



# Darwin Initiative Annual Report

## Important note:

To be completed with reference to the Reporting Guidance Notes for Project Leaders: it is expected that this report will be about 10 pages in length, excluding annexes



**Submission Deadline: 30 April 2011**

## 1. Darwin Project Information

Project Reference	17-008
Project Title	Can Hunting and Conservation of Endemic Annamite Ungulates be Reconciled?
Host Country/ies	Vietnam (Laos)
UK contract holder institution	Department of Geography, University of Cambridge
Host country partner institutions	WWF Greater Mekong Vietnam Programme, Vinh University
Other partner institutions	Vietnam Forest Protection Department, Hue University, American Museum of Natural History
Darwin Grant Value	<b>£ 294,469</b>
Start/end dates of project	01/10/09 – 30/09/12
Reporting period (eg Apr 2010 – Mar 2011) and number (eg Annual Report 1, 2, 3)	01/04/10 – 31/03/11 Annual report no. 2
Project Leader name	Nigel Leader-Williams
Project website	
Report authors, main contributors and date	Nicholas Wilkinson, Project Officer Nigel Leader-Williams, Project Leader

## 2. Project Background

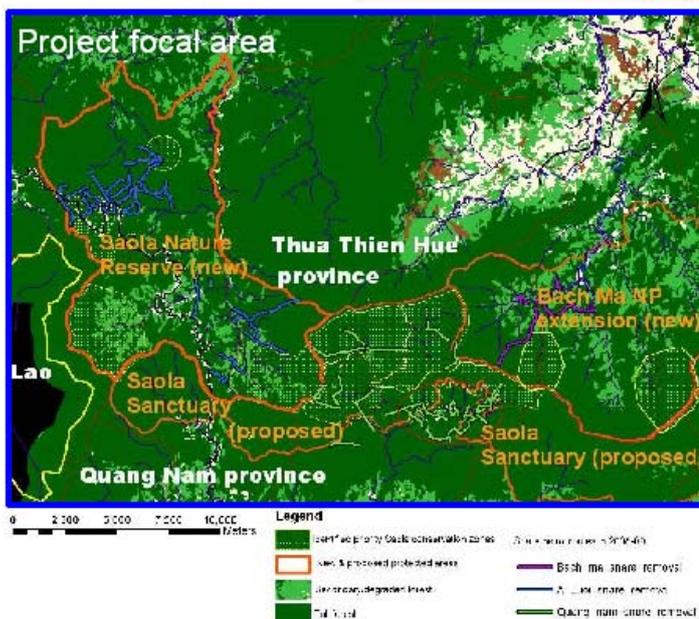
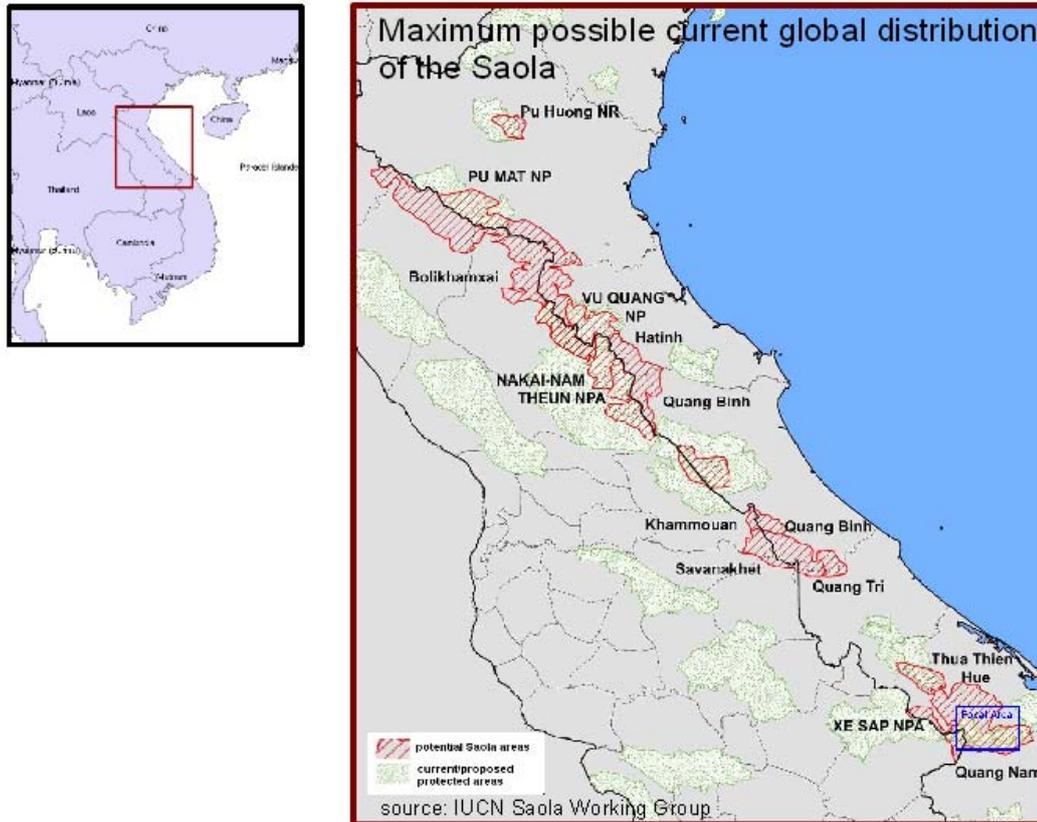
The Saola *Pseudoryx nghetinhensis* and the large-antlered and Annamite muntjacs *Muntiacus vuquangensis* and *M. truongsonensis* have only recently been described for science. All three are endemic species that are restricted to the Truong Son Mountains that straddle the international border between Vietnam and Laos. The Saola, in particular, is of immense concern to conservation, as a mono-specific genus that is threatened by indiscriminate snaring to supply the regional trade in wild meat in Vietnam and Laos.

All conservation planning documents for the Saola, including the draft National Saola Conservation Action Plan (2006) in Vietnam, have stressed that the lack of knowledge greatly hampers determining its conservation needs. Likewise, both muntjac species are also very poorly known and difficult to study. However, research needs to be prioritised to focus on those questions most important in guiding effective conservation action. Appropriate social science research is of particular concern, in order to engage local communities that currently hunt Annamite ungulates, and to understand the economic basis for hunting.

Various alternative plans exist about how to engage with local communities to conserve Annamite ungulates. Negotiating no-trapping zones, facilitating sustainable hunting of commoner species through 'hunters clubs' and offering financial rewards for a snare-free forest have been considered as options. These plans are based on different ideas about how and why local people (and outsiders) are hunting. To help choose a strategy that can work, research into the socio-economic basis of hunting is also needed.

This project seeks to build capacity to conduct high-quality conservation research on these hunted ungulate species in key Vietnamese universities. It also seeks to engage with key conservation actors (notably the National and appropriate provincial Forest Protection Departments and WWF) to plan and conduct research that is tied directly to possible conservation actions.

The global range of the Saola sets the limits of project activities but the main focal area lies around the border between Thua Thien Hue and Quang Nam provinces in Vietnam (see maps)



### **3. Project Partnerships**

The University of Cambridge provides two separate sub-grants to the main host-country partners: Vinh University and WWF in line with existing MoUs (submitted with FY1 report). Broadly, Vinh University is responsible for training activities (outputs 1&2), while WWF is responsible for research and conservation planning (outputs 3&4). However there are some important exceptions, notably under activities 3.4 and 2.7 (see next section).

The main link between the partners is the Project Officer, Nicholas Wilkinson, who has been based for 10 to 11 months of the year in Vietnam. Travelling regularly between Hanoi, Vinh, Hue and Tam Ky, the Project Officer ensures that work plans and action plans involving all partners are implemented as appropriate.

The work in FY2 has closely followed the detailed work plan set by the project Steering Committee at the end of FY1. However, this work plan needed to be revised on an *ad hoc* basis to adapt to the large new related WWF projects operating in the area (CEPF, Forest Guards and CarBi) and an increased WWF focus on patrolling and basic protected area management.

The Steering Committee did not meet in FY2, nor did it meet in the first three months of FY3. Therefore, this period was used to trial and adapt new research programmes suggested in the first SC meeting but not yet implemented. Their progress will be reviewed at the second SC meeting in July 2011 and the information used to produce a work plan that covers the final 12 months of the project.

