

# Darwin Initiative – Final Report

(To be completed with reference to the Reporting Guidance Notes for Project Leaders  
(<http://darwin.defra.gov.uk/resources/reporting/>) -

it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)

## Darwin project information

Project Reference	17019
Project Title	Developing Wildlife Forensic Capacity for ASEAN Biodiversity Conservation
Host country(ies)	Malaysia, Thailand
UK Contract Holder Institution	TRACE Wildlife Forensics Network (TRACE)
UK Partner Institution(s)	Royal Zoological Society of Scotland
Host Country Partner Institution(s)	TRAFFIC South East Asia (TSEA) Association of South East Asian Nations Wildlife Enforcement Network Programme Coordination Unit (ASEAN-WEN PCU)
Darwin Grant Value	£205,750
Start/End dates of Project	01/09/2009 – 31/08/2012
Project Leader Name	Dr Ross McEwing, TRACE
Project Website	<a href="http://www.asean-wfn.org">www.asean-wfn.org</a>
Report Author(s) and date	Dr Jennifer Mailley (Project Manager), Dr Ross McEwing and Dr Rob Ogden (Directors of TRACE), Dr. Bill Schaedla (TSEA) 29 <sup>th</sup> November 2012

## 1 Project Background

**Problem:** Forensic techniques are needed in South East Asia (SEA) to help investigate and prosecute illegal and unsustainable trade in wild flora and fauna.

**Purpose:** To provide the ability for host countries to undertake coordinated wildlife forensic analysis for CITES enforcement operations in SEA.

**Hosts:** Malaysia and Thailand.

### Key achievements:

1. Establishment of the ASEAN Wildlife Forensics Network ([www.asean-wfn.org](http://www.asean-wfn.org)).
2. Significant increase in the volume of wildlife crime related forensic samples processed in SEA due to scientific and enforcement training (see map below).
3. Formal recognition of project success via the ASEAN Wildlife Enforcement Network endorsing TRACE as recognised strategic partners.

★ = Laboratory personnel (n=4) highly trained in wildlife DNA forensics techniques for casework and in developing new techniques/ R&D.

● = Enforcement personnel (n >150) trained in wildlife forensic sample collection and submission to laboratory.



## 2 Project support to the Convention on Biological Diversity (CBD)

This project gave direct support to CBD articles regarding the transfer of technology (Art. 16), providing support to regulatory provisions (Art. 8.k) and in supporting sustainable use by deterring unsustainable use (Art. 10.e). It also strongly supported CITES.

The CITES Strategic Vision 2008-13 (Goal 1, objectives 1.7 and 1.8), stipulates the need for Parties to CITES to have sufficient capacity to enforce the convention, and forensic science is a key tool in enforcement. This project improved the capacity of ASEAN nations to investigate the illegal wildlife trade and hence their ability to effectively enforce CITES regulations and implement the CBD. At a national level in the host countries of Malaysia and Thailand, it has greatly increased the necessary knowledge and techniques to establish wildlife forensics capabilities for the long-term. At a regional level, a network was created linking forensic scientists and enforcement officers who are now in contact with each other and are better aware of forensic capabilities and processes. This has enabled increased inter-agency and regional cooperation.

Interaction with CITES Management Authorities within the ASEAN region was an ongoing aspect of the project management plan, since the CITES MA representative is often also the ASEAN Wildlife Enforcement representative for each ASEAN nation. It was through interacting with CITES MAs that the need for the project first became apparent, and it was through ongoing contact with and via the ASEAN-WEN that the project Needs Analysis was carried out; the most suitable personnel to train were identified; and project updates and outcomes were disseminated.

### 3 Project Partnerships

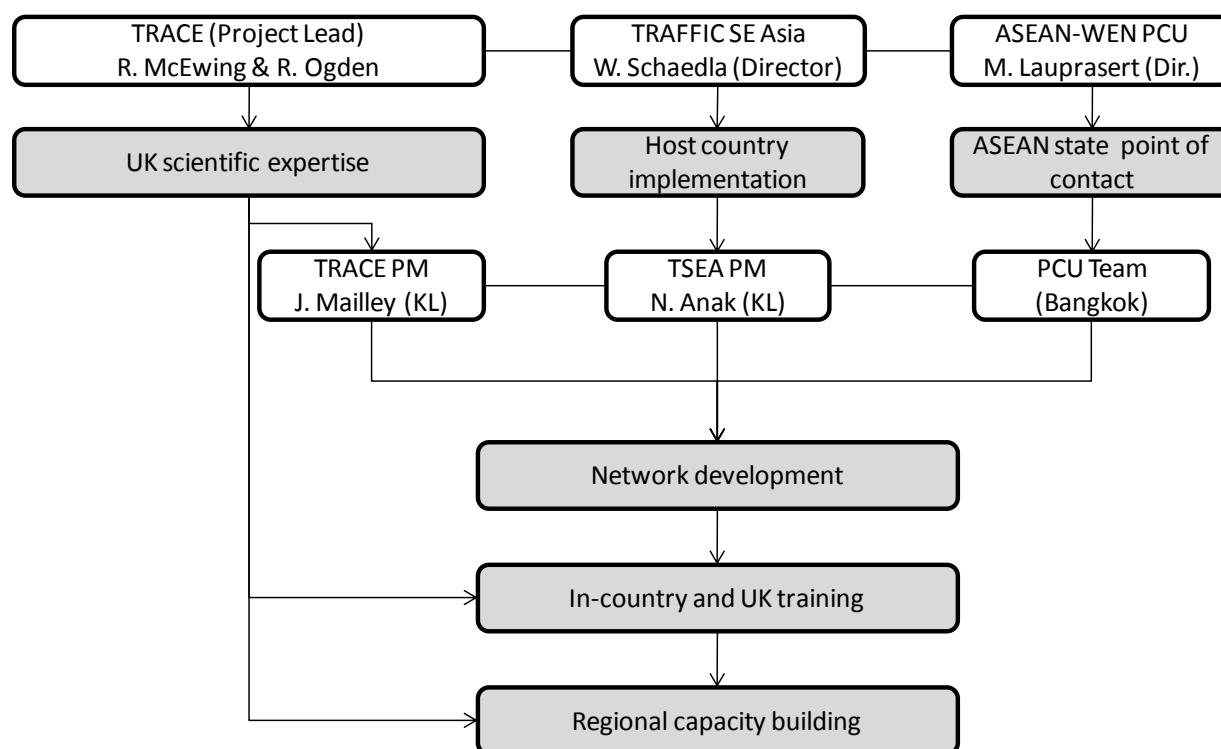
#### Partnership structure

The lead UK institution, TRACE Wildlife Forensics Network, worked in close partnership with the two host country partners:

- TRAFFIC South East Asia (TSEA) located in Kuala Lumpur Malaysia, and
- The ASEAN-WEN PCU (Association of South East Asian Nations' Wildlife Enforcement Network Programme Coordination Unit) located in Bangkok, Thailand.

Each of the three organisations (TRACE, TRAFFIC and the ASEAN-WEN PCU) brought specific knowledge to the overall team and fulfilled roles according to their specialism. It is felt that the project could not have been successful if any of the three had not been engaged. The diagram below displays the relationships (arrows) and responsibilities (grey boxes) of the partners TRACE, TRAFFIC and the ASEAN-WEN PCU (white boxes), and these are described in more detail below the diagram.

**Diagram 3.1: Project partnerships and responsibilities**



The project lead, TRACE Wildlife Forensics Network (TRACE) are a UK based NGO who develop and utilise DNA techniques to assist in wildlife crime investigations across the globe; and also organise and conduct training and seminars to educate enforcement officers and associated managers about the use and potential of forensics in such investigations. TRACE provided specific advice regarding the various options available at national and regional level for organising, sharing and paying for wildlife forensic services, as well as highly specialist scientific expertise concerning laboratory tests and research. TRACE employed a project manager (PM) and its Directors oversaw the daily and longer term project management, and hence managed and drove the project's implementation.

TRAFFIC South East Asia is the South East Asian arm of the global network NGO TRAFFIC, whose remit is to monitor the trade in wild flora and fauna to ensure that trade is sustainable. TRAFFIC SEA personnel provided essential expertise about the current state of the illegal wildlife trade, and the effectiveness or otherwise of current activities aiming to reduce illegal activity; as well as contacts with a variety of governmental agencies and NGOs involved in monitoring and decreasing the illegal trade. They also acted as a logistical hub, with the TRACE employed Project Manager being based in the TRAFFIC office in Kuala Lumpur, Malaysia, for the majority of years 1 and 3.

