TRACE

the wildlife forensics network

2024

ANNUAL REPORT

CONTENTS

WELCOME 3

HOW WE BUILD CAPACITY 5

CRIME SCENE 7

EVIDENCE MANAGEMENT 9

LABORATORY 11

COURTROOM 13

NETWORKING 15

THE YEAR IN NUMBERS 17

1

2

WELCOME

Welcome to this year's TRACE annual report. 2024 has seen us develop two new areas of activity with our first project work in Latin America and the beginning of a dedicated effort to apply forensic science to tackle the illegal timber trade

Both of these initiatives address long-term challenges for wildlife law enforcement and provide exciting opportunities for TRACE to extend its impact.

Our Latin America project work has focused on Ecuador and Colombia, where we have conducted national assessments of wildlife evidence practices and forensic capacity, in partnership with UNODC's Global Programme on Crimes that Affect the Environment. We hope that this represents the first step to broader capacity building.

The challenge of identifying traded timber and timber products has been a long-standing issue in law enforcement, complicated by the enormous range of species, the lack of simple identification methods and the fact that legality is often related to the geographic origin of the products, as well as the species identity. Working with national partners through the African Wildlife Forensics Network (AWFN), we are starting to develop challenge-led approaches to timber forensic identification as part of a new long-term initiative.

As the only international organisation dedicated to promoting the use of forensic science in wildlife law enforcement, TRACE continues to deliver capacity from crime scene to courtroom, providing expert instruction and resources to investigators, scientists and prosecutors.

TRACE maintains steady organic growth, with sixteen staff, representing twelve nationalities, working with partners in over a dozen countries to improve wildlife law enforcement. This report presents just some of the project activities we've led this year, courtesy of increased grant income from our global supporters. As ever, we are very grateful to all of our donors and partner organisations for facilitating our work.

This year provided two fantastic opportunities to bring the wildlife forensic community together, with the Society for Wildlife Forensic Science biennial meeting taking place in Kuala Lumpur in June, the first time it has been held in Asia. This brought together over 120 practitioners from around 35 countries and included training workshops, lab-exchange visits and a great deal of knowledge exchange. The SWFS meeting was followed by the AWFN annual meeting held on the shores of Lake Malawi. Alongside the professional discussions, the second Pan-African wildlife forensic Sports Day proved to be a deeply popular, if fairly competitive, event!

We continue to focus our efforts on addressing gaps in law enforcement capabilities, delivering what is most needed to ensure that our work and donor funding have maximum impact. As a small non-profit organisation, working with local partners, we are able to rapidly adapt to changing circumstances on the ground, to achieve our aims. As ever, many thanks to all of our staff at TRACE for their dedication and enthusiasm to the cause; teamwork is at the centre of all we do.

As director of TRACE Wildlife Forensics Network, it gives me a huge amount of pleasure to provide this annual update. Thank you for your interest in our work, please read on for some inspiring examples of wildlife forensic science in action!

Prof. Rob Ogden
TRACE Director

HOW WE BUILD CAPACITY

TRACE specialises in helping countries use forensic evidence in wildlife law enforcement. This involves a combination of training and capacity building throughout the evidential journey, from crime scene to courtroom. In the world of forensics, everything depends on the previous link in the chain: the prosecutor needs an accurate lab report, the lab needs correctly preserved evidence, the evidence needs correct documentation and these records need to link seamlessly back to the crime scene, where the whole process begins. Any breaks in evidence security or gaps in expertise will lead to evidence being rejected and cases potentially lost.

When developing wildlife forensic capability, this means that we have to focus on every aspect of forensic evidence production and management. TRACE employs specialists with years of international experience at each stage of the process, ensuring that all of our trainee crime scene officers, instructors and laboratory analysts are taught by experts in their fields.

Aside from technical support, TRACE is also committed to supporting practitioner networks that promote wildlife forensic community development and ensure that quality assurance standards are shared, implemented and maintained. This overall capacity building model can be tailored to country requirements and promotes sustainable solutions for wildlife forensics in global law enforcement.