#### **3.1: University of Cambridge**

Cambridge is primarily responsible for technical input to the project's major research outputs (ungulate distribution report and bio-economic model) and, to a lesser extent to some technical workshops. This latter role became more important during FY2 as challenges relating to the analysis and interpretation of data have come to the fore. The Project Officer has made two trips to Cambridge in FY2 and has received advice from the Project Leader and from other academic staff (see, for example Activity 3.6 in the next section). While in Vietnam, the Project Officer and The Project Leader remain in regular email and skype contact regarding technical issues. The Project Leader made one visit to Vietnam at the end of FY1 and another at the beginning of FY3.

Cambridge is also ultimately responsible for administration of the grant, including finances and reporting. Financial reports are submitted directly to Cambridge by WWF and Vinh University. Cambridge also directly administers funds for notably international travel and payment for UK-based trainers. These are handled on a contract basis by Ms Danielle Feger, the research administrator in the Department of Geography, who is responsible for administering these funds with support from the Project Officer, with whom she remains in regular contact.

#### **3.2: DICE**

The Durrell Institute of Conservation and Ecology (DICE, University of Kent) was originally the host institution for this project and remains responsible for most of the short training courses in Vietnam and for training and supervision of the two Vietnamese masters students studying in the UK. Professor Douglas MacMillan, the project Co-Investigator has provided some valuable technical support to both students (one of whom he is supervising) and to the Project Officer.

#### **3.3: WWF**

The period 2010-11 has seen substantial changes in the approach of WWF Greater Mekong to its species conservation work in Vietnam, following the poaching of what was most likely the last Javan rhino in Cat Tien National Park. One result of this is the increased level of attention now given to the 'Hue-Quang Nam Saola Landscape', this project's focal area, both in terms of fundraising and of discussion of technical issues of Saola conservation.

Three new major projects have been launched in the focal area, all of which are highly relevant to this project. Brief details are given below.

Title "Safeguarding the Saola within the Species' Priority Landscape in Vietnam". Short title: "Saola CEPF" Donor: Critical Ecosystems Partnership Fund. Amount: USD242,674. Dates 05/2010 - 06/2012. This project will implement law enforcement, build protected area capacity, understand resource use patterns among local, forest-dependent communities and develop culturally appropriate economic alternatives to hunting within Saola core areas. The CEPF project is explicitly linked through its proposal to the current project and the existence of the current project was essential to securing funding from CEPF. The CEPF project has already supported community mapping work and the findings of the current project regarding community use zones and local economics will be important inputs to the CEPF project. For more information see:  
[http://www.cepf.net/grants/project\\_database/indo-burma/Pages/strategic\\_direction\\_1.aspx](http://www.cepf.net/grants/project_database/indo-burma/Pages/strategic_direction_1.aspx)

Title "Avoidance of deforestation and forest degradation in the border area of southern Laos and central Vietnam for the long-term preservation of carbon sinks and biodiversity" Short title: "CarBi project." For more information see:  
[assets.panda.org/downloads/carbi\\_project\\_summary.pdf](http://assets.panda.org/downloads/carbi_project_summary.pdf). Donor KfW Entwicklungsbank (German Development Bank). Dates 12/2010-12/2014. Total budget € 2.079.480  
This project aims to preserve carbon stocks but will do this through improving protected area management of all three reserves in the focal area as well as the contiguous Xe Xap NBCA in Lao. Furthermore the CarBi project will monitor ungulate populations as indicators of forest health and some of the methods developed by the current project are expected to inform this. For more information see: [assets.panda.org/downloads/carbi\\_project\\_summary.pdf](http://assets.panda.org/downloads/carbi_project_summary.pdf)

In addition WWF has used internal funds to support employing Forest Guards in the Thua Thien Hue Saola Reserve. There are also some important links with another project "Supporting Law enforcement to reduce illegal wildlife trade in the Central Annamites Bottleneck." A DICE masters student, Brian Crudge completed his thesis with support from this project in 2010 and is now involved in writing the final report. This came about through the links with DICE fostered by the current project. Data collected by the wildlife trade project is expected to inform the bio-economic model to be produced by the current project. AWWF 'Saola Task force' has met via monthly conference calls since June 2010 to discuss immediate actions. The Project Officer is a task force member and, through this route, as-yet-unpublished information collected by this project's research activities has already informed the development of WWF conservation plans including the proposals for the two new projects. Dr Barney Long (WWF-US) is another member of the Saola Task Force who provides technical inputs based on his long experience working in the area.

Consequently, the intensity of WWF conservation work has increased in the area. Previously, WWF projects concentrated on designing and inaugurating incentive-based conservation schemes. Basic protection, including enforcement, has been supported through funding and training to the government partners (provincial Forest Protection Departments) but has not been intensively monitored. In contrast, WWF is now directly employing Forest Guards who work together with FPD rangers to patrol the Hue Saola Nature Reserve, with a focus on removing snares and preventing hunting with dogs. The management information system MIST is being used to monitor all enforcement activities within the Nature Reserve. In the immediate future, WWF intends both to extend but also to further develop this approach within the Hue-Quang Nam Saola landscape. To this end, considerable practical expertise in conservation enforcement from within the WWF network is being brought to bear on the matter (see activities 3.8 and 4.1 below).

Sarah Brook (WWF Species Co-ordinator) has worked closely with the Project Officer in planning for numerous activities, notably the enforcement workshop (part of 4.1) and Saola Working Group meeting (3.3). Ong Dinh Bao Tri has been responsible for much of the management of project activities in Thua Thien Hue and Quang Nam, in particular setting up MIST to collect data from the patrol teams. Van Ngoc Thinh has moved to a new position as Central Annamites Co-ordinator and provides input into longer-term work plans. Luong Viet Hung, the enforcement co-ordinator does not receive any salary from the project but is nonetheless heavily involved in all work that involves the patrol teams.

### **3.4: Vinh University**

Dr Cao Tien Trung is directly responsible for the Vinh University component of the project, although some administration is handled by the international relations department. Professor Hoang Xuan Quang is responsible for teaching (as a contribution to short courses) and supervision of Vietnamese Masters students.

The relationship with Vinh has developed over the year, mainly through the provision of the short courses. These have proved a valuable learning experience for their convenors as well as the students as we adapt to the challenges of giving a course in another language and within a different educational system. With each course the capacity of the Zoology Department to host foreign lecturers improves and the Project Officers and trainers learn about what works and what doesn't.

Vinh University continues to be generous with co-financing to project activities and with support with permissions and visas.

As planned, four studentships have been awarded through Vinh directly to students of Hue University. Three of these students have been co-supervised by the Project Officer and one (Ta Dinh Thanh) by Mr Tri of WWF. They also each have a supervisor from the University. With Vinh University students, Prof Quang and Dr Trung are able to provide much support, including accompanying them on field trips. Therefore, the Project Officer's role is restricted to technical advice on research design and, in future, probably also on analysis.

### **3.5: FPDs**

The key role of the provincial FPDs lies in vetting and approving project activities. Formally this is done through their role in the Steering Committee. Informally, it is done through WWF who works closely with provincial FPDs on all projects. Thus, WWF field staff have a good sense of whether or not changes to the work plan require approval from FPD. With the establishment of new nature reserves, the protected area Management Boards, including that for Bach Ma National Park, also become key players. Yet again, however, the project's interaction with them is almost exclusively through WWF. FPD and nature reserve staff receive training from the project, including one international Masters degree for a member of Thua Thien Hue FPD.

### **3.6: IUCN Saola Working Group**

The IUCN Saola Working Group has become an important player in conservation planning for the species. It is the most important forum for communication with others working in the area and on the species.

The SWG earns credibility from being independent of any NGO and for being a scientific advisory body. Nicholas Wilkinson, Cao Tien Trung and Van Ngoc Thinh are all SWG members.

At the end of FY2, the project helped prepare for the second SWG meeting to be held in April 2011 and this activity will be covered in the next report.

## **4. Project Progress**

### **4.1: Progress in carrying out project activities**

#### **1.1 Identify gaps in current syllabuses & 1.2 Planning workshop**

Building on the discussions held in FY1, Vinh University has added the following modules to its Zoology Masters syllabus:

- GIS in research and management of biological resources,
- Community mapping,
- Social survey methods
- Wildlife management,
- Wildlife trade.