The ASEAN-WEN is the umbrella institution through which all formal requests for making contact with, and interacting with, various wildlife enforcement agencies in South East Asia are passed. The WEN also coordinates interagency and international investigations where appropriate. Hence the Programme Coordination Unit, who act as the Secretariat to the ASEAN-WEN, were key in providing a formal mechanism for introduction to the broader ASEAN-WEN network of agencies, such as environmental police, customs, forestry and fisheries in each ASEAN nation. Establishing these contacts was instrumental for the initial phases of the project when regional awareness of the project had to be established, and when organising activities requiring regional coverage such as the Needs analysis, and the training seminars in years 1 and 3.

### **Project management**

TRACE Wildlife Forensics Network, directed by Dr Rob Ogden and Dr Ross McEwing, had overall responsibility for project delivery as project lead. Their employee, Dr Jennifer Mailley, fulfilled the role of project manager from Sep 2009 to Aug 2010 and again from Sep 2011 to Aug 2012. Dr Mailley was assisted by an employee of TRAFFIC South East Asia, Ms Noorainie Awang Anak, and was located in Kuala Lumpur along with Ms Anak. Line management responsibility for Dr Mailley remained with TRACE, and with TRAFFIC SEA for Ms Anak.

Dr Mailley and Ms Anak formed the core of the project team in ASEAN who were involved on a day to day basis in running the project. Drs Ogden and McEwing of TRACE provided specialist scientific input and advice; while experienced staff within the TSEA office provided broader support and networking opportunities, as well as assistance in organising aspects of the training events. The ASEAN-WEN PCU (Association of South East Nations Wildlife Enforcement Network Programme Coordination Unit) provided support in the form of contact with CITES MAs ('focal points') of each ASEAN country. The role of focal points was to pass information and requests for information to networks of relevant people within their respective country.

### **Evolution of relationships**

An MoU was established within Year 1 of the project, between TRAFFIC SEA and TRACE, which concretely stipulated financial and in kind commitments but also allowed for the specific skills provided by each partner to alter in line with evolving project needs. This aspect of the relationship worked particularly well as it engendered trust between the two partners, but was also realistic as to the practicalities of project implementation given limited resources. For example, by year 3, TRACE personnel were already well known by the ASEAN-WEN focal points and did not therefore require TSEA staff to attend regional meetings with them as they did in year 1. Similarly, TSEA staff were more au fait with some aspects of wildlife forensics by years 2 and 3 and so were better able to direct enquiries from ASEAN enforcement personnel to the relevant experts within TRACE than at the start of the project.

Another key development during the project was the relationship between TRACE and the agencies to which they delivered scientific training. The relationship evolved from one where TRACE were essentially advertising the benefits of their scientific knowledge, and requesting permission to contact relevant personnel through the ASEAN-WEN PCU in year 1, to one where the scientists and enforcement personnel were directly contacting TRACE and TSEA with specific questions and requests for training, during years 2 and 3. This was taken as a sign of genuine need for ongoing support and successful establishment of the project 'brand' within the region. The project deliverables were therefore more heavily defined by TRACE towards the start of the project, albeit based on a regional Needs Assessment, and more heavily influenced by ASEAN personnel towards the end of the project, once momentum was achieved.

Formal recognition of the utility of the project and integration of project personnel with the ASEAN-WEN was obtained when TRACE were formally endorsed as strategic partners of the ASEAN-WEN in 2012. This was a key outcome because not only are strategic partners few in number (total now three and previously limited to the largest NGO bodies in the ASEAN

region), but the movement to endorse TRACE was invited by the ASEAN-WEN PCU rather than being driven by TRACE.

*A key lesson from the project is that the momentum of project activities and the formal endorsement obtained is hard to win and easily lost. Therefore a risk of not being allocated immediate Darwin follow-on funding is that any future efforts will pay the cost of re-establishing momentum and trust within the region.*

### **Other institutions**

The most significant UK project partner was the **Royal Zoological Society of Scotland** (RZSS), which contributed £55,000 directly to the project budget. This was a considerable investment, representing almost 10% of the RZSS annual conservation spend and 20% of the project cash funding. It is fair to say that without this support the project would not have been successful (and may not have been funded).

Beyond RZSS, the ASEAN Wildlife Forensics Seminar held in Bangkok in July was supported by a number of organizations who gave permission and time for invited speakers to present. This included the **Royal Society for the Protection of Birds** (RSPB) and **Science Advice for Scottish Agriculture** (SASA) from which experts in wildlife crime investigation were released for a week to attend the event. In addition to these UK-based agencies, a representative from the **Marine Forensics lab of NOAA** was able to attend as an invited speaker from the USA, as was a representative from **Interpol**. This range of speakers added an extra dimension to the seminar, enabled ASEAN enforcement officers and scientists to meet international peers and leaders of the field and significantly raised the profile of the Darwin Initiative project at a global level.

## **4 Project Achievements**

### **4.1 Impact: achievement of positive impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits**

The goal of this project was to increase the capacity for ASEAN nations to utilise forensic techniques when investigating wildlife offences. Overall, the mechanism by which the direct impacts of the project will translate in to biodiversity conservation is through a decrease in the illegal trade of wild flora and fauna. Successful prosecutions should *decrease the pool of active criminals* operating in the region and disrupt criminal networks, while other criminals *will be deterred* from starting or continuing to trade illegally if they perceive the risk of apprehension to be high enough.

Simply speaking, this means that direct impacts on biodiversity will not be measurable from this project. Instead, impact is measured in terms of the *capacity of host nations to decrease the illegal activities which decrease biodiversity, and the extent to which they were using that capacity at project end.*

Capacity can be broken down in to two aspects: a) the ability of the relevant personnel to carry out specific *tasks* (such as submitting a sample of meat to a laboratory in the correct secure packaging before it goes rotten; or how to carry out a specific type of DNA test); and (b) the development of a suitable managerial and cooperative *forensic framework* upon which these tasks are carried out (e.g. communication between scientists is facilitated; management are aware of and support training needs, or invest in new equipment, or enable the transfer of samples between countries).

### ***a) Impact on ability to carry out necessary tasks***

Project impact on the ability to carry out necessary tasks comes from **evidence of increased use of wildlife forensic tests in investigations of wildlife crime** in the host countries. The Malaysian laboratory processed 80% more forensic casework (crimes) in yr 3 than the previous year, and at project end are planning a significant lab expansion based on the advice given by TRACE WFN. Thailand processed over 30 cases in yr 3 in a brand new and dedicated facility which was opened as a direct result of the momentum created by this project. Therefore both host countries have greatly increased the current processing of cases as a direct result of the project, and both will have invested significant resources in expanding current and future capacity as a direct result of this project. The increase in casework in both labs also signifies an increase in awareness among active enforcement officers and their superiors who approve requests for work.

Impact can also be assessed via **the quality of the forensic casework carried out within the host country laboratories**. Both Malaysia and Thailand have been trained in, and begun to adopt, the scientific protocols recommended by TRACE and it is therefore likely that the work is of a sufficiently high quality. The final test of quality will come when casework is questioned in a court of law. At the date of final report writing, this has yet to happen and any final judgements declared, although the team are aware of one ongoing court case in Malaysia which has required the forensic scientists to give evidence.

### ***b) Development of a forensic framework to be used in investigations***

A key impact on the region was the establishment of **a functioning network of scientific and enforcement experts, via the establishment of the ASEAN-WEN Wildlife Forensics Network and endorsement of TRACE as strategic partners of the ASEAN-WEN**.

The broader impact and legacy of the project can be assessed in terms of **increased coordination between regional scientists, and regional agencies**, when using wildlife forensics. To this end it is heartening to note that Indonesia and Thailand are cooperating in live casework, which required the coordination and cooperation between each countries' CITES MAs. Furthermore the forensic scientists who met as a direct result of this project continue to communicate with each other about technical and logistical matters via the ASEAN Wildlife Forensics Network.

### **Impact on focus species**

The main thrust of the project was to build generic wildlife forensic capacity, rather than species specific activities. However, the project did include some focused research and development activities on specific species which are threatened by the illegal trade. The stated target species were originally ramin (tropical timber), fresh water turtles and pangolins. In the second year it became apparent that the demand for focus on tigers and rhinoceros was greater than that for turtles and timber, and so a change request was submitted to notify Darwin of this change in focus.

For **tigers**, work was undertaken to develop a genetic sexing test (see publications in Annex 5) and to perform validation studies for the development of an individual DNA profiling system. This system has already been used in investigations within Thailand to examine captive breeding claims. For **rhinoceros**, the work focussed on transferring methods to recover and analyse DNA from horn, a technical challenge that must be overcome in order to provide evidence of species, geographic origin or individual identity of traded products. Malaysian, Thai and Indonesian forensics DNA laboratories can all now work with rhinoceros horn samples. In addition, novel work was conducted to develop SNP DNA markers for rhinoceros species. These markers are relatively new and offer an alternative to traditional DNA profiling. This work is currently being prepared for submission to a peer-reviewed journal. For **pangolin**, the greatest issue at present is understanding the trade routes associated with the illegal collection and transport of whole live specimens or parts and derivatives. Research was initiated at the Malaysian laboratory into the phylogeographic structure of Southeast Asian pangolin species, about which very little is known. This work is not complete, but is starting to reveal more about species and population genetic distributions in Southeast Asia that provide intelligence on the where pangolin are being most heavily over-exploited.