Crime Scene

Typically considered the start of the forensic evidence process, wildlife crime scenes can include poaching sites, vehicles, buildings or shipping containers. Crime scene roles vary from the first responder on site, to a crime scene investigator, requiring a range of tailored trainings and equipment provision. TRACE works with partner agencies throughout Africa, Southeast Asia and Latin America to develop national capacity for enforcement agencies to correctly secure and process wildlife crime scenes. In addition to direct officer training, we train instructors and institutionalise crime scene courses through wildlife schools and ranger training facilities.

Evidence Management

Once recovered, evidence items must be fully documented, securely transferred and stored to allow their subsequent analysis and submission to court. Evidence security and management require organisations to develop and follow robust Standard Operating Procedures (SOPs). TRACE works with a wide range of wildlife enforcement agencies to support the design and implementation of institutional SOPs, including role-specific train-the-trainer programmes and the provision of secure evidence storage facilities.

Laboratory

Wildlife forensic science is focused on addressing key investigative questions concerning the identity of animals, plants, their parts and products. Forensic analysis can include physical, chemical and biological methods, ranging from morphology to DNA testing. TRACE works with laboratories around the world to help local scientists develop and apply forensic science to support wildlife crime investigations. This includes laboratory design, research and development, quality management and casework advice. We have helped establish over fifteen national wildlife DNA forensic laboratories since 2009.

Courtroom

During this final stage of the enforcement process, it is critical that forensic evidence is correctly interpreted and presented in a court of law. As wildlife forensic science is relatively new to many countries, it is important to raise awareness of the science and techniques involved among prosecutors and the judiciary, to ensure evidence is admitted at trial. TRACE partners with experienced wildlife prosecutors to provide training to the legal profession and forensic expert witnesses.

Networking

A key component of our regional capacity building work is the formation of networks of wildlife forensic scientists and crime scene investigators. Establishing partnerships within and among countries promotes knowledge exchange, creates training opportunities, builds communities and advances the development of professional standards. Through initiatives such as the African Wildlife Forensics Network, TRACE supports meetings and activities that link international experts with national practitioners and help maintain the relationships that enable wildlife forensics to impact investigations.

Quality Assurance

Quality is an essential component of forensic science, controlling how it is conducted and also in how it is taught. TRACE helps countries implement quality management systems that comply with international best practice including relevant ISO standards for evidence management and laboratory testing, and the Standards and Guidelines of the Society for Wildlife Forensic Science.

CRIME SCENE

In combating wildlife crime, forensic evidence can play a crucial role in holding perpetrators accountable. Crime scenes provide fantastic opportunities to recover vital evidence. At the same time, mistakes made at start of the forensic process are usually impossible to rectify later on, highlighting the importance of effective crime scene training.

This year, TRACE was invited to assess existing wildlife crime scene capacity and demonstrate training methods to enforcement agencies in Latin America, starting with Ecuador and Colombia. Our work began with research into the agencies involved in wildlife law enforcement, collating information on their different roles, the types of investigations they encounter, crime scene responsibilities and their skills and experience. We used the results to inform the design of demonstration workshops that brought together a broad range of national stakeholders to discuss the status of evidence collection and management in each country and explore how best to build capacity.

In Ecuador, 35 representatives from over fifteen national and local agencies participated in a two-day workshop, led by TRACE and facilitated by UNODC, in Francisco de *Orellana* (Coca). Later in the year, a similar event was held in Bogota, Colombia, hosted by the Botanic Gardens, where once again around 35 participants from over a dozen agencies took part.

These workshops served to raise awareness of best practices in securing, searching, documenting, and collecting evidence at wildlife crime scenes, considering the unique national contexts. By providing practical examples and resources, participants gained essential insight into how to enhance crime scene investigation capacity and how TRACE's sustainable capacity-building model can assist countries in strengthening their forensic response and ensuring justice for wildlife crimes.

Crime Scene Management demonstration in Ecuador.

Engagement at both workshops was excellent, with activities sparking comprehensive discussions into how best to develop capacity across organisations, identifying future training needs and establishing national relationships among stakeholders. The outputs from this work will form the basis of future projects designed to support wildlife forensic capacity building in Colombia and Ecuador.

Elephant Crime Scene Examination and Evidence Management

While conservation and wildlife law enforcement share common objectives, it is not unusual for professionals skilled in one discipline to possess only foundational understanding of the other.

