhance capacity of internet companies on combating wildlife cybercrime.

This article features projects IWT042 "Combatting Global Wildlife Cybercrime: Building on Success in China", led by TRAFFIC International, which works in China, Vietnam, Cameroon and Tanzania.

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Ivory products for sale in the Cambodia domestic market, Credit: R. Weckauf

Using genetics to tackle the illegal wildlife trade

Genetic technology has been racing along in the last decade, however its use by the conservation sector is trailing behind. Genetics can help inform many conservation issues: helping to define management units, delineate species, map animal movement, estimate population sizes, understand ecology and trace the origin of animal products. These are vital components that help us to understand and address key concerns within many areas of wildlife conservation. A genetic toolbox is now a crucial bit of kit for many conservation projects but there are many more that have yet to benefit from the new technologies.

Projects in developing countries especially lack funding and access to genetic techniques, despite them often dealing with the most pressing conservation concerns. Therefore, as part of the IWT Challenge Fund project on "Critical evidence to drive a reduction in Cambodia's ivory trade", it is a key aim to develop facilities and train staff in much needed genetic skills within the Royal University of Phnom Penh. In the second year of the project the university is now home to the first conservation

> " Cambodia has been identified as a country 'important to watch' by CITES as it is possible the Chinese ban on ivory will shift the trade to neighbouring countries that lack the training and resources to tackle the problem "

genetics laboratory in Cambodia and staff are focusing their work on native species-projects that are in vital need of conservation support. The major one being the documented increase in the illegal ivory trade within the Cambodian domestic market.

Fauna & Flora International (FFI) have been working in Cambodia with the Royal University of Phnom Penh (RUPP) since 2005, but it is only recently that they have turned their attention to the illegal ivory trade. Cambodia has been identified as a country 'important to watch' by the Convention for International Trade in Endangered Species (CITES) as it is possible the Chinese ban on ivory will shift the trade to neighbouring countries that lack the training and resources to tackle the problem. The recent surveys conducted by FFI between 2015-2017 worryingly show an upward trend in the number of ivory products for sale, as well as the total value of ivory found for sale in three of Cambodia's major cities.

To understand where this sudden influx of ivory is coming from, and to support the Royal Government of Cambodia in their efforts to tackle this trade, the Royal Zoological Society of Scotland (RZSS) has trained staff at RUPP to use genetics to identify whether the ivory is from African or Asian elephants and, if possible, the country of origin. This partnership has involved the provision and use of high-tech equipment including a quantitative Polymerase Chain Reaction (qPCR) machine. A recent addition to many genetic labs this allows genetic samples to be analysed and results to be processed completely within Cambodia, limiting the often-lengthy process of sending samples abroad.
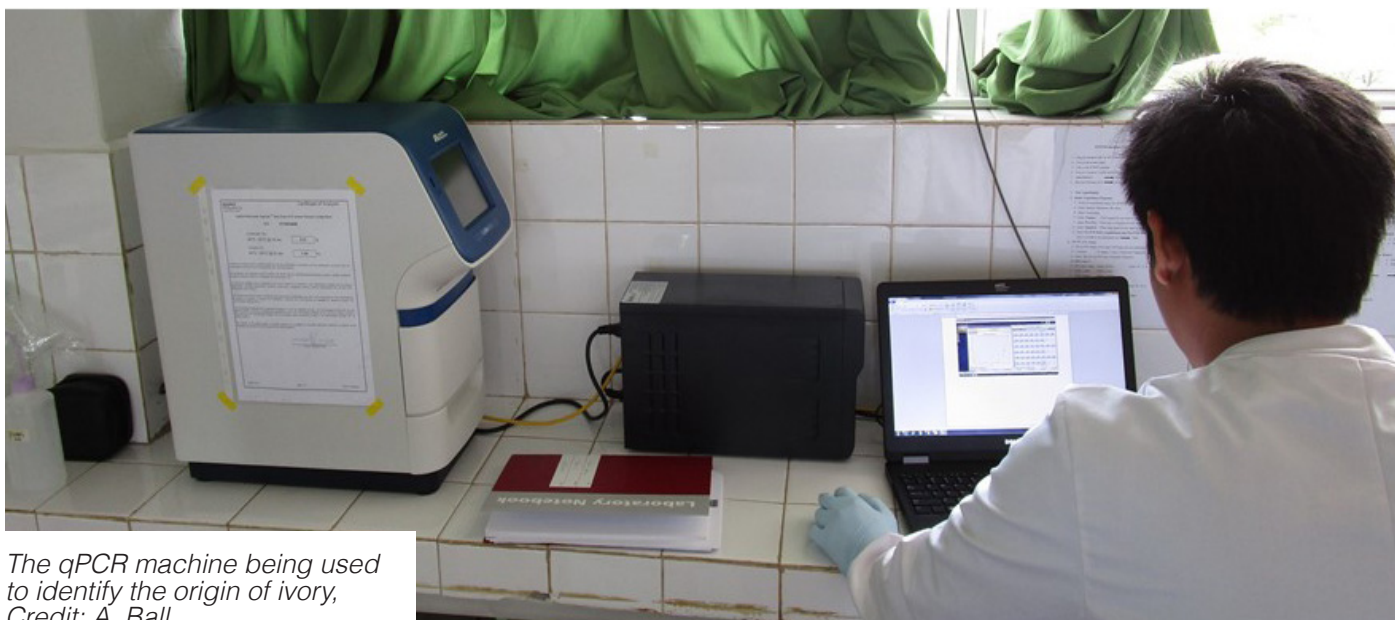
*The qPCR machine being used to identify the origin of ivory, Credit: A. Ball*

This machine has so far revealed that 70% of the tested ivory is from African elephants in a diverse range of locations, including countries in the West and East of Africa. This is a key finding that aligns with evidence that current demand for ivory is having a disproportionate impact on African elephant populations. However, a more surprising result from this work is that 15% of the tested samples are not from either living elephant species but are in fact Woolly mammoth ivory.