## 4.2 Outcomes: achievement of the project purpose and outcomes

**Project purpose:** To provide the ability for host countries to undertake coordinated wildlife forensic analysis for CITES enforcement operations in the ASEAN region.

The planned project outputs described in Annex 1 have all been achieved, and several have been exceeded. Together these outputs mean that in the original host countries of Malaysia and Thailand the project purpose has been achieved. In addition two further countries, Vietnam and Indonesia, have taken some steps towards achieving the same goal.

### Project outcomes.

The main outcomes are as follows:

1. Development of the ASEAN Wildlife Forensics Network, with ASEAN scientists and enforcement officers now aware of each other's identities, roles, capabilities and requirements, and able to communicate directly with each other and via the project website ([www.asean-wfn.org](http://www.asean-wfn.org))
2. The establishment of a dedicated wildlife DNA forensic laboratory in Thailand, within the Department for National Parks, Wildlife and Plant Conservation (CITES MA & SA), which processed >30 cases in its first year of operation (2011-12) and employs one laboratory manager and several PhD students as laboratory assistants.
3. Enhanced capacity leading to a pronounced and sustained increase in casework at the existing Malaysian wildlife forensics lab during the course of the project, with 101 cases processed in 2011-12; an 80% increase from the start of the project. Furthermore, Malaysia report that after project end they intend to renovate their existing laboratory, expand staff capacity further and do so using the advice and expertise provided by TRACE.
4. Training of 15 scientists from nine ASEAN nations in the basics of wildlife forensic testing. Advanced training of four scientists from three countries in wildlife forensic casework analysis and R&D.
5. Training of ~150 enforcement officers from nine ASEAN nations in the collection, storage and transfer of forensic evidence relating to wildlife crime investigations.
6. Development and implementation of methods and reference data for identifying species, subspecies, individuals and parentage to address questions in wildlife crime investigations.
7. Endorsement of TRACE as strategic partners of the ASEAN Wildlife Enforcement Network; recognition of the project via invitation to present at Interpol's Wildlife Crime Working Group (2011, Bangkok) and via invitation to attend the ASEAN Wildlife Enforcement Network Annual meetings in 2010 and 2012.

## 4.3 Outputs (and activities)

### Outputs and activities

The project has achieved the outputs as laid out in the logical framework. There were several minor amendments to project activity timing (change requests were submitted to Darwin, and reported in Annual reports 1 and 2), but other than this, all Annex 1 details the activities carried out in order to deliver the outputs.

### Problems encountered

#### *Time taken to gain permission to operate*

In general, the problems encountered were due to the inexperience of the project lead in gauging how long various tasks would take to complete. When time was an issue it was invariably due to the need for a greater level of formal communication, and to a more complex set of agencies, than anticipated. Because of the flexibility of the Darwin scheme and the ability to move, under approval, some aspects of budget forwards to the next financial year, these

problems were overcome and the only impact was a shift in the timing of when some deliverables were completed.

An ongoing and unexpected theme of the problems encountered by the project team was the amount of time needed to complete tasks. Several stages of the training planning both in Malaysia and in the UK took longer than expected and were reported in annual Report 2. Enabling participants to come, by writing several different letters of invitation and explanation to higher and higher levels of management was a particular problem requiring persistence and a considerable effort. Gathering enough details to enable flights to be booked (e.g. passport numbers) was a challenge, and almost half of the Kuala Lumpur workshop participants who were travelling from outside Malaysia had to renew their passports before they could come to the event, so air tickets were not booked until a few days before the course, increasing cost.

In year 1, a key issue encountered (and reported on in Annual report 1) was that of the time taken to gain acceptance within the ASEAN region and therefore, permission to communicate directly with the necessary agencies in order to organise the training workshop in Kuala Lumpur. This problem was overcome with persistence, and by relocating the project manager to KL so that she could attend regional meetings and build the personal relationships necessary to overcome the barriers associated with the project being a new concept to many personnel who were key figures within the ASEAN-WEN.

#### ***Personnel who were not incentivised to engage with the project***

Another issue noted in yr 1 was the slightly obstructive actions of some enforcement agency personnel who at the least were not incentivised to cooperate with the project, and had been rumoured to be corrupt. For example, some training resources originally said to be available to the project team were later found to be double-booked, meaning that again persistence and flexibility in project timing and expenditure were necessary.

#### ***Possible overlap with the activities of other NGOs***

In 2011 a significant sum of money was granted by the US government to a NGO called Freeland, who have historically focused their enforcement training activities in the ASEAN region on improving investigative processes, and have sometimes incorporated some aspects of forensics such as tyre mark identification. When wildlife forensics has been incorporated, the aim has been to submit samples to the USA for DNA testing; a process that has many limitations. It was therefore important that future Freeland training did not replicate or contradict the training provided by the Darwin project. The Darwin project team openly communicated their findings from the project with Freeland. The hope is to establish a norm of sharing relevant information. Specifically, the team shared the updated Needs analysis in order to clearly demonstrate to Freeland the range of regional needs which still exist upstream (enforcement) and downstream (judiciary) of the laboratory stages of the forensic process. There is certainly sufficient regional need in the field of wildlife forensics for there to be enough space for multiple parties to operate; ideally in a fully coordinated manner.

#### **4.4 Project standard measures and publications**

Please see Annexes 4 and 5.



## 4.5 Technical and Scientific achievements and co-operation

The implementation of forensic processes within the laboratory demands a high level of technical and scientific cooperation. Such work ran throughout the project and formed the core activity in terms of capacity building. While scientific in nature, this work is typically not considered novel research, therefore with the exception of formal species specific research outputs (please refer to the Section 4.1 'impact on focus species'), the description of scientific activities does not follow a standard reporting format, but is divided by activities among countries. Further information is provided in Annex 1.

### **Activity / Training subject:**

#### *Forensic process*

All of the scientists trained from Malaysia and Thailand had some experience of using DNA techniques prior to the project however the use of analytical techniques to generate forensic evidence is fundamentally different in terms of the laboratory process. Following training in the theory of forensic best practice, work was therefore undertaken to put in place appropriate documentation systems and quality controls.

#### *DNA methods*

The techniques of DNA sequencing, DNA STR profiling and DNA SNP profiling were taught as the basic methods used for biological identification in wildlife forensics. These techniques were introduced in the 2010 training workshop to scientists from nine different countries and provided in a more depth during the advanced UK training course and in the Malaysian, Thai and Indonesian laboratories.

#### *Validation studies*

The ability to plan, implement and report a validation study required to transfer research techniques into forensic methods was also covered within the advanced UK training course. This generic process is a major part of the quality assurance process expected of forensics laboratories.

#### *Data analysis*

The analysis of raw data through to the presentation of forensic genetic statistics requires a good understanding of population genetic analysis methods. Scientists were trained in data analysis as part of the UK advanced training course and at the workshop following the Bangkok seminar.

#### *Casework support*

One of the objectives of the project was to reach a point where host country laboratories were undertaking live casework for national wildlife crime investigations. Such casework also requires support and guidance in the early stages. TRACE were able to directly advise on a number of casework issues relating to tiger captive breeding claims (Thailand) and species identification issues (Malaysia).

## 4.6 Capacity building

The incremental increase in capacity of host countries to utilise wildlife forensics is the key purpose of this project so is already reported on in, for example, Annex 1 (Log frame and progress against outputs). Evidence of the increased capacity being utilised comes from the key impact indicator- that of a large increase in the volume of wildlife forensic samples being processed in both host countries- already detailed in Section 4.1.

TRACE has increased its own capacity to be a suitable project partner in several respects. Firstly, overall lessons learnt from the project (as discussed under 'Problems encountered in Section 4.3 above) show the utility of having TRACE personnel located in the host region, and that future projects should allow for the time taken for tasks involving formal permission from agencies and government departments. Secondly, TRACE have increased their suitability as future project partners within the ASEAN region by working alongside more established NGOs, interacting with multiple government agencies and building a large network of contacts. This has led to TRACE gaining respect and standing within the region, as evidenced by their endorsement as strategic partners of the ASEAN Wildlife Enforcement Network.

From a technical perspective, TRACE has learnt a great deal more about the nature of the problems facing wildlife law enforcers and forensic scientists in the Southeast Asian region. This information will enable future capacity-building to be more efficient, directed and relevant to individual needs.

#### **4.7 Sustainability and Legacy**

Project sustainability operates at two levels: i) the scientific capacity of the experts and ii) the policy level decision-making and support that affects forensic working processes and impact. The scientific capacity as it stands is vastly increased compared to that observed at the start of the project. Thus success has been achieved. However, ongoing mentoring is needed to ensure the continued application of high quality work, especially when novel scenarios are encountered. At the policy level, evidence of the integration of the labs into routine operations is apparent from the increase in the number of cases submitted.