Personnel working in the CITES 'Monitoring the Illegal Killing of Elephants' (CITES MIKE) programme collect crucial monitoring data for understanding trends in elephant poaching. However, these individuals have not previously received training in the principles of crime scene management and thus had not fully considered the forensic opportunities available at sites of illegally killed of elephants.

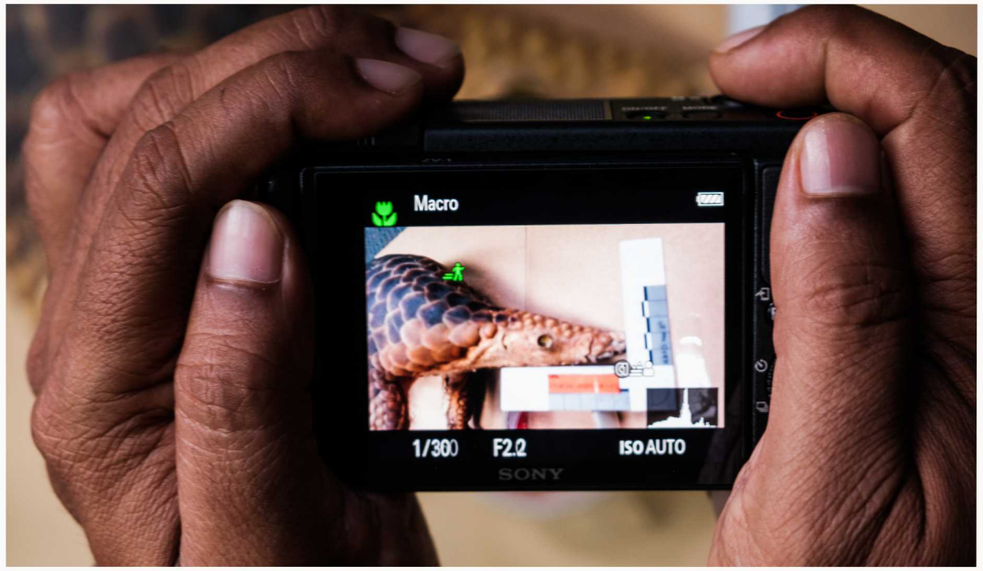
In 2024, TRACE worked in collaboration with Cameroonian instructors, previously trained by us, to facilitate training of CITES MIKE personnel in theoretical knowledge and vocational skills encompassing the planning, documentation, recovery, and transportation of evidence from wildlife crime scenes.

Beyond providing a co-teaching opportunity for newly qualified Cameroonian instructors, this initiative also enabled TRACE staff to mentor them on the subject matter. This collaborative course has fostered improved cooperation and efficiency between conservation and wildlife law enforcement efforts.

Crime Scene Photography

In some regions of the world, elements of wildlife crime scene management development are already making progress, and TRACE is requested to deliver training in specific skills. One such skill that commonly comes under scrutiny in the courts is crime scene and evidence photography.

This year, we ran a short three-day course for Wildlife officers from PERHILITAN, representing divisions across Peninsular Malaysia, working to help improve the quality and integrity of their crime scene photography. This course focused on developing core photography skills, techniques for documenting crime scenes and evidence through photography, and strategies for improving the presentation of photographic evidence in court.



EVIDENCE MANAGEMENT

The procedures employed following evidence collection, throughout its journey to court, are critical in forensic investigations. Maintaining the Chain of Custody is crucial in allowing evidence to be admitted at trial, requiring the careful development and application of institutional protocols.

This year TRACE worked in the Lao People's Democratic Republic (Lao PDR), to establish a working Standard Operating Procedure (SOP) for evidence management in wildlife crime investigations. We led a series of SOP design workshops comprised of wildlife law enforcement officers from different regions of Lao PDR, all under the Department of Forest Inspection (DoFI).

This resulted in the production of the first national SOP for wildlife evidence management in Lao PDR, which has now been formally authorised for use in wildlife crime investigations. In 2025 we hope to be back in Lao PDR to support the roll-out of this SOP and its nationwide implementation.

Elsewhere in Southeast Asia, we partnered with the Sabah Wildlife Department and the Sarawak Forestry Corporation to develop a tailored SOP that addresses their specific needs and capacity for evidence management. Both of these SOPs received endorsement in 2024.