These additions to the syllabus have already been approved by the Ministry of Education and Training. The first three modules are based around the short courses supported by the project and the Vietnamese language training materials developed with those courses (see below). The last two modules of Wildlife Management and Wildlife Trade will be based on courses to be given in FY3. The direct contribution of this project will be to produce these modules as optional modules in the existing masters course in Zoology. However it is hoped that the relationship between DICE and Vinh that this project has fostered will lead to the development of sufficient further modules that a new masters degree in conservation can be offered. Discussions between Professor Douglas MacMillan (DICE, project co-investigator and Head of School) and senior figures at Vinh University are planned for FY3.

### **1.3 Lectures by DICE [and Cambridge] staff at VN universities**

Although one open lecture to undergraduates was given in this financial year (details in half-year report), this activity has been largely reduced in favour of the development of short courses. Originally we had planned that visiting trainers from the UK would give both short courses and open lectures in the same trip. However, in both trips that have been planned so far, Vinh University has always favoured extra time spent on the short courses than in giving open lectures. This is seen as a more valuable contribution to conservation education given the expense of hiring foreign trainers.

### **1.4 Development of new teaching materials**

The materials for the three short courses delivered in this year (see 2.2 to 2.4 below) have all been produced as full modules in Vietnamese and will be published online through the Ministry of Education Website. As well as power-point presentations, the modules contain detailed explanatory text on relevant techniques and exercises for students.

### **1.5 Training for VN university staff**

Because we were not able to find a suitable candidate from Vinh to attend a course at DICE, training for university staff has been restricted to the attendance of a few young lecturers from Vinh on the short courses. We continue to investigate options for training of Vinh staff, or future staff in the UK with funding from other sources.

### **2.1 Community mapping training**

This activity completed in FY1. However the Social Science methods course also included a session on community mapping. Three masters students, Nguyen Trong Dong, Pham Thi Huyen and Ta Dinh Thanh have since used this training in their fieldwork for the project.

### **2.2: Training in GIS**

A 7-day course in GIS for wildlife research and management was given at Vinh University by Dr Lê Trần Chấn of the Geography Institute in Vietnam from the 12-19 March 2011. Fourteen Masters students and young lecturers from Vinh University attended along with three from Hue University and four protected area staff from reserves in Nghe An and Ha Tinh provinces.

The course gave an overview of GIS and covered basic use of the software MapINFO including installation, import export and manipulation of key data types, co-ordinate systems and projections and plotting species distributions.

It was deemed wasteful of funds to hire a UK-based trainer for this course as there is an abundance of GIS technical expertise in Vietnam. A course in advanced GIS analysis, which might have benefited from the input of a UK-based trainer, was deemed above the level of the students.

### **2.3: Training in basic ecological survey methods**

A 7-day course on statistics and survey design in conservation was given by Dr David Sewell (DICE) from 28 February-6 March 2011 at Vinh University. Fourteen Masters students from Vinh University, four from Hue University and seven PA staff from reserves in Nghe An, Ha Tinh, Thua Thien Hue and Quang Nam provinces attended the course.

The course covered the following topics:

- overview and introduction
- descriptive statistics (measures of central tendency and spread)
- differences and relationships (hypothesis testing, the t-test and ANOVA, correlations and regressions)
- biodiversity and niche (biodiversity indices and measuring niche breadth and niche overlap)
- non-parametric tests.
- 'Occupancy' statistics; use of the PRESENCE software.
- Mark-recapture methods use of the MARK software.

The course mainly consisted of classroom sessions and concluded with a 2-day field trip to Pu Mat National Park. Each classroom session included a powerpoint presentation, a detailed text document explaining concepts and an exercise. Exercises for the first 5 sessions were conducted in Microsoft Excel only and the final two sessions used free software. This is appropriate as Vinh students do not currently have access to, or training in, statistical software but do mostly have their own laptops with Excel installed.

The decision was taken to focus on issues of statistics and survey design because, while these topics are taught in Vinh, the coverage appears to be entirely theoretical and masters theses do on ecological subjects do not generally use statistics or take account of study design considerations. Where possible, herpetological examples were used as this taxonomic expertise is shared at both DICE (Dr Sewell) and Vinh (Dr Trung and Prof Quang).

#### **2.4: Training in basic social survey methods**

A 7-day course in Social Science Methods for Conservation was given by Dr Rajindra Puri (DICE) from 1-7 November 2010. The course consisted of three classroom days at Vinh University and a 4-day field trip to Cuom village, Dien Lam commune, near Pu Huong nature reserve in Nghe An province. The people of the village belong to the Thai ethnic minority.

The course was attended by 13 Masters students and young lecturers from Vinh University, one from Hue University and seven PA staff from reserves in Nghe An, Ha Tinh and Thua Thien Hue Provinces.

Topics covered were:

- Overview of social science methods in conservation
- Participant observation
- Interviewing
- Cultural Domain Analysis
- Field methods including pile-sorting, weighted ranking, weighted ranking and community mapping.

Interviewing and the other field methods were conducted with interview groups from Cuom village as practice sessions.

#### **2.5: Conservation Biology training at DICE**

Nguyen Xuan Truong (Thua Thien Hue Forest Protection Dept) and Nguyen Anh Quoc (WWF Quang Nam) have both completed the taught component of their Masters courses at DICE. Nicholas Wilkinson (Project Officer) and Professor Douglas MacMillan (Project Co-investigator) met with both students in January 2011 to discuss appropriate research projects that contributed to the aims of the project. Both have subsequently submitted proposals to the university degree committee.

Quoc's proposed project is entitled "Economic and Cultural factors underlying hunting practices in A Vuong and Song Kon communes, Quang Nam province, Vietnam", and will be supervised by Professor MacMillan. Quoc plans to concentrate on two focal villages which traditionally and currently use land which lies partly within the new Quang Nam Saola Nature Reserve. Using semi-structured interviews in the village and in the forest as well as participant observation of hunters he hopes to provide the first step towards a more in-depth understanding of the decision-making processes of modern Katu hunters. This study falls under Project Activity 3.7 (specific training for research into hunting patterns).

Truong's proposed project is entitled "Using GIS to find out the Distribution of Saola and Types of Traps in Saola Nature Reserve with Community Participation." However his proposal awaits revision and review by the degree committee. He will collate data on snares collected by patrols using the MIST database, by independent surveys begun in FY2 (see 3.8 below) and from community mapping and compare the information about snare distribution from the different sources. He will also collect community mapping and interview records of Saola sightings and conduct further interview surveys to assess the validity of these sources of information. He hopes to investigate the overlap between snare intensity, patrol effort and areas where Saola are most likely to occur. He will be supervised by Dr Joseph Tzanopolous (DICE), who has GIS-expertise. His study will fall under Project Activity 3.7 (specific training for research into hunting patterns) and 3.8 (landscape-wide snare and habitat survey).

Quoc has already returned to Vietnam to begin his fieldwork and Truong plans to return in May.

## **2.6: Wildlife trade training at DICE**

As discussed in the previous half-year report, this activity is underway. Both students are taking the MSc in Conservation Biology in one case with a dissertation focus on the hunters who supply the wildlife trade.

## **2.7: Training in analysis and interpretation of monitoring and other management data (FPD staff)**

After attending a training course in Thailand in the Management Information software MIST (see half-year report), the Project Officer and Ong Dinh Bao Tri (WWF) developed a Vietnamese language MIST database and datasheet.

In July, the Project Officer joined a patrol by FPD rangers in the area of the new Saola Nature Reserve with Luong Viet Hung, the WWF enforcement officer, and a second patrol in Bach Ma National Park with members of one of the park's enforcement team to test the datasheet and train rangers in its use. WWF's new forest guards have subsequently been trained to use the datasheet by Mr Hung with funding from the forest guards project. The datasheet has now been adopted by WWF for work in the region.

Mr Tri and Mr Hung gave a training course for protected area staff in use of the database. The three day course (21-24 February) was attended by the four forest guard team leaders and one member of staff from the Thua Thien Hue Saola Nature Reserve, two district FPD staff from Tay Giang, Quang Nam (since employed as staff of the new Quang Nam Saola NR) and one staff from Bach Ma National Park.