Evidence of government commitment to the continued increase in wildlife forensics capacity can be seen from the investment in staff and resources in both the Malay and Thai laboratories. Specifically, the investment by Thailand in an entirely new, fully-staffed laboratory, and the investment in Malaysia in new equipment and in the PhD enrolment of a key geneticist, suggest that the policy makers assume that wildlife forensics will continue to have an important role to play in the medium to long-term future.

Thus the increased capacity delivered by the project is highly likely to endure, provided that a proportion of the personnel involved remain in post.

The exit strategy of the project was to formally incorporate the ASEAN Wildlife Forensics Network into the ASEAN Wildlife Enforcement Network, the umbrella organisation and DI project partner that oversees regional wildlife crime enforcement. This legacy was achieved when in 2012 the ASEAN-WEN formally endorsed TRACE as a strategic partner of the ASEAN-WEN, meaning that TRACE has permission to partner the ASEAN-WEN and/or associated agencies in future projects or ongoing work.

Key staff trained under the project, such as laboratory scientists and enforcement officers are, at time of writing, all still in post. We anticipate that they will continue in post according to the decisions of their own managers; the greatest risk of losing key skills is through their promotion following successful involvement in the project. As the beneficiaries of the DI training were large state institutions, there is theoretically sufficient personnel structure to maintain training and continuity. The project staff from TSEA were all employed on a part-time basis within broader roles, and they will return to these broader roles now the project is complete. The TRACE-employed PM Dr Mailley has secured a role as Senior lecturer at a university in Malaysia. This employment may facilitate future collaborations between TRACE and regional stakeholders, for example by the use of university facilities to conduct training courses or seminars.

To date, project partners have stayed in touch with each other and are continuing to collaborate on future funding applications. Principal scientists trained under the project are also still in communication regarding ongoing casework, both with each other and with the project partners.

## 5 Lessons learned, dissemination and communication

Some of the crucial lessons learnt from this project relate to culture and relationships. Specifically, as mentioned in previous sections, the start of the project required a considerable amount of pro-active effort to obtain trust and then buy-in at a regional level. By the end of the project the roles were reversed and the project team were more frequently reacting to queries and specific needs stated by the host country institutions. The buy-in was almost entirely reliant on having the PM present in the region, as face to face meetings were imperative to establishing the relationships and increasing clear understanding of the project aims, deliverables and benefits. Due to the formal nature of the ASEAN WEN, and the complexities of coordinating between ten nations (each with varying needs and capacity for wildlife forensics), the role of the ASEAN-WEN PCU was crucial, as was the need for persistence and patience in the first year. Once this 'barrier' was broken down however, the real work could begin and a bottom-up approach worked particularly well. For example, training Thai scientists empowered them to push for the development of the dedicated laboratory established in 2010 within the Department of National Parks, Wildlife and Plant Conservation. Similarly, internal discussions within the Department of National Parks in Malaysia, instigated by their lead scientist, resulted in that scientist being funded to enrol on a PhD programme.

Hence, a key lesson is that the 'permission' to communicate directly with agencies and individuals was hard won and in the end one of the greatest strengths of the project. A key risk if follow on funds are not secured is that the trust and momentum developed during this project will be lost and a delay in further work will mean any future projects will once again have to re-establish their reputation before meaningful work can commence. This is essentially a cost that can be avoided by maintaining what has already been established.

Dissemination is discussed under Output 6. A summary of the project was produced in the form of a project brochure (attached) which is aimed at a broad audience from scientists to policy makers. To date over 250 brochures have been disseminated in ASEAN and Europe, and this will continue as TRACE staff attend various meetings and seminars, including CITES CoP16.

As mentioned, press releases are rarely appropriate while live casework is ongoing. Instead dissemination of relevant information about specific stages of the project has been to scientists, enforcement officers and their management via the Wildlife Forensics Network. One slight issue is that this has minimised public promotion of Darwin in the host countries but it is anticipated that once there is a successful prosecution in court, that will be the time to overtly promote the project and its success. This is something which TRACE can carry out after project completion.

Aside from this, project dissemination through popular and peer-reviewed publications, presentations, press releases, television interviews and radio shows have all helped raise the profile of the project and Darwin Initiative. Please see Annex 1 Output 6 for recent dissemination and communication events. All activities prior to April 2012 are documented in the annual reports.

### 5.1 Darwin identity

**Various means of publicising the Darwin Initiative are listed below:**

1. Project title included the suffix 'A Darwin Initiative' and this was present in the email signature of the PM, ensuring it was present in all formal communications, as well as featuring on the title page of the project website ([www.asean-wfn.org](http://www.asean-wfn.org))

2. Darwin logo on all presentations including:

- regional conferences attended such as ASEAN-WEN annual meetings (Myanmar in 2010 and Singapore in 2012); Interpol Wildlife Crime Working Group meeting in Bangkok, Feb 2012; and

- on all training materials such as PowerPoint™ presentations and hard copy handouts delivered in Kuala Lumpur (Malaysia), Bangkok (Thailand), Ho Chi Minh City (Vietnam) and in the UK (reported in Annual Reports 2 and 3).

3. Darwin logo prominent on conference paraphernalia such as bags and folders, provided at project seminars in Yrs 2, 3 and 4 (reported in Annual reports 2 and 3)

4. Darwin logo present on project brochure (attached) and a message from the Darwin Initiative included in the brochure.

5. Darwin Initiative deliberately mentioned in appearance on Malaysian television (Drs Ogden and McEwing), on BBC Radio 4 Scotland interview (Dr Mailley) (reported in Annual reports 2 and 3)

### **Distinction of Darwin monies from broader project**

DI funding represented the core of a standalone project, therefore there was no need to distinguish DI input from other monies. On the contrary, care needed to be taken not to let the DI element over-ride minor project donors. The entire project was branded as 'A Darwin Initiative', reflecting the fact that without the Darwin money the project was unlikely to have been delivered.

### **Understanding of the Darwin Initiative in host countries**

Awareness of the Darwin Initiative appears to vary across sectors and agencies, probably due to the variance of the exposure of individuals to the Initiative. For example while ex-pat personnel working in TRAFFIC were aware of the initiative, awareness among ASEAN Wildlife Enforcement Network personnel appeared to be low but increased because of this project.

To help address the issue of wider awareness, the two large regional workshops organized within the project (Kuala Lumpur 2010 and Bangkok 2012) both included opening speeches by representatives of the respective British Embassies, who introduced and explained what the Darwin Initiative is and why the British government chooses to support such projects.

## **6 Monitoring and evaluation**

Monitoring and evaluation was carried out on an ongoing basis, as part of the project management. The international nature of the overall team meant that communication and formal and less formal reviews were regularly necessary, keeping the team aware of project development. Producing the annual and half yearly reports for Darwin provided a further and useful opportunity to review progress in detail.

Evaluation of success was dependant largely on the feedback received during meetings with stakeholders and trainees, and more formally through communications with ASEAN-WEN PCU. Evidence of the positive view of the project came from, for example, from invitations to attend the ASEAN-WEN Annual meetings in 2010 and 2012, and the invitation from Vietnam to provide enforcement officer training in December 2011 for which they paid a significant proportion of costs.

Taken as a whole, the outputs have each contributed to the overall goal by setting the stage on which forensic testing can be carried out. Each output therefore remains valuable and a valid indicator of achievement. For example, the updated Needs analysis aims to minimise the risk of duplication of effort between NGOs and confusion of the personnel involved in receiving wildlife forensics training; the publication of the novel sexing methodology for tigers in a peer reviewed article demonstrates how the ASEAN scientists can work together, but more importantly it signifies that the methodology is accepted by the academic community and is therefore less open to criticism in a court of law; the presentation at Interpol increased awareness for the project to a broad international community and expanded the impact of the ASEAN Wildlife Forensics Network.

Changes to the project design were limited to two aspects: the timing of workshops in yrs 1 and 2 (in Kuala Lumpur and Malaysia) and a slight alteration of the species of focus. All changes were approved by Darwin and have been reported in Sections 4.1 and 4.3.

At a broad level, the project was externally evaluated to some extent by the international wildlife forensic community, first through the publication of a peer-reviewed paper that explained the model behind wildlife forensic capacity building under the project, and second through a presentation and discussion of the project at the Society for Wildlife Forensic Sciences meeting in the USA in May 2012. Feedback from both processes was extremely positive and has in some cases convinced other practitioners to adjust their approach to training and capacity building (i.e. spending longer periods in target country laboratories).

## 6.1 Actions taken in response to annual report reviews

**Yr 1 review:** The first annual review was mostly very positive but specifically:

1. Requested discussing the employment of Project Manager Jennifer Mailley directly with LTS (submit CV).

Response: The employment of the project manager was discussed with LTS.