To ensure adherence to the newly endorsed SOPs and to facilitate internal dissemination of the protocols, nine officers from the Sabah Wildlife Department and twelve officers from the Sarawak Forestry Corporation subsequently participated in a TRACE-led train-the-trainer program, helping to support role-specific SOP trainings in each region.

3-day Wildlife Crime Evidence Seizure Management practitioners workshop being run in Lao People's Democratic Republic for the Department of Forestry Inspection.

A trainee undertaking a 'teach back' to assess their ability to deliver training to their colleagues.

LABORATORY

As usual, 2024 saw wide array of laboratory-based activities including training, mentorship, capacity development, and casework support. A few of our favourite highlights are included here.

Casework

This year, TRACE experts were requested to assist several governments with wildlife related forensic analysis. At the start of the year, approximately 40kg of dried and 108kg of frozen fish swim bladders were seized by the Suvarnabhumi Airport Customs in Thailand. Morphological assessment suggested that the possible species origin was the protected *Totoaba* species, but customs requested DNA-based species confirmation. In a collaborative initiative between UNODC and TRACE, the PELTS mobile laboratory was deployed to provide on-site support. Three experienced wildlife forensic scientists from TRACE set up the laboratory at the Customs office to sample the seized materials. All necessary wet laboratory procedures were completed on site. Subsequent

Suspected illegal wildlife parts being sampled for DNA forensics.

identification by DNA sequencing confirmed that all the tested the specimens originated from *Totoaba macdonaldi*, a species listed under CITES Appendix I.

In March 2024, Mozambique law enforcement officials intercepted a consignment of 651 pieces of suspected ivory at Maputo harbour en route to Dubai. Given Mozambique's current lack of a dedicated wildlife forensic laboratory, the National Administration for Conservation Areas (ANAC) sought assistance from TRACE for the analysis of this seizure, leading to the deployment of the PELTS Lab. The TRACE laboratory team received support

Ivory being sorted in Maputo, Mozambique

from wildlife forensic scientists affiliated with the Victoria Falls Wildlife Trust in Zimbabwe and the Central Veterinary Laboratory in Malawi, both of whom are previous beneficiaries of TRACE training and support, including participations in the TRACE Scholarship programme at The University of Edinburgh. The PELTS mission was a huge success, resulting in the production of a forensic casework report for the Mozambique government and identification of multiple genetic populations of African elephant within the seizure.

Ivory being sampled in Maputo, Mozambique, for forensic DNA analysis

Timber Forensics

The illegal trade in timber threatens both individual tree species and entire habitats. Significant efforts to regulate the legal trade are in place worldwide, but illegal logging and laundering of trafficked timber into legitimate supply chains remain massive problems. Law enforcement challenges include the identification of protected timber species in trade, establishing the need for forensic analysis to support investigations.

Given the widespread nature of the legitimate timber trade, the importance of field-based presumptive testing to rapidly screen shipments is a priority for enforcement agencies. Only when there is sufficient confidence to seize a consignment will there be time to perform a laboratory-based test. At the present time there are a wide range of presumptive field tests and definite laboratory methods for timber identification. Field tests typically rely on physical characteristics, while lab tests focus on chemical and genetic analysis.TRACE scientists have over fifteen years' experience of timber identification, but this year we began our first dedicated research and development project to evaluate and apply timber methods in an enforcement context in Africa.

Following on from the 2024 African Wildlife Forensics Meeting in Malawi, we convened a workshop to bring together timber trafficking investigators and forensic specialists from across Africa to consider the diverse technical challenges and potential solutions in this field. Detailed assessments of different tools were shared, including the Xylorix, Xylotron and near-infra-red spectroscopy (NIRS) field systems, and DART mass spectroscopy, and DNA-based lab approaches.

This highly productive meeting identified several key needs and opportunities, which will be explored in greater detail in 2025, with TRACE set to take a lead role in forensic science coordination in this field.

ThermoFisher Partnership

TRACE and ThermoFisher Scientific have partnered to provide the global wildlife DNA forensics community with significant discounts on laboratory supplies. This long-term partnership forms part of ThermoFisher Scientific's Global Health Equality programme and supports the work of TRACE in building wildlife forensic capacity worldwide. This opportunity has already been taken-up by Tanzania and Sarawak in Malaysia for laboratory development, and in Peninsula Malaysia and Thailand for TigerBase implementation.