Mr Tri has since visited the Thua Thien Hue Saola NR headquarters to ensure the smooth running of the database. Trips to Quang Nam and Bach Ma are planned for FY3.

In addition to the above, training has also been given to FPD staff, including those who attended the short courses (see above) and who are conducting Masters research supported by the project (Nguyen Xuan Truong, Hue FPD and Pham Doan Vong, Bach Ma NP)

## **3.1: Construct range-wide database**

As discussed in the FY1 report, we are working on improving the database structure for the Thua Thien Hue-Quang Nam data before attempting to input data from other areas. However, Masters students undertaking community-mapping work in Pu Huong have been collecting interview records of Saola, while future Masters research to be conducted in FY3 is expected to produce more data. An updated list of local place names has been collected as part of the community mapping work and sources of (lower resolution) place name data have been identified for Pu Mat National Park and Nakai Nam Theum NPA in Lao.

Work on the database has included the development of a scoring system for records and of an ArcGIS tool that automatically links points in the place-name database to polygons derived from the watershed layer (see FY1 report).

The next step is to develop a GIS method to score each pixel for Saola abundance. This should be flexible so that different scoring systems could be used to reflect the different confidences of different experts in the records. This will require some detailed GIS programming work and the Project Officer will begin this in October 2011 with support from Cambridge academic staff.

At the end of 2011 the database form and interview protocol were still waiting for input from SWG members but active discussion is now underway.

### **3.2: Construction of Participatory GIS**

The delay in completion of the community mapping work (3.4) relative to the logframe means that the final place name layer is only just being produced. Once this is complete, an activity will be planned under the linked CEPF project to hand maps back to communities. This will also be used as an opportunity to get (anonymous) feedback from villagers on the new Protected Areas and plans to protect them.

Luong Van Duc's Masters thesis has been completed and uses the free software ZONATION to derive optimal conservation decisions from the uncertain community mapping data on ungulate distribution. The Project Officer intends to take this analysis further in the second half of FY3 with support from Cambridge.

### **3.3: Expert workshop**

As discussed in the half-year report, this activity will be implemented through support given to the second meeting of the SWG (see section 3.6). The Project Officer and Sarah Brook (WWF) collaborated on planning this workshop, which was held in Vinh and Hue in April 2011, and will be covered in more detail in the FY3 report.

### **3.4: Community mapping in Hue – Quang Nam**

Field trips to A Luoi (Thua Thien Hue) and to Tay Giang and Dong Giang (Quang Nam) in February and March 2011 served to complete the community mapping effort begun by Luong Van Duc and Nguyen Thi Thu Hieu. The work has been completed by Ta Dinh Thanh, a third Masters student from Hue University who received a studentship from the project, and by Nguyen Tien Hoang, a lecturer from the university hired by the project as a consultant. This team visited the remaining 35 villages, using the same methodology as Duc and Hieu and were overseen by Ong Dinh Bao Tri.

The data from these two field trips are currently being entered.

### **3.5: Range-wide community mapping**

Two Masters students receiving support from the project (Nguyen Trong Dong and Pham Thi Huyen) have begun fieldwork around Pu Huong nature reserve (NB: half-year report incorrectly stated Pu Mat National Park). They have received training on the social science methods course (see 2.4 above), methodological guidance from the Project Officer and Dr Trung, and are being supervised by Professor Quang. Rather than the universal approach adopted in the Hue – Quang Nam Landscape, they are visiting a focal village within each commune. This work updates but also greatly expands the work conducted by Frontier International in the early 1990s. Data have not yet been entered but preliminary results suggest that the earlier perception that Saola were restricted to the north-east sector of the reserve was an artefact of the distribution of previous interview surveys. This highlights the importance of community mapping for making sense of interview records of species.

FY3 will hopefully see similar projects conducted by Vinh masters students in Pu Mat and Vu Quang and also in key Saola areas in Lao. We are also seeking additional support for this work from the Saola Working Group and the Zoological Society of London in order to achieve more complete coverage.

### **3.6: Species distribution modelling**

Some of the technical challenges facing species distribution modelling for the Annamite ungulates were discussed in the half-year report. In Cambridge during January 2011, the Project Officer discussed some ideas for modelling with these uncertain datapoints (derived from interviews) with Dr Gabriel Amable (a GIS specialist). An idea involving Monte-Carlo simulation was proposed and appears feasible but will require programming within ArcGIS. The Project Officer intends to investigate this further in the winter of 2011-2012 in Cambridge and to arrive at an appropriate method for species distribution modelling based on interview records. The methods developed with the community-mapping data using Zonation software could also be applied to the output of a species distribution model, providing another means for quantifying the effects of uncertainty on the conclusions of the model.

### **3.7: Specific training for research into hunting patterns**

This research is about to start at the end of FY2. As discussed in the FY1 report, this delay has arisen because it was not possible to identify applicants for the UK Masters courses well in advance of the course start date. One of the UK-based Masters students will initiate this research but it was not possible for him to conduct a trial period before starting the course. See activity 2.5 above for a summary of his planned research.

### **3.8: Landscape-wide snare and habitat surveys**

As discussed in the half-year report, we have decided to concentrate on making use of data collected by patrol teams to determine spatial and temporal patterns of snaring and perhaps also of hunting. The expansion of patrol effort under other WWF initiatives makes this a possibility. In the Thua Thien Hue Saola Reserve, the data from 18 patrols by forest guard teams, spanning three months have already been entered into the MIST software. Data are also available from the earlier patrols funded by this project in all three reserves in 2010 although these have not yet been entered. The patrols record snares, hunters' camps and encounters with people in the forest.

Data collected by patrol teams present a challenge for analysis as patrols do not follow the type of standardization and randomization protocols expected of surveys. It is therefore necessary to develop an analytical framework for these data to investigate both spatial patterns and trends. This is an unexpected development for the project but we have been able to make use of the opportunity to involve a volunteer intern from the Catholic University of Louvain in Belgium, Ms Yasmine El Bahyaoui, for whom an internship with WWF forms part of her Masters degree. Yasmine began work in February 2011 and will produce a preliminary report on the opportunities and challenges of using patrol data for researching and monitoring hunting patterns.

Sufficient data have not yet been collected from the Hue – Quang Nam landscape. Therefore, in March 2011 the Project Officer and Ms ElBahyaoui visited a long-running WWF project in Monduliri province, Cambodia, and returned with four years of data exported from MIST. The trip also included two days in the field accompanying an enforcement patrol so that we could gain an understanding of how the data were collected and the differences from the Hue Quang-Nam landscape. Ms ElBahyaoui has also undertaken one trip into the Saola Nature Reserve accompanying a forest guard patrol.

Ms ElBahyaoui is currently using the software PRESENCE to determine if these data can be analysed in an 'occupancy' context. The key issues are zero-inflation and the complex behaviour of hunters. We have also been in contact with WCS Cambodia who have undertaken some work in the same field.

Nevertheless, whatever can be done with these data, they are potentially biased by the capacity of the teams to detect snares. This is not necessarily constant across time or space as hunters may become better at hiding snares if there is more risk of their being removed. Therefore, an independent survey of snares is required. As described in the half-year report, a method has been developed for snare-surveys based on intensive searches of 200 x 200m quadrats. Pham Doan Vong, a Masters student supported by the project has conducted such surveys of 24 squares within the Bach Ma NP extension, of which 12 were distributed randomly and 12 were the alleged locations of recent Saola sightings. The fieldwork was nearing completion at the end of FY2 but had not yet been written up. Further surveys in the other two reserves in the landscape are planned at the beginning of FY3 followed by a power analysis to assess what questions might be answerable by this method and whether further data collection is needed.

### **3.9: Targeted Saola surveys**

There have been no advances on this activity since the half-year report.

### **3.10: Bio-economic modelling**

This activity is scheduled to begin in earnest in FY3. This year, through reading and discussion at Cambridge, and a developing understanding of the kind and quantity of data to be collected by this project, we have arrived at two key insights regarding the process which bio-economic modelling should take.