2. Recommend instigating a more proactive means of communication within the network such as a e-newsletter.

Response: Communications were circulated in September following the first workshop. An e-newsletter was circulated in October 2011 with contributions from the network members.

3. Recommend translating sections of the website to increase accessibility.

Response: This recommendation has not been taken up. While it would be possible to translate the front page of the website, the site is predominantly aimed at the scientific community who operate in English. In this respect we also take the lead of the ASEAN-WEN website, which is provided only in English: <http://www.asean-wen.org/>

### Yrs 2 and 3 review:

Darwin informed the project team that the second annual report, submitted in April 2011, was not formally reviewed, and to date there has been no feedback on the 3<sup>rd</sup> annual report (submitted April 2012). Therefore there are no responses to a review which the team can provide in this final report. Instead, the team maintained contact with the Darwin/ LTS management with regard to any issues flagged above such as the alterations to the species of focus; the return of the PM Jen Mailley to the region, and the processes for applying for follow-on funding.

## 7 Finance and administration

### 7.1 Project expenditure

The project ran largely according to the initial budget described in the Stage 2 application. The main difference was in the allocation of UK staff costs, where a dedicated project manager, Dr Jennifer Mailley, was employed on the project, reducing the project lead time. This change was documented in the first annual report and had no effect on any of the budget totals (see Table 7.1).

In addition to this change, there were four change requests made and granted. Three of these involved carrying money across the Defra financial year end (31/03 to 01/04) in each year of the project, due to slight delays in the delivery of the training activities. The fourth change request was granted in order to transfer money from UK Travel to UK Operating Costs in order to fund the development of a new DNA technique for rhinoceros.

There were no capital items purchased and, other than the documented change requests, there were no other instances of variance within budget lines of greater than +/- 10%.

Table 7.1 Darwin Initiative grant expenditure throughout the project

	2009/10	2010/11	2011/12	2012/13	Total
UK Staff (RM)					
UK Staff (JM)					
Host country staff					
<b>Total staff</b>					
Overhead costs					
Travel & Subsistence					
Operating costs					
Capital Equipment					
Other costs					
<b>TOTALS</b>					

## 7.2 Additional funds or in-kind contributions secured

During the lifetime of the project additional in-kind contributions were received from a wide range of stakeholders and project supports. These are detailed in Table 7.2

Table 7.2 Additional in-kind contributions secured

Donor	Source category	Description	Value
Dept National Parks, Thailand	Host country partner (in-kind)	Development of a fully staffed wildlife DNA forensics laboratory	
Royal Zoological Society of Scotland	Original funder (in-kind)	Hosting UK training workshop	
Department of Wildlife and National Parks, Malaysia	Host country partner (in-kind)	Sending additional participant on UK training workshop	
Eijkman Institute, Indonesia	ASEAN partner (in-kind)	Sending participant on UK training workshop	
Vietnam CITES MA	ASEAN partner (in-kind)	Organization of an enforcement workshop	
BioMatters Inc., New Zealand	Corporate donor (in-kind)	Donation of software licences for DNA sequence analysis	
<b>Total Estimated Additional In-kind Funding</b>			<b>£117,000</b>

### 7.3 Value of DI funding

As the major funding source for the ASEAN Wildlife Forensics Network project, the DI was absolutely essential to the development of wildlife forensic capacity in the ASEAN region as a whole, and Thailand and Malaysia in particular. By funding the formation of a network that brought together international scientific expertise with government scientific and enforcement agencies within biodiversity rich countries, the funding facilitated training, capacity building and networking that would not have been resourced as a coordinated programme under any national or regional ASEAN funding mechanism. Wildlife forensics is a cutting edge approach to wildlife law enforcement, but is also a highly specialised area for which there are relatively few recognised experts. It is an applied discipline that cannot be delivered by existing academic or human forensic laboratories without considerable additional resources. Furthermore, its implementation requires the development of effective communication between national scientist and enforcement agencies, as well as among scientists at an international level. Despite its obvious benefits, the inter-disciplinary nature of wildlife forensics makes it very difficult to fund effectively from traditional grant-awarding bodies. DI funding enabled host country and UK partners to combine and deliver the infrastructure necessary to include forensic analysis in wildlife crime investigations, thus supporting host country efforts to implement national CBD and CITES legislation.

# **Annex 1 Report of progress and achievements against final project logframe for the life of the project**

Key:

MI= Measurable indicator.

MV= means of verification.

Activity= activity as scheduled in the project workplan.

## **Output 1: National wildlife forensic units following approved forensic protocols.**

MI: Laboratory facility operational in each country with trained staff in place.

MV: Physical existence of forensic units and staff. Auditing of procedures.

**Activity 1.1:** Assessment of current facilities and staff in each country.

Time scale: Months 1 to 6.

The laboratory facilities within Malaysia and Thailand were assessed and reported on in the first Annual Report. Since that report, a number of sources have been used to gather further information on the overall picture of wildlife forensic facilities in the ASEAN region. These were reported in the attachment 'Needs Analysis.doc' in Annual Report 2. The Needs analysis has been updated during year 3 and shared with ASEAN-WEN and another NGO, Freeland, as reported above.

**Activity 1.2:** Implementation of laboratory systems for supporting forensic analysis.

Time scale: Months 7 to 30.

During the second year of the project key three activities were initiated under Activity 1.2 which have each been built upon in Year 3. The three activities were:

- i) Provision of software (Geneious™, for recording, storing, and sharing DNA sequence data). During year 3 the continued use of Geneious™ by laboratory scientists has been mentored by TRACE Technical Director Dr Ross McEwing, to cement the initial training given in Kuala Lumpur in 2010 on the first training course.
- ii) Provision of standard laboratory forms (for standardising procedures across individuals within laboratories and across laboratories within the region). During year 3 laboratories in Malaysia and Thailand implemented the use of standard laboratory forms when performing routine casework tracking, analysis and progress recording. This constitutes a significant step forwards in improving laboratory procedures, minimising the risk of errors and miscarriages of justice.
- iii) Strategic advice to the host countries Malaysia and Thailand, regarding wildlife forensics capacity development and systems design. During year 3 both Malaysia and Thailand have taken on board to some extent the advice given by Drs McEwing and Ogden in the letters of recommendation produced during the start of year 2.

Specifically, Thailand has continued to develop its dedicated wildlife forensics laboratory, WIFOS, having invested in infrastructure, equipment and staff. The lab was officially opened in December 2010 and our year 2 Annual report listed as a risk the possibility that the laboratory would be underdeveloped if it was moved to a site distant from the HQ of Thailand's key wildlife investigations agency, DNP. During year 3 the laboratory became operational, more securely entrenched in Thailand's routine enforcement actions and the risk of relocation now appears minimal. However this progress has required continued close support from TRACE staff working in the lab in Bangkok and this need is likely to continue for some time.

Malaysia has also followed the advice of TRACE experts by investing in their lead forensic geneticist to undertake a PhD. This will further his career and academic standing, making it more likely that the laboratory will be 'gazetted' as recognised by the Malaysian courts as suitable for giving expert witness testimony.



In addition to the two host countries, TRACE have provided direct support to the development of wildlife forensic capacity in Indonesia, through the validation of tiger DNA profiling systems. The project team have also visited laboratories in Vietnam, to assess the feasibility of establishing wildlife DNA forensic capacity in Hanoi.

## **Output 2: Trained wildlife forensic technicians, researchers and field officers.**

MI: A minimum of 3 national wildlife staff and 3 lab staff trained in each country.

MV: Course certificates obtained by trainees; trainee feedback.

**Activity 2.1:** Training: Provision of specialist training in collection and identification of evidence.

**Activity 2.2:** Training: Provision of specialist training in laboratory methods.

Original timescale: months 7 to 9. Revised timescale: months 10 to 12.

Together activities 2.1 and 2.2 constituted the 1<sup>st</sup> Training Workshop carried out in 2010 and were completed and then reported in Annual Report 2.

During year 3 the number of enforcement officers trained in evidence collection and identification was further increased when the PM, Dr Jen Mailley, was invited to train 25 Vietnamese officers for one day in December 2011. The event occurred in Ho Chi Minh City, and was largely hosted by the Vietnamese authorities. The approach by the Vietnamese CITES Management Authority to TRACE WFN requesting the delivery of training, and providing funds to cover the activities, demonstrated a level of proactivity and commitment by the Vietnamese authorities, as well as recognition of TRACE's integration within the region. A photograph of enforcement officers searching mocked-up luggage seeded with illegally smuggled items. The event also opened the opportunity for further discussions with the Southern CITES Management Authorities about ongoing needs in Vietnam.