ThermoFisher SCIENTIFIC

COURTROOM

As the final recipients of any evidence recovered from a crime scene, it is crucial that there is robust communication between prosecutors and everyone involved in the collection, documentation, security, and analysis of all evidence.

This principle has become a key theme running through the African Wildlife Forensics Network (AWFN). The new AWFN Prosecutor working group is intended to facilitate independent discussions among prosecutors as well as contribute to the deliberations of the other practitioner groups. For instance, this year's AWFN crime scene training sessions addressed the impact of substandard evidence collection on prosecutions and the ethical considerations of photography and its potential impact on legal proceedings. Through a series of case studies designed to identify legal challenges to the investigative process, we explored strategies to improve conviction rates in wildlife crime cases. By identifying common mistakes made along the penal chain, prosecutors were able to emphasise the crucial role of communication between wildlife law enforcement and prosecutors, and to identify reasons why wildlife forensics experts often do not get feedback from prosecutors regarding trial outcomes.

Key challenges were identified during these prosecutor-led discussions, which represent areas to address in order to improve wildlife crime convictions, including issues with investigative decision-making, pre-trial co-ordination and post-trial feedback.

A prosecutor led workshop to better share with wildlife crime officers the needs and challenges of prosecuting wildlife crimes.

Each of these identified challenges are areas where TRACE is actively working to strengthen the connections within the penal chain, from crime scene through to the courtroom. The networking opportunities offered by the AWFN serve as the first step in improving such linkages through improved communication.

The Money Shot

A common practice in many countries and jurisdictions involves taking photographs of individuals suspected of wildlife crimes when they are first arrested. These photographs frequently depict the suspect holding or positioned behind the evidence, often while handcuffed, and sometimes feature the arresting officer proudly standing as if 'guarding' the suspect. This practice is often nicknamed a 'money shot'.

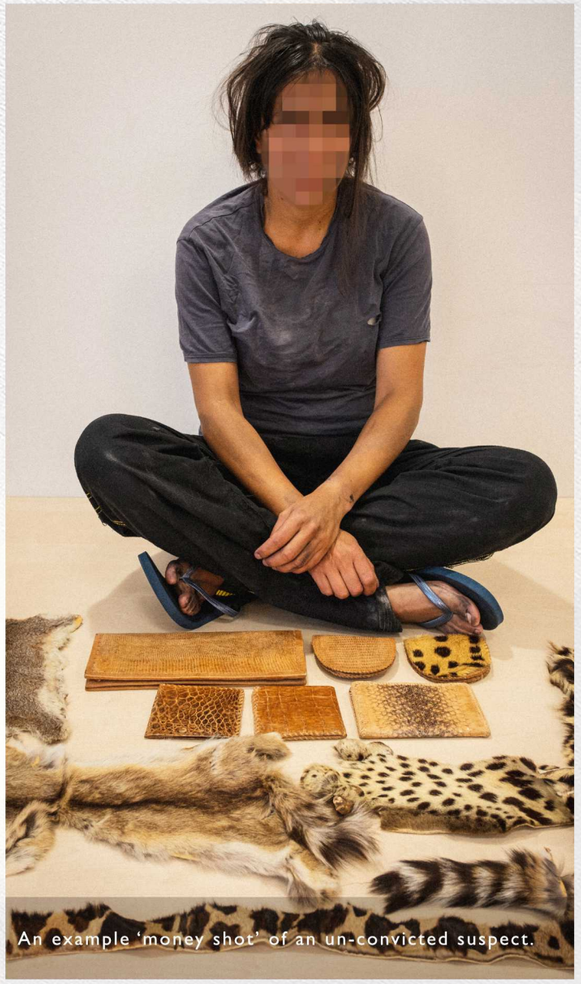
Although this practice is often intended as justification of the suspect's guilt, it presents several ethical and forensic concerns that should make the practice unacceptable. From a forensic perspective, such photographs can make all evidence linking the suspects to the evidence inadmissible since the defence can plausibly argue that any trace evidence found on the items was left during the photo session, rather than during the commission of the illegal act itself.

Beyond the forensic implications, this practice raises serious human rights concerns, such as the presumption of guilt instead of 'presumed innocent until proven guilty'. Most countries in which TRACE operates are signatories to several human rights charters and international laws and, as such, despite its common acceptance, this practice is almost always technically illegal in these countries.