1. In order to avoid an overwhelming complexity, models should be guided by a decision analysis such that they may be targeted to critical aspects of the system that are likely to affect conservation decisions.
2. Companion modelling, in which the model is formulated as a (board) game to be played by local resource users is likely to be the most appropriate approach to develop the basic model.

Following these insights we plan to conduct a trial of companion modelling in early FY3 and to engage the Saola Working Group and WWF in providing input to a decision analysis.

#### **4.1: Research planning workshops**

The project's inception workshop in September 2009 highlighted the need for a workshop to plan research that would aid patrolling. This took place from 15-17 of March 2011 in Hanoi on Enforcement in Mountainous Landscapes in South-east Asia. The workshop was co-funded by this project and WWF GMPO. From the Hue-Quang Nam Saola landscape, Luong Viet Hung, Van Ngoc Thinh and Ong Dinh Bao Tri (WWF) all attended as did the Project Officer and Tim Wood, a consultant hired by WWF to produce a draft Law Enforcement Strategy for the Hue Saola Nature Reserve. Representatives were also present from two other protected areas within the range of the Saola (and hence the wider project area); these were Nakai Nam Theum and Nam Et – Pu Louey NPAs in Lao.

Because of its broad focus, the workshop was able to bring in considerable expertise from within the WWF network. Representatives with considerable practical enforcement expertise were present from twelve protected landscapes and seven countries within South-east Asia as well as representatives of WWF-GMPO's senior management. The workshop was facilitated by Nick Cox, WWF-GMPO's manager for Species, Protected Areas and Wildlife Trade. Craig Bruce (enforcement specialist for the WWF Tigers Alive Initiative) provided significant technical input and led some sessions. Sarah Brook (WWF) was responsible for the organisation of the workshop.

The workshop report has been drafted by the Project Officer and is currently under review. For the project, the most significant outputs were a classification of enforcement tactics and a specific discussion of those tactics that could be usefully employed in the Thua Thien Hue Saola Nature Reserve. The results of this latter discussion have already informed the enforcement strategy drafted by Mr Wood.

The importance of the list of tactics lies in clarifying the kind of decisions that could be made about enforcement. In order to investigate the effectiveness of enforcement as a strategy, the project must evaluate not only enforcement as is currently conducted but also the potential for improvement.

Another outcome of the workshop was to reveal the inherent difficulty of the question of spatial coverage by an enforcement team. Determining the area that a team could cover in one patrol was a key objective from the project's perspective. This is critical for decision analysis relating to prioritization of conservation within landscapes. However, discussions at the workshop made it clear that defining 'coverage' of an area was not a trivial matter and needs further work.

The report on Community-Based Conservation has not been finalised (see FY1 report) but is scheduled for FY3.

#### **4.2: Protected area management planning & zonation**

FY2 has seen the establishment of two nature reserves in the project's focal area, both named for their flagship species: the Saola. The Thua Thien Hue Saola Reserve was established in April 2010 and the contiguous Quang Nam Reserve in March 2011. The project has not provided any direct support to the reserve establishment in this FY (in contrast to FY1). However, the project officer has been heavily involved in discussions within WWF about projects to support conservation within the reserves. For example, in the Thua Thien Hue reserve, WWF planned to employ forest guards from local communities. On the basis of Darwin project community mapping work, interviews were conducted and guides hired from Huong Huu, a commune which traditionally uses the area in the south of the new reserve but which had been overlooked because the current location of the villages is fifteen kilometres away.

It is now expected that the impact of project findings on conservation action in the focal area in future will largely be effected via WWF initiatives rather than through direct input to management plans by government agencies (see next section).

#### **4.3: Evaluation of participatory resource-use planning approaches**

Two important components of this activity are receiving feedback from local communities on the nature reserve boundaries and conducting a participatory consultation on community-based conservation suggestions. Both of these have suffered from delays resulting from the timetables of community mapping, and from WWF staff availability due to the demands of other projects. They are now both scheduled for FY3.

#### **4.4: Participatory Resource Use Planning**

No activities were planned or conducted in this financial year

### **4.2 Progress towards project outputs**

#### **Output 1. Improved capacity of Vinh University to produce graduates able to deliver the research components of Vietnam and Lao's contributions to the CBD.**

##### **Indicators**

- Conservation courses developed in Vietnamese university.
- Feedback from Vinh University lecturers and students.

##### **Assumptions**

- Individual lecturers willing to collaborate.
- Individual lecturers maintain new courses after project ends.
- Students appreciate new course content and style of teaching.

Three courses have been developed this year, and translated materials from them have already been integrated into an existing Vietnamese Masters course as modules approved by the Ministry of Education. Two more modules are expected to be produced in FY3. Furthermore the commitment of Vinh University and DICE to collaborating in the development of a new masters course remains strong.

The capacity of lecturers to continue to teach courses remains a topic of concern and securing further funding for Vietnamese lecturers to study in the UK remains a focus for concern. However, we expect that funds will emerge from Vinh University, DICE and/or Cambridge, including support for English language training.

Feedback from students has not yet been sought except informally and verbally. Feedback questionnaires, adapted from DICE, will be sent out in FY3.

A great deal of experience has been gained so far which has built Vinh University's capacity to host foreign lecturers. Translation is a particular issue and guidelines need to be developed for the translation of course materials taking into account the amount of time needed. Project funds for translation have not proved sufficient and support has been required from Vinh University's own funds.

#### **Output 2. Training of two Vietnamese students to MSc level at DICE, 10 Vinh and Hue university masters projects, both Lao and Vietnamese, supervised by DICE, and 20 Vinh and Hue university undergraduate projects supervised by DICE.**

##### **Indicators**

- Students graduate from DICE, and Vinh and Hue, universities.
- Thesis reports from each project.

## Assumptions

- Students with sufficient English skills exist
- Students successfully complete fieldwork.
- Weather and other unknown variables do not prevent completion of fieldwork
- Students obtain permission for fieldwork.

Two students are currently studying at DICE and are expected to finish in September.

Two (Luong Van Duc and Nguyen Thi Thu Hieu) have completed their Masters theses at Hue University with financial and academic support from the project. Two more students from Hue University (Pham Doan Vong and Ta Dinh Thanh) have completed their fieldwork and will defend their theses in the summer. Pham Thi Huyen and Nguyen Trong Dong (Vinh University) will also defend their theses this summer and have completed most of their fieldwork. Three more students at Vinh University have been registered for studentships but have not yet started fieldwork. We have not been able to find any Laotian masters students studying at Vinh who are interested in work relevant to the project's aims. However we plan to work instead with five undergraduate students. William Robichaud, the head of the IUCN Saola Working Group plans to provide academic support to these students to conduct their fieldwork in the autumn of 2011.

In the report for FY1 we expressed the concern that the full number of studentships could not be met due to a fall in the value of the pound. Subsequent fluctuations in exchange rates have led to a more favourable situation and we expect to be able to support 12, rather than 10 studentships by the end of the project.

Vinh University has proved so far to be a particularly useful partner in obtaining permission for fieldwork and we have not encountered any problems as yet.

### **Output 3. Applied research ties all student work together into two outputs: i) models of endemic ungulate distribution across the wider landscape; ii) bio-economic model of hunting and ungulate abundance in the Hue-Quang Nam landscape.**

#### Indicators

- Report and published manuscript on the distribution of endemic ungulates across their range in Vietnam and Lao with recommendations on how to strengthen the two protected area systems to support national pledges to the CBD.
- Report and published manuscript on the bio-economics of the Hue-Quang Nam landscape and its implications for saola conservation at the community, protected area and ecosystem levels.

#### Assumptions

- Permission to publish reports granted by local authorities
- Journals accept submitted manuscripts
- Governments willing to expand the protected area system.

Delays in fieldwork and challenges in analysis have meant that nothing has yet been published. These reports are expected to be published by the end of the project.

All data collected by the project will help inform these reports. The community mapping work has formed the main focus of data collection so far.

The Government of Vietnam has already shown willingness to expand the protected area system by gazetting two new nature reserves within the project focal area. A third new nature reserve, Khe Nuoc Trong, has also been gazetted in Quang Binh province, with protection of a Saola population as one key goal.

Expanding the protected area system is therefore no longer the issue. The question is how much of this area can benefit from sufficient protection to halt the decline of the endemic ungulates. This is primarily a decision for international conservation agencies that can choose how to allocate resources between protected areas. Protected Area management boards can choose where to focus conservation efforts within their boundaries but most PAs in Vietnam are already small by global or even regional standards.