**Activity 2.3:** Training: Training of host country staff in the UK

UK based training was successfully completed. Four scientists attended the 3-week long advanced training programme hosted by TRACE WFN in Edinburgh. Both Indonesia and Malaysia funded the participation of a scientist each, in addition to the two scientists funded by the Darwin budget. This signifies the level of government interest in and commitment to this project, and means that project deliverables in terms of match-funding and, more pragmatically, person-hours of lab-based training were exceeded. Scientists were trained in how to convert research tools into forensic techniques, with tiger and rhino being used as example species. Both subjects address activity 3.2, the development of key forensic tools to address identified priorities. The outcomes of the training included a paper co-authored by TRACE and the four scientists, which describes a novel method for determining the gender of tigers using DNA. The paper was attached in annual report 3 as a PDF titled, "McEwing et al 2011 *Panthera tigris* molecular sexing".

In addition to direct forensic training, the participants now constitute the core of the scientific network within the project. This event therefore fostered further collaborations for research and casework independent of TRACE, helping to build the network and ensure its sustainability beyond the project.

## **Output 3: A body of research highlighting regional forensic needs and delivering scientific resources for applied use.**

MI: Production of a Needs Analysis Report.

MI: A series of forensic analysis protocols addressing key issues.

**Activity 3.1:** Research: Needs Analysis for wildlife forensic identification tools.

Timescale: Months 1 to 9.

The Needs Analysis was completed in line with the log frame and reported in our 2<sup>nd</sup> Annual Report (and was attached as Needs Analysis\_final.doc). During year 3, an updated Needs Analysis was produced and shared with the NGO FREELAND who are focused mainly on Thailand. The updated Needs Analysis was attached to annual report 3 as "Darwin ASEAN WFN Needs Analysis.pdf". Under the USA funded ARREST Programme, FREELAND aim to increase the wildlife forensics capacity of some

ASEAN nations including Thailand. Therefore to avoid duplication of effort and perhaps more importantly confusion on the ground, TRACE WFN decided to openly share their findings with a gentleman's agreement that FREELAND would reciprocate with feedback on their planned activities and the outcomes of their work.

**Activity 3.2:** Research: Development of key forensic tools to address identified priorities.

Timescale: Months 7 to 32.

Together with the scientific training delivered in Year 1 in Kuala Lumpur, the key wildlife forensic scientists in Thailand, Malaysia and Indonesia had at the end of Year 3 been trained in the specific techniques listed below. Many of these allow the scientists to develop novel tests when necessary, and importantly to develop a research technique into a validated forensic technique - one that is good enough to withstand scrutiny by a defence scientist and in court.

Additional laboratory-based training in the ASEAN region was given to Thailand, Malaysia and Indonesia when Drs Rob and Ross visited the ASEAN region in October 2011 and again in June 2012 prior to the final regional conference held in Bangkok. The in-country laboratory-based training and work on live case work exceed project goals.

***Scope of training delivered to address identified priorities:***

1. Specialist DNA extraction techniques from elephant ivory, rhino horn, faecal samples and from bone
2. PCR optimisation techniques
3. Primer design for species specificity
4. Primer design for degeneracy
5. Primer design for sexing mammals
6. Using Geneious™ software for sequence analysis and quality checking
7. DNA sequencing analysis, theory and practice
8. Creating validated sequence databases for Geneious™ software
9. Developmental validation requirements for DNA profiling systems
10. Genemapper™ software training
11. Microsatellite analysis theory and practice
12. Statistical interpretation of genetic data for forensic typing / profiling

**Activity 3.3:** Research: Creation of a species reference collection of DNA samples for shared use.

Timescale: Months 7 to 32.

The species database has been designed and produced, according to the intended timescale. The aim of the database is to overcome the constraints on sample movement among countries, by allowing electronic sequence data generated from reference samples in country to be shared among all ASEAN members. Authenticated reference sequence data are a vital component of wildlife DNA forensic work.

Database development has largely been undertaken in Year 3, beginning with a consultation process involving TRAFFIC Southeast Asia and the host country scientists to examine the most pressing trade enforcement issues and converting these into forensic genetic questions. This led to a list of target species for which reference sequence data was widely required. The database was designed and constructed in MS Access to allow scientists to contribute data that directly linked to known reference samples held by ASEAN member institutions (summary attached in Annex 3 as 'Species Database Overview.pdf'). The database was handed over to the host country partners, with the necessary training, at the July 2012 training workshop event.

**Output 4: A framework of inter-agency cooperation for incorporating forensic analysis into illegal trade investigations.**

MI: Attendance at inter-agency seminars and development of multi-agency approaches.

MV: Seminar reports. Documented agreements between agencies.

**Activity 4.1:** Interagency Cooperation: Seminar attendance at key project meetings.

Timescales: Months 4 to 6, 10 to 12, 34 to 36.

These activities were progressed during various visits by TRACE to SEA, documented in annual reports 1 to 3. During the last year of the project, in October 2011, Drs Rob Ogden and Ross McEwing attended a meeting in Thailand to discuss the wildlife forensics policy of the Department for National Parks (DNP), where the need for coordination between local agencies and internationally between laboratories was discussed (see "Thai WIFOS policy meeting agenda.pdf" attached to annual report 3). Support from the Deputy Director of the DNP was given to advance the project in future cases where CITES permits were needed for sample movement between laboratories.

As part of the same trip, RO and RM also visited Vietnam and met with the CITES Management Authority and government laboratories (within the CITES SA), as well as key local NGOs. These meetings were all very fruitful and stemmed from the continued interest and enthusiasm of the Vietnamese authorities to develop wildlife forensic capacity – further work in Vietnam is needed to deliver increased forensics capacity to meet their stated needs (see "Vietnam letter of support.pdf" in annual report 3).

A meeting with the ASEAN-WEN Secretariat was held in October 2011. The ASEAN-WEN Secretariat invited JM and RM to attend the annual ASEAN-WEN meeting in Singapore, May 2012. As a result of this meeting TRACE were formally endorsed as strategic partners of the ASEAN-WEN in October 2012.

The project team were invited to inform Interpol of their activities with a 40 minute slot at the Interpol Wildlife Crimes Working Group forum held in Bangkok, February 2012 (See Annex 3 – Supporting Photographs of annual report 3). The talk delivered was well received with verbal compliments from attendees, and reached a large audience of regional and international wildlife enforcement personnel.

Additionally, the PM was invited to attend meetings in Thailand in early 2012 when the issue of illegal elephant trade was high on the political agenda of Thailand. The PM attended and advised the NRESCD on how a database of captive elephant DNA might enable checks to be made of captive breeding claims. It is not yet apparent whether this advice was taken on board.

**Output 5: A regional network of wildlife forensic expertise for sharing protocols, samples and data.**

MI: Central accessible online forum for sharing information.

MI: Electronic database of available reference samples in the region.

MV: Access and number of hits to online forum and database.

**Activity 5.1:** Network coordination: Identification of all regional stakeholders.

Timescale: months 1 to 3.

As reported in the first annual report, all key regional stakeholders with a role in enforcing CITES were identified. Furthermore, following the 1<sup>st</sup> Workshop, continued presence in the region and attendance at Interpol, the project team has established personal contacts within many of the key enforcement authorities and agencies with scientific capacity. The UK training in yr 2 cemented the core scientific element of the network, bringing together again the scientists from Malaysia, Thailand and Indonesia.

**Activity 5.2:** Network coordination: Establishment of online networking forum.

Timescale: months 4 to 12.

This activity progressed in time with the log frame and was reported in our second annual report. Following the 1<sup>st</sup> Workshop in 2010, Members have been able to email each other using the

Googlegroup email, and the web site continues to be available as a repository for project news and requests for information. The website is at [www.asean-wfn.org](http://www.asean-wfn.org)

**Activity 5.3:** Network coordination: Project launch and interim workshops.

Timescales: Project launch workshop months 4 to 6.

As reported in the first annual report, the project launch was completed in October and November 2009 in Thailand and Malaysia respectively, on time with the log frame.

**Activity 5.4:** Network coordination: Regional conference on wildlife forensics

Timescale: Months 34 to 36. This activity was completed in June 2012 when a three-stranded event was held in Bangkok, Thailand. On day 1 the core scientists received additional training in statistical interpretation of DNA results. On day 2 over 70 Thai enforcement officers from across Thailand, were trained in evidence collection, storage and submission to the lab. As with the Malaysian-based enforcement officer training the event allowed the scientists to introduce themselves to the officers and thereby increase the national network of forensic personnel. On days 3 and 4 an international seminar was hosted, with over 175 attendees from 15 different nations (including many from ASEAN, European, and USA). The success of the seminar was apparent from various indicators, namely that people attended on the second day as well as the first (they came back) and the compliments and enquiries received by TRACE and Thai staff during the following the event. Two photos of the event are provided below.



*ASEAN (international) Wildlife Forensics Seminar held at Thai department for National Parks, Wildlife and Plant Conservation, Bangkok. Left, the packed auditorium; right, speech by the Senior Officer of ASEAN-WEN, Mr Manop Laupresart, chair by Dr Ross McEwing (TRACE).*

**Output 6: Broad dissemination of project results.**

MI: Publication of project case study and conference proceedings.