Furthermore, the common practice of disseminating these images on social media platforms introduces significant risks to the safety of both suspects, who may ultimately be found innocent, and law enforcement officers, who could become targets for reprisals.

TRACE has been making efforts to tackle these issues and stop the use of this practice and we have made headway in most of the countries we work in, as well as with attendees from all the countries sending representatives to the to the African Wildlife Forensics Network.

"From a forensic perspective, such photographs can make all evidence linking the suspects to the evidence inadmissible"


An example 'money shot' of an un-convicted suspect.

NETWORKING

The sharing of knowledge, techniques, and practical experiences is an essential part of any applied discipline, and this is particularly true in wildlife forensics due to its highly specialised and small global community.

The Society for Wildlife Forensic Science (SWFS), a global network of wildlife forensic scientists from government laboratory institutions, non-governmental organisations, and academic institutions, convened its 7th meeting in Kuala Lumpur, Malaysia in June 2024. Hosted by the Malaysian Department of Wildlife and National Parks' National Wildlife Forensics Laboratory and organised by the SWFS community, the three-day event drew 121 participants representing 30 countries and featured around 50 different presentations. The meeting also hosted workshops for all participants to expand and share knowledge in specialist forensic techniques. These workshops covered topics such as Quality Management Systems, database development, the validation of forensic DNA methods, and elephant ivory morphological identification. TRACE staff led four of these workshops, and facilitated the attendance of many scientists from Southeast Asia and across Africa. Additionally, TRACE chaired an Asia-Pacific Meeting, providing a platform for forensic scientists from these regions to share updates on their laboratory development and receive guidance as needed. At the closing ceremony, TRACE director, Prof. Rob Ogden, was awarded the Society's Hawk-Espinoza Lifetime Achievement Award for his work in the field of wildlife forensics.

Morphological ivory-identification workshop in Kuala Lumpur, Malaysia.

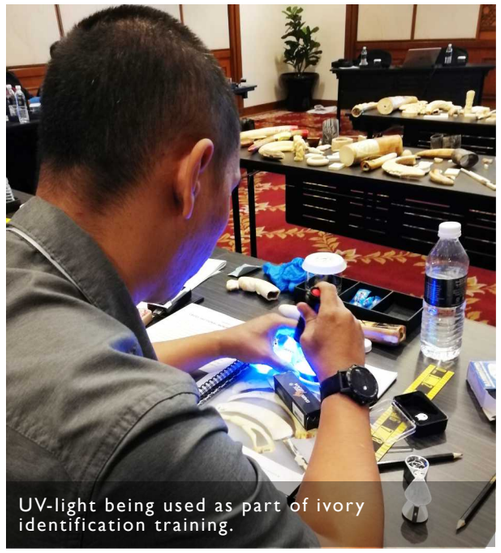
Ivory Identification

Subsequent to the Society for Wildlife Forensic Science meeting, TRACE organised a two-day ivory identification workshop in Malaysia. This initiative aimed to extend the application of this successful technique, already contributing to prosecutions in Africa.

Mirroring previous ivory identification courses conducted in Africa, this workshop was structured around the CITES Identification Guide for Ivory and Ivory Substitutes, with tailored enhancements to emphasise ivory-bearing species and substitutes prevalent in the trade between Africa and Asia. The ivory reference collection, essential for hands-on exercises in the use of morphological identification methods, was generously provided by national authorities in Malaysia and Malawi, significantly enriching the learning experience with authentic specimens. Lead instructors were TRACE-trained Malawian and Zambian enforcement officers, both of whom have since gained experience in applying their training to forensic identification in Africa.