**Output 4. Forest management plans within the Hue-Quang Nam landscape incorporate the results of applied saola research to the benefit of conservation and community benefit sharing mechanisms.**

**Indicators**

- Community forest management systems adapted based on the results of bioeconomic model.
- New protected area management plans incorporate the results of participatory mapping, ungulate and snare distribution surveys and the bio-economic model

**Assumptions**

- Results of research indicate changes to management plans are required.
- Government agencies accept adapted community forestry model.
- Communities willing to conserve endemic ungulates.
- Protected area management boards willing to adapt.

Significant progress is not expected on this outcome until Years 3 and 4 of the project. However changes in WWF's approach over the past year lead us to question now whether the indicators and assumptions given in the proposal will remain appropriate in future.

Originally it was assumed that project findings would be translated to recommendations and communicated directly to decision makers, including FPD and other government stakeholders but also local community groups. These would then be incorporated into official documents or community regulations that would guide future work carried out by local agencies using their own resources. Furthermore, based on WWF's previous work in the area it was assumed that community forest management would continue to be a central component of plans to conserve endemic ungulates.

The situation has changed now in that:

- WWF does not currently expect to hand over a working protected area management system to the Vietnamese government at the end of any current 1-4 year project and expect the government to pay for it. Rather, sustained investment is required over the next 5-10 years, and longer-term funding solutions such as trust funds are being considered.
- Reduced attention is being paid to official documents and signed commitments and perhaps a reduced faith in their power. Instead project proposals and annual workplans are submitted based on an understanding of the area and its issues that is constantly being updated. Protected Area Management plans are practical.
- While WWF continues to support community forestry, it is no longer seen as an important component of species conservation.

Hence, it is expected that the project's outputs will still inform government conservation plans but are more likely to do so through processes facilitated by WWF and/or the Saola Working Group. Direct communication with government agencies is likely to be less important.

### 4.3 Standard Measures

**Table 1 Project Standard Output Measures**

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for this reporting period	Total planned from application
Established codes								
2	Number of people to attain masters qualification		2					
3	Number of people to attain other qualifications		0					
4A	Number of undergraduate students to receive training		0					
4B	Number of training weeks to be provided		0					
4C	Number of postgraduate students to receive training	17	24					
4D	Number of training weeks to be provided	1	26					
6A	Number of other people to receive education/training	3	18					
6B	Number of training weeks	1	4					
7	Number of training materials to be produced	1	4					
8	Weeks to be spent by UK project staff on project work in the host country	32	39					
9	Species/habitat management plans							
10	Field guides/manuals to assist work related to species identification, classification and recording							
11A	Number of papers to be published in peer reviewed journals							
11B	Number of papers to be submitted to peer reviewed journals							

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for this reporting period	Total planned from application
12A	Number of computer based databases to be established and handed over to the host country	2	1					
12B	Number of computer based databases to be enhanced and handed over to the host country							
14A	Number of conferences/seminars/workshops to be organised to present/disseminate findings							
14B	Number of conferences/seminars/workshops attended at which findings from Darwin project work will be presented/disseminated.							
15A	Number of national press releases in host country	x	2					
15B	Number of local press releases in host country	x	2					
15C	Number of national press releases in UK							
17B	Number of dissemination networks to be enhanced/ extended	x						
18A	Number of national TV programmes/features in host country(ies)							
18B	Number of national TV programmes/features in UK							
18C	Number of local TV programmes/features in host country(ies)							
18D	Number of local TV programmes/features in UK							
19A	Number of national radio interviews/features in host county(ies)							

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Total to date	Number planned for this reporting period	Total planned from application
19B	Number of national radio interviews/features in UK							
19C	Number of local radio interviews/features in host country(ies)							
19D	Number of local radio interviews/features in UK							
20	Estimated value (£'s) of physical assets to be handed over to host country(ies)							
23	Value of resources raised from other sources (ie. in addition to Darwin funding) for project work	x						

**Table 2 Publications**

Type (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £

#### 4.4 Progress towards the project purpose and outcomes

##### Purpose

More effective conservation of a globally important ecosystem by

- i) conducting applied conservation research on the highly endemic Annamite ungulate community and threats posed by hunting.
- ii) strengthening the capacity of leading universities within the region to produce well-trained graduates in biodiversity conservation who value traditional knowledge
- iii) influencing on-the-ground community and government forest management systems.

##### Progress

- i) Research into ungulate distributions using community mapping and interview records has been conducted using standard methods. Challenges to data analysis remain to be investigated and so far work has been restricted to Saola because its distinctiveness makes interview records more reliable than for muntjacs. Three separate methods for research into hunting have been developed (patrol data, quadrat-based snare surveys and accompanying hunters to the field) and data are being collected. Again analytical challenges remain to be resolved. Further research programmes, such as companion modelling are to begin in FY3.

- ii) The capacity of Vinh University to deliver courses in key conservation-related subjects has been improved through the training of young lecturers and the provision of Vietnamese language materials. The capacity of Vinh to host foreign lecturers has improved which bodes well for future plans for a joint masters. Eight masters student projects are ongoing or already finished, two of which are from Vietnamese students studying in the UK. All of these projects involve the use of local knowledge and, through the provision of a social science methods course and the Saola survey interview guide the project is actively promoting what we believe is a respectful and realistic attitude to the use of local knowledge in conservation in Vietnam.
- iii) Through involvement with WWF and the Saola Working Group the Project Officer has already made significant contributions to project proposals and other plans for conservation in the project's focal area, even though research findings from the project are still unpublished. The change in approach and level of support from WWF to the focal area suggests that this will be a sensible channel for future input to conservation decisions.

### **Outcomes**

- Clear understanding of how to reconcile hunting, livelihoods and conservation through a bio-economic model.
- First accurate understanding of distribution and habitat of endemic ungulates across northern Annamites
- Capacity of research organisations enhanced through UK MSc training of two trainers and support in developing courses.
- 10 Vietnamese and Laotian Masters and 20 undergraduate projects supervised by UK experts.
- Forest management plans incorporate needs of ungulate species and local people.

These outcomes are still relevant although it is possible that we will fall short of the goal for number of undergraduate projects.

Advances in data collection and analytical methods over the next year will determine the form of the first two outcomes.

### **4.5 Progress towards impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits**

As a research and training project, we expect that it will take time before concrete benefits in any of these three fields can be demonstrated. However, by the end of the project we expect to be able to confidently show the impacts of project research on conservation decisions.

## **5. Monitoring, evaluation and lessons**

Plans for monitoring remain as documented in the project proposal. Most monitoring relates to the publication of research and its impact on conservation decisions which is not relevant to the work conducted so far.

The degree certificates of the first two masters students to have completed their theses have been collected. Review of the issues in the data collected by the students will be conducted as part of the preparation of the work for publication. This will begin once the full community mapping dataset is available, in FY3.

Questionnaires will be produced in FY3 to review all short courses and provide lessons for the future. These lessons will be useful to future collaboration between Vinh University and overseas institutions, including DICE and Cambridge.

## 6. Actions taken in response to previous reviews (if applicable)

Not applicable

## 7. Other comments on progress not covered elsewhere

No comments.

## 8. Sustainability

The developments discussed in section 3 relating to the role of WWF and the IUCN-Saola Working Group and again in section 4.2 relating to Output 4 are likely to affect the project's exit strategy that will be reconsidered at the next steering committee meeting in FY3.

## 9. Dissemination

No dissemination activities were scheduled for this year. Formal dissemination of results is expected to begin in FY3 with the production of reports but will mostly occur at the end of the project. However, in the meantime, project findings continue to impact conservation plans and actions through informal channels.

## 10. Project Expenditure

**Table 3 project expenditure during the reporting period (1 April 2010 – 31 March 2011)**

Item	Budget	Expenditure	Variance/ Comments
<i>Staff costs specified by individual</i> Wilkinson, Project Officer, Cambridge Brook, Project Supervisor WWF Thinh, Project Manager WWF Admin staff WWF Trung, Project coordinator Vinh Khanh, Admin Vinh			
<i>Overhead costs</i> Institutional overheads Office rental, heating etc.			
<i>Travel and subsistence</i> International travel National travel Fieldwork travel/subsistence			
<i>Operating costs</i> Conferences, workshops, seminars Fieldwork operating costs			
Capital items/equipment (specify)			
Others: Consultancy			
<i>Others (please specify)</i> Studentships			
TOTAL			

There is an overspend because the actual expenditure for staff costs for Nicholas Wilkinson are higher than budgeted.