MI: Peer-reviewed research publications.

MI: National press coverage overseas and UK

**Activity 6.1:** Press and Publicity: Design of a three year publicity plan.

Months 1 to 3.

Completed – see Annual Report 1.

**Activity 6.2:** Press and Publicity: Coverage of project workshops and regional conference.

Time scale: Months 4 to 6, 21 to 24, and 34 to 36.

During the 2010 training in Malaysia, a live television interview with Rob Ogden and Ross McEwing was requested by Malaysian Astro News Channel 'Astro Awani'. The twenty minute interview on the subject of wildlife forensics and the Darwin Initiative project was aired live on Wednesday 4<sup>th</sup> August 2010. Once back in the UK, the Project Manager Jen Mailley was also interviewed about the project by BBC Radio Scotland on their Good Morning programme, on Wed 15<sup>th</sup> September 2010. Both interviews can be provided in hard copy upon request, from TRACE Wildlife Forensics Network. See Annual report 2 for details.

The 2011 UK training was publicised via a television broadcast on ITV news in June 2012. See Annual report 3 for details

The 2012 Wildlife Forensics Seminar and enforcement training in Bangkok was covered on national Thai news (Channel 7): [http://www.ch7.com/news/news\\_thailand\\_detail.aspx?c=2&p=376&d=194567](http://www.ch7.com/news/news_thailand_detail.aspx?c=2&p=376&d=194567)

**Activity 6.3:** Press and Publicity: Incidental press releases.

Timescale: Months 6 onwards.

In early 2012, Dr Jen Mailley was interviewed and filmed along with Malaysian laboratory staff, for a documentary by National Geographic on the illegal wildlife trade in Malaysia. This is due to air in early 2013. The fact that the project as it closed was heavily focused on supporting live criminal investigations means that press releases describing ongoing work are rarely appropriate. Only after a case has gone to court and a verdict handed down is it safe to publicise the results of any DNA testing. In recent months, TRACE communicated with FREELAND to remind them of the risks of miscarriages of justice associated with premature publicity, when FREELAND released news of the seizure of two tiger cubs in a case in which TRACE are still supporting the Thai WIFOS laboratory.

General awareness of the project and the training progress has been disseminated via a series of publications listed below:

- The CFS Bulletin of the Jill Dando Institute of Crime Science at University College London, which is disseminated to a broad range of forensic specialists.
- Articles in two of Darwin's Newsletters, in 2011 and 2012
- TRAFFIC Bulletin Vol 23, Issue 2, May 2011, "News from the ASEAN Wildlife Forensics Network"

Scientific awareness-raising:

Specialist awareness of the project has been disseminated via the publication of the peer-reviewed journal on a novel tiger sexing methodology (Annex 5), and the Interpol presentation delivered by JM in February 2012, as reported above.

The Darwin project has been specifically highlighted as a standalone case-study in a peer-reviewed publication:

Ogden, R. (2010) *Forensic science, genetics and wildlife biology: getting the right mix for a wildlife forensics lab*. Forensic Sci. Med. Pathol. Published online: 1<sup>st</sup> July 2010.

## Annex 2 Project's final logframe, including criteria and indicators

Project summary	Measurable Indicators	Progress and Achievements Sep 2009 - August 2012	Actions required/planned for next period
<p><b>Goal:</b> Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources. To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve.</p> <p>Sub-Goal: An effective, coordinated regional network of wildlife forensic expertise exists to support enforcement of CITES regulations through a combination of quality assured investigative processes and the capacity to develop and apply new identification tools.</p>		<p>Outputs achieved:</p> <ol style="list-style-type: none"> <li>1. National wildlife forensic units following approved forensic protocols</li> <li>2. Trained wildlife forensic technicians, researchers and field officers</li> <li>3. A body of research highlighting regional forensic needs and delivering scientific resources for applied use.</li> <li>4. A framework of inter-agency cooperation for incorporating forensic analysis into illegal trade investigations.</li> <li>5. A regional network of wildlife forensic expertise for sharing protocols, samples and data.</li> <li>6. Broad dissemination of project results</li> </ol>	<p>(do not fill not applicable)</p>
<p><b>Purpose</b> To provide the ability for host countries to undertake coordinated wildlife forensic analysis for CITES enforcement operations in the ASEAN region.</p>	<p>Future illegal trade investigations utilise forensic techniques. Increased number of illegal wildlife trade prosecutions.</p>	<p>As above, for goal/ subgoal.</p>	<p>N/A</p>
<p><b>Output 1. National wildlife forensic units following approved forensic</b></p>	<p><b>Laboratory facility operational in each country with trained staff in</b></p>	<p><b>Progress: Malaysia processing 80% more cases (crimes) in Yr 3 than previous year, and planning lab expansion; Thailand processed 26 cases in</b></p>	

<b>protocols.</b>	<b>place.</b>	<b>Yr 3 in a brand new and dedicated facility which was opened as a direct result of this project. Indonesia have adopted standard procedures and are coordinating with Malay and Thai scientists.</b>
Activity 1.1: Capacity Building: Assessment of current facilities and staff in each country (Log frame timescale Months 1 to 6).		Progress: Completed and reported in annual reports 1 and 2.
Activity 1.2: Capacity Building: Implementation of laboratory systems for supporting forensic analysis (Log frame timescale Months 7 to 30).		Progress: Standard operating procedures adopted in Malaysian, Thai and Indonesian laboratories.
Activity 1.3: Capacity Building: Joint preparation of funding applications for ongoing support		Progress: Follow-on Darwin monies were applied for in summer 2012, but unfortunately not granted despite the success of the original support and a large volume of support from ASEAN Nations. Feedback from Darwin suggests the new criteria of 'poverty alleviation' was not met fully enough to warrant funds- this alteration in criteria is problematic for project such as this which are most heavily focused on decreasing biodiversity loss that occurs through illegal activity. Further funds are actively being sought in collaboration with project partners.
<b>Output 2. Trained wildlife forensic technicians, researchers and field officers.</b>	<b>A minimum of 3 national wildlife staff &amp; 3 lab staff trained in each country.</b>	<b>Progress: Quota of scientists trained exceeded in Thailand; met in Malaysia; exceeded in Indonesia. Quota of enforcement staff trained exceeded in host countries (Malaysia and Thailand); exceeded further in Vietnam.</b>
Activity 2.1: Training: Provision of specialist training in collection and identification of evidence (Revised timescale: Months 10 to 12)		Progress: Complete. 1 <sup>st</sup> training workshop delivered and excellent feedback received, as reported in annual report 2.
Activity 2.2: Training: Provision of specialist training in laboratory methods		Progress: completed alongside activities 2.1 and 2.3
Activity 2.3: Training of host-country staff in the UK (Timescale: months 16-22)		Progress: completed in Yr 2 and reported in annual report 2.
<b>Output 3. A body of research highlighting regional forensic needs and delivering scientific resources for applied use.</b>	<b>a. The production of a needs analysis report. b. A series of forensic analysis protocols addressing key issues</b>	<b>Progress: Needs Assessment completed; then updated in year 3. Findings have (a) been shared with other relevant NGO (Freeland) and (b) have driven the prioritisation of the techniques for which standard operating procedures are adopted by the host country laboratories; and (c) has driven the development of a novel species reference database.</b>
Activity 3.1: Research: Needs analysis (by species and problem) for wildlife forensic identification tools (Timescale: Months 1-9)		Progress: Needs Assessment completed and then updated in Yr 3.
Activity 3.2 Research: Development of key forensic tools to address identified priorities (Timescale: Months 7-32)		Progress: Project team identified priority cases and problems to pursue, based on the Needs Analysis. These were incorporated into the UK training programme and were pursued via ongoing technical support to live casework (lab testing).
Activity 3.3: Research: Creation of a species reference collection of DNA samples for shared use. (Timescale: Months 7-32)		Progress: Database has been produce and delivered to host country partners. Database is being populated by host countries.
<b>Output 4: A framework of inter-agency cooperation for incorporating forensic analysis into illegal trade investigations.</b>	<b>Attendance at inter-agency seminars and development of multi-agency approaches.</b>	<b>Progress: Attendance at seminars has continued throughout the project. TRACE were formally endorsed as strategic partners of the ASEAN-WEN in 2012, meaning they are recognised as a body needing no further formal permission to apply for or offer funds for working with the ASEAN-WEN.</b>