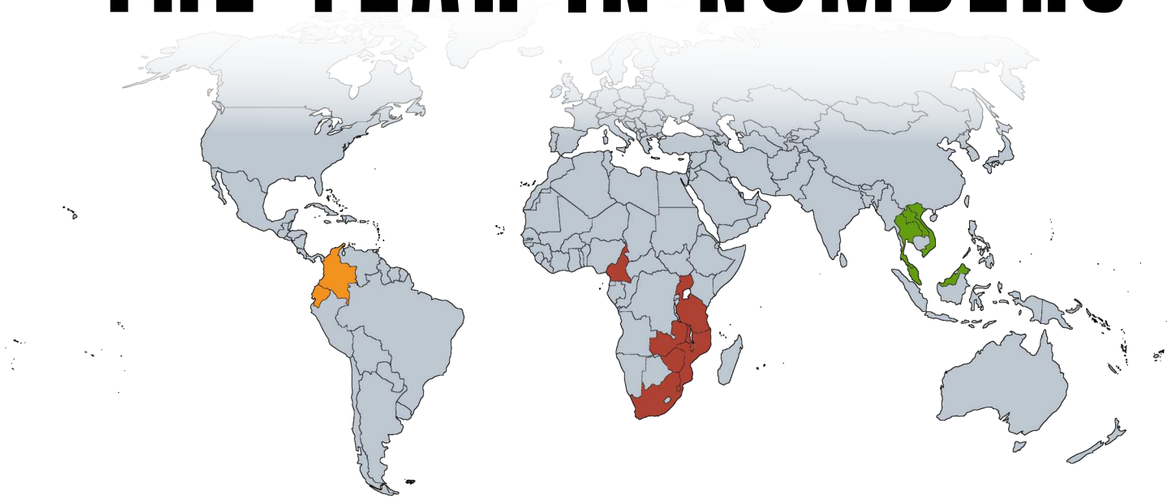
Participants delved into the science of distinguishing raw and worked ivory from a diverse array of species, including elephants, hippopotamuses, warthogs, walruses, and various whale species, including orcas and narwhals. Moreover, participants honed their ability to differentiate genuine ivory from convincing substitutes such as vegetable-ivory and synthetic imitations.

The workshop incorporated an interactive component where each participant analysed three unidentified specimens, applying their newly acquired expertise to classify them and document their findings in a structured report. To gauge their foundational knowledge participants completed a pre-workshop assessment, followed by a post-workshop evaluation to measure their progress. The remarkable improvement in post-workshop test scores attested to the effectiveness of the training, underscoring a significant enhancement in participants' ability to accurately identify ivory and its substitutes with confidence.



UV-light being used as part of ivory identification training.

THE YEAR IN NUMBERS



By utilising a train-the-trainer approach, along with continued mentorship, TRACE helps countries build institutional capacity, resulting in a massively increased in-country impact per dollar spent. **This year, in Africa alone, TRACE staff trained 42 people directly, but our in country African trainers raised this number to 696 people trained.**

Tanzania and Cameroon have had a combined total of 15 staff trained through the TRACE train the trainer programme, but since completion those **Tanzanian and Cameroonian students have trained 210 and 160 indigenous students, respectively, in Crime Scene and Evidence Awareness.**

We have a number of initiatives that are applied across multiple jurisdictions. Such projects include TigerBase, Loxodonta Localizer, Lion Localizer, and the PELTS mobile laboratory.

2024 was TRACE's first year working in Latin America, having been asked to run awareness workshops in Colombia and Ecuador.

Following assistance from TRACE, 2024 **saw the new laboratory in Malawi complete their first wildlife DNA forensics casework**.

2 TRACE trainers per deployment | **10-15** Trainers enabled per deployment | **600+** Students trained by native trainers in 2024

Financial Summary for 2024

All values in GBP *(in thousands)*	2024	2023
Income	**1,488**	1,706
Operational costs	**1,306**	935
Organisational Costs	**335**	359
Reserves	**739**	873

A big thank you to all our funders!

People's Postcode Lottery
Postcode Animal Trust
International Narcotics & Law Enforcement – United States Department of State
UNDP – Empowered lives. Resilient nations.
US Forest Service – Department of Agriculture
USAID – United States Agency International Development – From the American People

and another big thank you to all our partners!

UNODC – United Nations Office on Drugs and Crime
TRAFFIC – the wildlife trade monitoring network
Wildlife Conservation Society
Netherlands Forensic Institute – Ministry of Justice and Security
WWF
Wildlife Crime Prevention
LWT – Lilongwe Wildlife Trust
ThermoFisher Scientific
Society for Wildlife Forensic Science
Danau Girang Field Centre

TRACE Wildlife Forensics Network
16 Corstorphine Hill Avenue
Edinburgh
EH12 6LE
United Kingdom.

info@tracenetwork.org