11. **OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes**

## Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2010-2011

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
<p><b>Goal:</b> <i>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</i></p> <p>⇒ The conservation of biological diversity,            ⇒ The sustainable use of its components, and            ⇒ The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</p>		<p>Not yet applicable. Impacts are expected with publication of research findings and (beyond project lifespan) from training provided to Vietnamese conservationists.</p>	
<p><b>Purpose</b>  <i>More effective conservation of a globally important ecosystem by i) conducting applied conservation research on the highly endemic Annamite ungulate community and threats posed by hunting, ii) strengthening the capacity of leading universities within the region to produce well-trained graduates in biodiversity conservation who value traditional knowledge and iii) influencing on-the-ground community and government forest management systems.</i></p>	<ul style="list-style-type: none"> <li>• <b><i>Clear understanding of how to reconcile hunting, livelihoods and conservation through a bio-economic model.</i></b></li> <li>• <b><i>First accurate understanding of distribution and habitat of endemic ungulates across northern Annamites</i></b></li> <li>• <b><i>Capacity of research organisations enhanced through UK MSc training of two trainers and support in developing courses.</i></b></li> <li>• <b><i>10 Vietnamese and Laotian masters and 20 undergraduate projects supervised by UK experts.</i></b></li> <li>• <b><i>Forest management plans incorporate needs of ungulate species and local people.</i></b></li> </ul>	<p>Key research efforts so far have been community mapping (largely completed in the focal area and being applied in other parts of the full project area) and research into snaring patterns (three independent methods developed). Progress has been made on analytical techniques relating to the use of uncertain data in conservation planning and to analysis of data collected by patrol teams but there is more to do.</p> <p>Training aspects of the project have proceeded well with three new short courses accepted as new modules by Vinh University and the ministry of education.</p>	<p>Research into snaring patterns will continue in the first four months of year 3 and further input from the project officer will be given into student research projects involving community mapping. A 'hunting game' for companion modelling will be produced and trials. Students or consultants will be found to continue some of the data collection.</p> <p>From September 2011 to February 2012 (subject to SC approval) the project officer will spend time in Cambridge in order to develop key analytical techniques.</p> <p>Courses will be given in Economics for conservation, Conservation management and Wildlife trade.</p>
<p><b>Output 1.</b> Improved capacity of Vinh University to produce graduates able to deliver the research components of Vietnam and Lao's contributions to the CBD.</p>	<ul style="list-style-type: none"> <li>• <i>Conservation courses developed in Vietnamese university.</i></li> <li>• <i>Feedback from Vinh University lecturers and students.</i></li> </ul>	<p>Three courses developed this year and Vietnamese language teaching materials produced. Courses accepted by Ministry of Education as modules to be taught in future. A questionnaire needs to be designed to receive feedback from lecturers and students.</p>	
<p><b>1.1:</b> <i>Identify gaps in current syllabuses</i></p>		<p>Plan developed for new masters course syllabus including modules developed by project. Remaining courses will be delivered next year and discussions will be held on possible future DICE-Vinh joint masters</p>	

**NB:** This revised logframe is still subject to review at the next SC meeting. Changes from the logframe in the FY1 report are highlighted in blue.

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
<b>1.2:</b> Planning workshop with staff from DICE and Vinh university		Completed in FYI but further discussions expected to occur in FY3	
<b>1.3:</b> Lectures by DICE staff at Vietnamese universities		One open lecture given but this activity no longer considered a priority, with the aim of concentrating on short courses.	
<b>1.4:</b> Development of new teaching materials		Materials from 3 courses revised, corrected and published online as Vietnamese language training materials in GIS, Social survey methods and Ecological survey methods	
<b>1.5:</b> Training for Vietnamese university staff		Young lecturers have attended short courses. Next FY should see discussions about supporting Vinh staff to study abroad with other funds.	
<b>Output 2.</b> Training of two Vietnamese students to MSc level at DICE, 10 Vinh and Hue university masters projects, both Lao and Vietnamese, supervised by DICE, and 20 Vinh and Hue university undergraduate projects supervised by DICE.	<ul style="list-style-type: none"> <li>Students graduate from DICE, and Vinh and Hue, universities.</li> <li>Thesis reports from each project.</li> </ul>	Two students studying at DICE have completed the taught programme and are about to begin their research projects. Two students at Hue University have been awarded masters degrees by the Hue University of Science based on the research supported by the project. Seven more masters students are currently supported by the project in Vietnam of which two have completed their fieldwork	
<b>2.1:</b> Community mapping training (10 masters students and FPD staff)		Completed in FY1, though some extra training was provided under 2.3 below.	
<b>2.2:</b> Training in GIS (students, FPD and university staff)		One 7-day course led by Dr Le Tran Chan of the Vietnamese Geography Institute was attended by 16 students and 4 rangers.	
<b>2.3:</b> Training in basic ecological survey methods (students, FPD and university staff)		One 7-day course led by Dr David Sewell of DICE was attended by 19 students and 9 rangers. The course focused on statistics and study design.	
<b>2.4:</b> Training in basic social survey methods (students, FPD and university staff)		One 7-day course led by Dr Rajindra Puri of DICE was attended by 14 students and 6 rangers. The course included 4 days fieldwork in a Thai ethnic village.	
<b>2.5:</b> Conservation Biology training at DICE (1 Masters student) (will include training relevant to landscape-wide snare and habitat surveys)		Two students from the Vietnamese partner institutions (one from WWF and one from Thua Thien Hue FPD) have completed their taught course at DICE and have developed relevant research proposals.	
<b>2.6:</b> Wildlife trade training at DICE (1 Masters student) (will include training relevant to research into hunting patterns)		Both students have take the Conservation Biology course.	
<b>2.7:</b> Training in analysis and interpretation of monitoring and other management data (FPD staff)		8 Staff from 3 nature reserves attended a one-week training course in the software MIST for monitoring data collected by enforcement teams.	
<b>Output 3.</b> Applied research ties all student work together into two outputs: <ul style="list-style-type: none"> <li>i) models of endemic ungulate distribution across the wider landscape;</li> <li>ii) bio-economic model of hunting and</li> </ul>	<ul style="list-style-type: none"> <li>Report and published manuscript on the distribution of endemic ungulates across their range in Vietnam and Lao with recommendations on how to strengthen</li> </ul>	Data towards these publications has been collected through community mapping in the Hue-Quang Nam landscape and the Pu Huong Nature Reserve and through data collection on snare distribution patterns through independent surveys and analysis of patrol data. Progress has been made in developing and standardizing data collection and analysis techniques but more work is needed. Publication is	

**NB: This revised logframe is still subject to review at the next SC meeting. Changes from the logframe in the FY1 report are highlighted in blue.**

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
<i>ungulate abundance in the Hue-Quang Nam landscape.</i>	<p>the two protected area systems to support national pledges to the CBD.</p> <ul style="list-style-type: none"> <li>Report and published manuscript on the bio-economics of the Hue-Quang Nam landscape and its implications for saola conservation at the community, protected area and ecosystem levels.</li> </ul>	expected at the end of the project.	
3.1: Construct range-wide database		Development of database for Hue – Quang Nam landscape has progressed but its final form awaits the development of a method for mapping these uncertain data. Meanwhile students in north-central Vietnam are collecting Saola records using the database form.	
3.2: Construction of Participatory GIS		Local place name GIS layer is being produced. Next year will see maps given back to the villagers with support from WWF's parallel CEPF-funded project.	
3.3: Expert workshop		To be held at beginning of Fy3	
3.4: Community mapping in Hue – Quang Nam		Data collection is complete and data are now being entered.	
3.5: Range-wide community mapping		Has begun in Pu Huong Nature reserve by masters students supported by the project. Other student projects will expand to Vu Quang, Pu Mat and in key areas in Lao in FY3	
3.6: Species distribution modelling		Have investigated analytical methods using software ZONATION for processing results of modelling using uncertain data (interview records). In FY3 hope to investigate Monte-Carlo sampling within ArcGIS to run the models	
3.7: Specific training for research into hunting patterns		To begin in FY3	
3.8: Landscape-wide snare and habitat surveys		Enforcement patrols in three protected areas collecting data on snares using datasheet and database designed by the project (database designed within MIST system). Preliminary work on analysing these data conducted in collaboration with intern from the Catholic University of Louvain, Belgium and using data from an established WWF enforcement project in Cambodia. Independent snare survey method developed and conducted in Bach Ma extension by masters student & Bach Ma staff member Pham Doan Vong. Plans in FY3 to expand this work to the other reserves and to further work on the appropriate analytical method for patrol data.	