Activity 4.1: Inter-Agency Cooperation: Seminar attendance and networking at key project meetings (Timescale: Months 4-6, 10-12, 34-36)		Progress: See above paragraph.
<b>Output 5: A regional network of wildlife forensic expertise for sharing protocols, samples and data.</b>	<b>a. Central, accessible online forum for sharing information.</b> <b>b. Electronic database of available reference samples in the region.</b>	<b>Progress: Website operational and acts as a repository for key materials. Core network of scientists established and communication via email, skype and face to face visits maintained throughout year 3.</b>
Activity 5.1: Network Coordination: Identification of all regional stakeholders (Timescale: Months 1-3)		Progress: all major stakeholders were identified and all regional CITES MAs engaged with the project.
Activity 5.2: Network Coordination: Establishment of online networking forum (Timescale: Months 4-12)		Progress: website is developed, members forum is functioning.
Activity 5.3: Network Coordination: Project launch and interim workshops (Timescale: Months 4 to 6)		Progress: project launch workshops completed.
Activity 5.4: Network coordination: Regional conference on wildlife forensics (Time scale: months 34-36)		Progress: conference completed in June 2012, Bangkok, Thailand. Over 70 enforcement personnel trained in a one day event, and 175 national and international delegates attended a 2 day international conference.
<b>Output 6: Broad dissemination of project results</b>	<b>Publication of project case study and conference proceedings. Peer-reviewed research publications. National press coverage -O/S &amp; UK</b>	
Activity 6.1: Press and Publicity: Design of a three year publicity plan (Timescale: Months 1-3)		Progress: Completed in year 1.
Activity 6.2: Press and Publicity: Coverage of project workshops and regional conference (Timescale: Months 4-6)		Progress: Completed in Yr 1.
Activity 6.3: Press and Publicity: Incidental press releases (Timescale: Months 7 to 33)		Progress: Year 3 saw 4 newsletter/ bulletin articles in specialist press (e.g. TRAFFIC bulletin); the PM interviewed and filmed for national Geographic (to be aired in 2013); and the UK training publicised on ITV. These are in addition to one academic publication in a peer reviewed journal, describing a novel method for genetically determining the gender of tiger samples (see section 5 above in this final report).



## Annex 3 Project contribution to Articles under the CBD

### Project Contribution to Articles under the Convention on Biological Diversity

Article No./Title	Project %	Article Description
6. General Measures for Conservation & Sustainable Use	10	Develop national strategies that integrate conservation and sustainable use.
7. Identification and Monitoring	60	Identify and monitor components of biological diversity, particularly those requiring urgent conservation; identify processes and activities that have adverse effects; maintain and organise relevant data.
12. Research and Training	10	<b><i>Establish programmes for scientific and technical education in identification, conservation and sustainable use of biodiversity components</i></b> ; promote research contributing to the conservation and sustainable use of biological diversity, particularly in developing countries (in accordance with SBSTTA recommendations).
Other Contribution	20	Smaller contributions (eg of 5%) or less should be summed and included here.
Total %	100%	Check % = total 100

## Annex 4 Standard Measures

Established codes	Description	Yr 1	Yr 2	Yr 3	Yr 4	Total	Total planned from application
4D	Number of training weeks provided		29 ( 1 week for 29 people)	23	15	<b>67</b>	N/A
6A	Number of people to receive education/training not already covered:		50	25	120	<b>195</b>	N/A
7	Number of types (not volume) of training material to be used in host country.		4 (physical kits; web based lectures; hard copy lectures; hard copy practical guides)	4 (physical sampling kits; sample submission forms; laboratory protocols; data analysis protocols)	7 (physical kits; web based lectures; hard copy lectures; hard copy practical guides; sample submission forms; laboratory protocols; data analysis protocols)	<b>7</b>	N/A
8	No of weeks to be spent by UK project staff in host country	13	26	17	13	<b>69</b>	N/A
9	Number of species/habitat management plans (refers to advice to host countries re. forensics policies)	0	0	2	2	<b>4</b>	
10	Number of individual field guides/manuals to be produced to assist work related to species identification: this is shared with TSEA and the 9 refers to the 9 different translations of TSEA's Species guides.		9	0	0	<b>9</b>	N/A
11A	Number of papers to be published in peer reviewed journals		1	1	2 in prep	<b>2+2</b>	N/A

14A	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work		0	0	1	<b>1</b>	
14B	Number of conferences/seminars/workshops <b>attended</b> at which findings from Darwin project work will be presented/ disseminated		0	0	2	<b>2</b>	N/A
15A	No of press releases in host countries	1	1		2	<b>4</b>	N/A
15C	No of national press releases in UK	1	1		1	<b>3</b>	N/A
17A	No of dissemination networks to be <b>established</b> (refers to ASEAN-WFN)		1	0	0	<b>1</b>	N/A
16A	Number of newsletters to be produced	0	0	4	1	<b>5</b>	N/A
16B	Estimated circulation of each newsletter in the host country(ies)			>3500 total- via web	200	<b>&gt;3500 total, via web</b>	
16C	Estimated circulation of each newsletter in the UK				50		
18A	Number of national TV programmes/features in host country(ies)		1	0	1+1	<b>2</b>	N/A
19B	Number of national radio interviews/features in UK		1	1	0	<b>1</b>	N/A
20	Estimated value (£'s) of physical assets to be handed over to host country(ies)		Software £3000	Primers - £2000	0	<b>£5000</b>	
21	Number of permanent educational/training/research facilities or organisation established				2	<b>2</b>	
23	Value of additional resources raised for project					<b>£117,000</b>	(Table 7.2)

## Annex 5 Publications

Type *	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
Project web site			<a href="http://www.asean-wfn.org">www.asean-wfn.org</a>	Free
TRAFFIC bulletin	News from the ASEAN Wildlife Forensics Network. April 2011; p64.	TRAFFIC	<a href="http://www.traffic.org">www.traffic.org</a>	Free online
Journal publication	Forensic science, genetics and wildlife biology: getting the right mix for a wildlife DNA forensics lab, Ogden, R (2010)	Humana Press: online	<a href="http://www.asean-wfn.org/?p=254">http://www.asean-wfn.org/?p=254</a>	Free on project website
Journal publication	Molecular sexing of tigers, Panthera Tigris, McEwing et al, 2012.	Conservation Genetic Resources.	DOI 10.1007/s12686-011-9529-x	Free from TRACE
UK Forensics network newsletter	Wildlife Forensics in South East Asia. CFS Bulletin Issue 2 January 2012; University College London.	JDI Centre for the Forensic Sciences.	<a href="http://www.ucl.ac.uk/forensicsciences/newsletter">http://www.ucl.ac.uk/forensicsciences/newsletter</a>	Free to access
Darwin newsletter (x2)	Darwin News 2011-10 and 2012-02.	UK Darwin Initiative	<a href="http://darwin.defra.gov.uk/publications/">http://darwin.defra.gov.uk/publications/</a>	Free to access
Project brochure*	The ASEAN Wildlife Forensics Network- A Darwin Initiative. Ogden and Mailley (eds) 2012.	Copyright TRACE WFN	<a href="http://www.asean-wfn.org/wp-content/uploads/2012/07/THE-ASEAN-WILDLIFE-FORENSICS-NETWORK.pdf">http://www.asean-wfn.org/wp-content/uploads/2012/07/THE-ASEAN-WILDLIFE-FORENSICS-NETWORK.pdf</a>	Free via project website and in hardcopy from TRACE
Instruction manuals for wildlife forensic sampling	DNA sampling instructions to accompany TRACE WFN sampling kits	TRACE WFN (available in English, Thai, Malay, Vietnamese and Indonesian)	Available for members of the ASEAN Wildlife Enforcement Network via the secure part of the project website ( <a href="http://www.asean-wfn.org">www.asean-wfn.org</a> )	Free

## Annex 6 Darwin Contacts

<b>Ref No</b>	17019
<b>Project Title</b>	
<b>UK Leader Details</b>	
Name	Dr Ross McEwing
Role within Darwin Project	Project lead and Technical Director, TRACE WFN.
Address	RZSS, 134 Corstorphine Road, Edinburgh. EH12 6TS
Phone	
Fax	
Email	
<b>Other UK Contact (if relevant)</b>	
Name	
Role within Darwin Project	
Address	
Phone	
Fax	
Email	
<b>Partner 1</b>	
Name	Dr Bill Schaedla/ Dr Chris Shepherd
Organisation	TRAFFIC South East Asia
Role within Darwin Project	Manager of TRAFFIC SEA team
Address	Unit 3-2, 1 <sup>st</sup> floor, Jalan ss23/11, Petaling Jaya, 47400, Taman SEA, Selangor, Malaysia.
Fax	
Email	
<b>Partner 2 (if relevant)</b>	
Name	Mr Manop Lauprasert c/o Mr Chrisgel Ryan Cruz
Organisation	ASEAN Wildlife Enforcement Network Programme Coordination Unit (ASEAN-WEN PCU)
Role within Darwin Project	Coordinator between TSEA and TRACE, with CITES focal points of the ASEAN region.
Address	
Fax	
Email	

### Attachments:

Darwin brochure  
Photo of final training event