The extinct Woolly mammoth of the ice-age steppes is not something you would associate with tropical Cambodia; exemplifying the huge reach of the current demand for ivory. Although it is not in itself illegal to trade it is being sold interchangeably with illegal elephant ivory. The impact that this has on the conservation of elephants is highly complex but by documenting its occurrence within Cambodia we are now in a more informed position from which to devise solutions.

The RUPP conservation genetics lab is now using their qPCR machine to tackle additional priorities. They are currently identifying captive individuals of the critically endangered Siamese crocodile for a reintroduction program and there are many other projects that require genetic support. Providing access to this cutting-edge technology can make a real difference to conservation within Cambodia, however, it is important to continue devising innovative ways that we can apply genetic technology to conservation issues not just in Cambodia but worldwide.

This article features project IWT044 "Critical evidence to drive a reduction in Cambodia's ivory trade", led by Fauna & Flora International, which works in Cambodia.
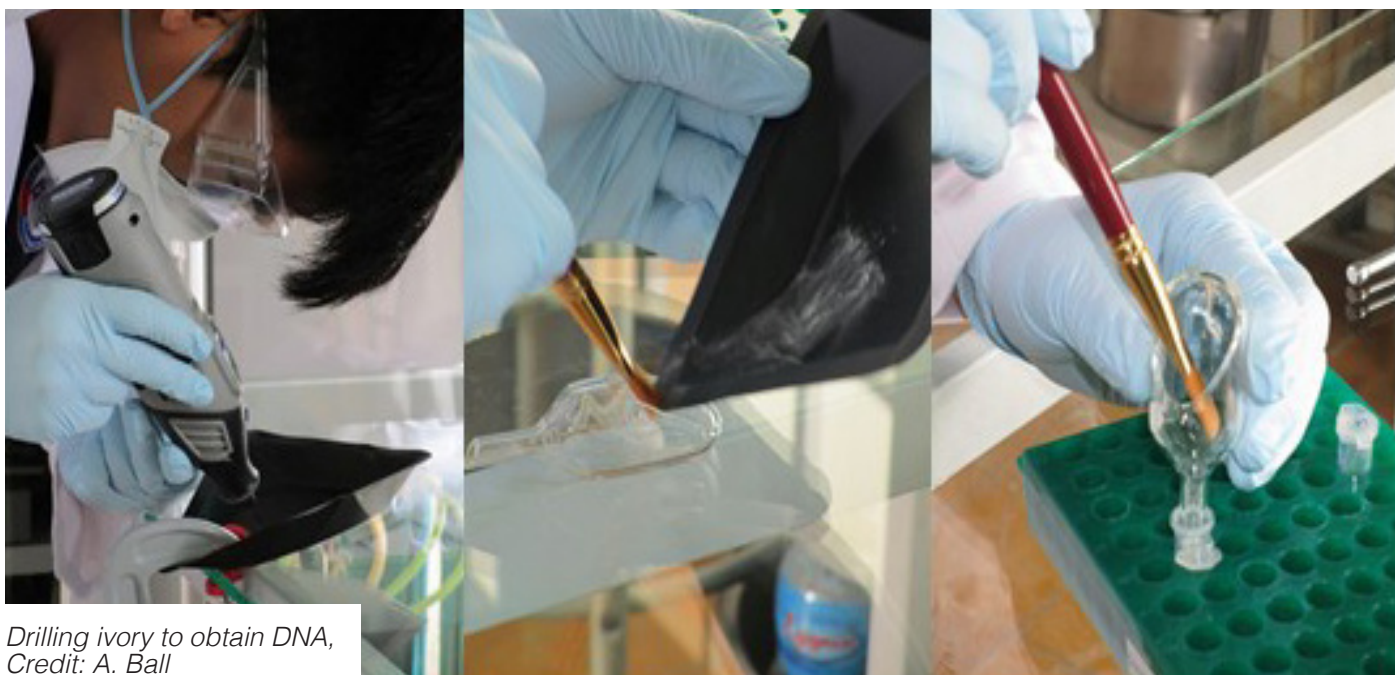
Drilling ivory to obtain DNA, Credit: A. Ball

Stockpile Management System technology being tried in Kenya, Credit: Stop Ivory

Newsletter Contacts

If you have any general queries about how the IWT Challenge Fund operates please e-mail us at **IllegalWildlifeTrade@defra.gsi.gov.uk**

For any queries on project applications or existing projects please contact our IWT Administrators (LTS International) at **IWT-Fund@ltsi.co.uk**

This is the second edition of the IWT Challenge Fund newsletter. The intention is that the newsletter will be produced quarterly. To include an article on your project in an upcoming edition, please contact us at **IWT-Newsletter@ltsi.co.uk**

The UK Government's Illegal Wildlife Trade Challenge Fund provides financial support to practical projects around the world which are:

- developing sustainable livelihoods and economic development, to benefit people directly affected by IWT
- strengthening law enforcement
- ensuring effective legal frameworks
- reducing demand for IWT products

To date through the Challenge Fund, around £18.5 million has been allocated to 61 projects.