**NB: This revised logframe is still subject to review at the next SC meeting. Changes from the logframe in the FY1 report are highlighted in blue.**

Project summary	Measurable Indicators	Progress and Achievements April 2010 - March 2011	Actions required/planned for next period
3.9: Targeted Saola surveys		SC has decided not to conduct any high-intensity survey. Collection protocols for sign have been developed for ranger patrols and students conducting snare surveys in case of accidental encounter.	
3.10: Bio-economic modelling		Work by the Project Officer, with support from Cambridge academic staff to develop appropriate methods. Key developments in ideas are use of decision analysis to focus on critical aspects of the system and use of companion-modelling to provide direct input to the model from local people and law enforcement staff. FY3 will see these ideas put into practice. More time in Cambridge is needed for developing the model.	
<b>Output 4.</b> Forest management plans within the Hue-Quang Nam landscape incorporate the results of applied saola research to the benefit of conservation and community benefit sharing mechanisms.	<ul style="list-style-type: none"> <li>• Community forest management systems adapted based on the results of bioeconomic model.</li> <li>• New protected area management plans incorporate the results of participatory mapping, ungulate and snare distribution surveys and the bio-economic model</li> </ul>	Due to changes in the approach and level of involvement of WWF it will be necessary in FY3 to re-think the process by which project research outputs impact conservation decisions (see section 4.2)	
4.1: Research planning workshops		Three-day international workshop held in Hanoi to share experience and discuss approaches and minimal standards for enforcement in forested mountainous landscapes in South-East Asia. This technical discussion has already fed into WWF plans, including recommendations to nature reserves and FPD in the Saola landscape and will continue to do so. It has clarified the issues for research to support effective enforcement in the area.	
4.2: Protected area management planning & zonation		Two new protected areas established. WWF engaged in active technical discussion on management in the context of major new projects in the area. This project has had input to both these processes.	
4.3: Evaluation of participatory resource-use planning approaches		Key activities have been delayed due to delays in completion of community mapping and wildlife trade work (separate WWF project requiring staff time) but will proceed in FY3	
4.4: Participatory Resource Use Planning		No activities planned or conducted in this FY	

**NB: This revised logframe is still subject to review at the next SC meeting. Changes from the logframe in the FY1 report are highlighted in blue.**

## Annex 2: Project's full current logframe

	Main partner	2009			2010			2011			2012			
		FY1	FY2	FY3	FY4	FY1	FY2	FY3	FY4	FY1	FY2	FY3	FY4	
Activities		9	10–12	1–3	4–6	7–9	10–12	1–3	4–6	7–9	10–12	1–3	4–6	7–8
Identify gaps in current syllabuses	Vinh	.	■ ■ ■	■ ■ ■	.	.	.	.	.	.	.	.	.	.
Planning workshop	Vinh	.	.	■ ■ ■	.	.	.	.	.	.	.	.	.	.
Lectures by DICE staff at VN universities	Vinh	.	.	.	■ ■ ■	.	.	■ ■ ■	■ ■ ■	.	.	.	.	.
Development of new teaching materials	Vinh	.	.	.	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	.	.	.
Training for VN university staff	Vinh	.	.	.	.	.	■ ■ ■	■ ■ ■	■ ■ ■	.	.	.	■ ■ ■	.
Community mapping training	Vinh	.	.	■ ■ ■	.	.	■ ■ ■	.	.	.	.	.	.	.
Training in GIS	Vinh	.	.	.	.	.	■ ■ ■	.	.	.	.	.	.	.
Training in basic ecological survey methods	Vinh	.	.	.	.	.	■ ■ ■	.	.	.	.	.	.	.
Training in basic social survey methods	Vinh	.	.	.	.	.	■ ■ ■	.	.	.	.	.	.	.
Conservation Biology training at DICE	Vinh	.	.	.	.	.	■ ■ ■	■ ■ ■	.	■ ■ ■	.	.	.	.
Wildlife trade course at DICE	Vinh	.	.	.	.	.	.	.	.	.	.	.	.	.
Training in analysis/interpretation of monitoring data	WWF	.	.	.	■ ■ ■	.	.	■ ■ ■	.	.	■ ■ ■	.	■ ■ ■	.
Construct range-wide database	WWF	.	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	.	.	.	.	■ ■ ■	.	.	.
Construction of PGIS	WWF	.	■ ■ ■	■ ■ ■	.	.	.	.	■ ■ ■	.	■ ■ ■	.	.	.
Expert workshop	WWF	.	.	.	.	.	.	.	■ ■ ■	.	.	.	.	.
Community mapping in Hue – Quang Nam	WWF	.	.	■ ■ ■	■ ■ ■	■ ■ ■	.	■ ■ ■	.	.	.	.	.	.
Range-wide community mapping	Vinh	.	.	.	.	.	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	.	.
Species distribution modelling	WWF	.	.	■ ■ ■	■ ■ ■	■ ■ ■	.	.	.	.	■ ■ ■	■ ■ ■	.	.
Specific training for research into hunting patterns	WWF	.	.	.	.	.	.	.	■ ■ ■	.	.	.	.	.
Landscape-wide snare and habitat surveys	WWF	.	.	.	.	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	.
Targeted Saola surveys	WWF	.	.	.	.	.	.	.	.	.	.	.	.	.
Bio-economic modelling	WWF	.	.	.	■ ■ ■	.	.	.	■ ■ ■	.	■ ■ ■	■ ■ ■	.	■ ■ ■
Research planning workshops	WWF	■ ■ ■	.	■ ■ ■	.	.	.	■ ■ ■	.	.	.	■ ■ ■	.	■ ■ ■
Protected area management planning & zonation	WWF	.	.	■ ■ ■	■ ■ ■	■ ■ ■	.	.	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■	■ ■ ■
Evaluation of participatory planning approaches	WWF	.	.	■ ■ ■	.	.	.	.	.	.	.	.	■ ■ ■	■ ■ ■
Participatory Resource Use Planning	WWF	.	.	.	.	.	.	.	■ ■ ■	■ ■ ■	.	.	.	.

**NB: This revised logframe is still subject to review at the next SC meeting. Changes from the logframe in the FY1 report are highlighted in blue.**

### **Annex 3; Onwards – supplementary material (optional but encouraged as evidence of project achievement)**

This may include outputs of the project, but need not necessarily include all project documentation. For example, the abstract of a conference would be adequate, as would be a summary of a thesis rather than the full document. If we feel that reviewing the full document would be useful, we will contact you again to ask for it to be submitted.

It is important, however, that you include enough evidence of project achievement to allow reassurance that the project is continuing to work towards its objectives. Evidence can be provided in many formats (photos, copies of presentations/press releases/press cuttings, publications, minutes of meetings, reports, questionnaires, reports etc) and you should ensure you include some of these materials to support the annual report text.

## Checklist for submission

	Check
<b>Is the report less than 5MB?</b> If so, please email to <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> putting the project number in the Subject line.	Yes
<b>Is your report more than 5MB?</b> If so, please discuss with <a href="mailto:Darwin-Projects@ltsi.co.uk">Darwin-Projects@ltsi.co.uk</a> about the best way to deliver the report, putting the project number in the Subject line.	No
<b>Have you included means of verification?</b> You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	No
<b>Do you have hard copies of material you want to submit with the report?</b> If so, please make this clear in the covering email and ensure all material is marked with the project number.	No
Have you involved your partners in preparation of the report and named the main contributors	Yes
Have you completed the Project Expenditure table fully?	Yes
Do not include claim forms or other communications with this report.	