

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 – Submission deadline 30 April 2007

Darwin Project Information

Project Ref Number	14 - 036
Project Title	Conserving the Southeast Asian Guano Bat – Sustaining Livelihoods Across Borders
Country(ies)	Myanmar (Burma), Thailand, Cambodia, Vietnam
UK Contract Holder Institution	University of Aberdeen
UK Partner Institution(s)	
Host country Partner Institution(s)	Yangon University, Prince of Songkhla University, WCS Cambodia, University of Hanoi
Darwin Grant Value	£142k
Start/End dates of Project	1 st June 2005 – 31 st May 2008
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	1 st April 2006 – 31 st March 2007. Annual Report 2.
Project Leader Name	Dr I. Mackie
Project website	Under construction
Author(s), date	Dr I. Mackie, Prof. Daw Tin Nwe, Dr Vu The Long

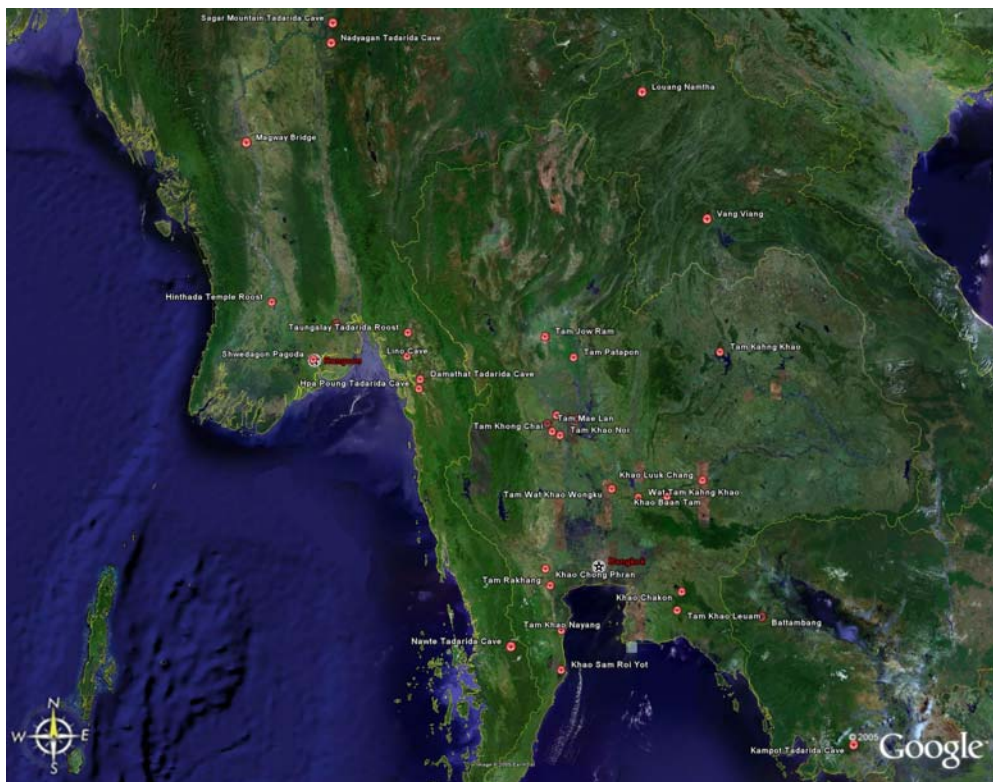
1. Project Background

The project is concentrated in Myanmar (Burma) and Thailand and includes Cambodia and Vietnam where the Southeast Asian guano bat, *Tadarida plicata*, provides a livelihood for local peoples who collect guano and use or sell it as an agricultural fertiliser. Across its range *Tadarida plicata* suffers from varying levels of harvesting, disturbance and exploitation. Because it forms massive colonies and moves seasonally between roost sites a regional conservation and management programme is needed to ensure this sustainable relationship. The project seeks to a) set up a monitoring system and conservation network of roost owners and researchers and b) conduct research to quantify economic impact and maximise benefits to all concerned by providing best practice guidelines for the collection and use of guano.

Further research seeks to establish whether *Tadarida plicata* is a migratory species qualifying for inclusion in the Convention on Migratory Species and international legislative protection.

The purpose of the project is to protect the Southeast Asian guano bat and the sustainable livelihoods it provides through a trans-boundary network of researchers, local guano collectors and international treaty (CMS). Project outputs are repeatable accurate population estimates at key roosts, village stewardship agreements and in country capacity building of 12 Darwin Trainees.

Known Major Roosts in SE Asia



2. Project Partnerships

Myanmar (Burma): The strong partnership with Yangon University Zoology Department continues with another PhD student and 2 MSc students starting on the project this year. The guano bat research group is working well, data has been collected for CBD commitment purposes and relationships between the bat group and roost owners/communities have been cemented. Two MSc theses and one PhD thesis directly related to CBD commitments were successfully defended (hard copies have been sent to DI). However, there have been some unexpected developments within the Zoology department at Yangon. Over the course of the year the in country partner retired twice, being reinstated a week after her first retirement (see half year report). This development has had no real detrimental effect because of a good relationship with the current acting head of department. However, a new head of department will be assigned the post and it is not known how this will affect the project in Myanmar (Burma). In order to be a more effective partner, and in discussion with Myanmar(Burma) partners, I have spent time building my own capacity to conduct workshops and lectures on basic statistics and paper writing for Zoology department staff. This has meant a shift in focus for me from field research to Departmental duties in Yangon.

Thailand: My Postdoc has been working extensively with the Thai based research students. The main drive to ensure sustainability and impact here is to initiate a partnership with the government Wildlife department and after talks and agreement funds have been sought to establish a joint post

Partnership in Cambodia with WCS has moved forward greatly with the establishment of a jointly funded field officer Yim Saksang. He has received training and conducted field research and is also an excellent communicator and participant in local awareness. Again I am seeking more funds to secure his position.

The Vietnam partnership is still strong even though there are no identified *Tadarida* roosts where guano is collected. It is believed heavy hunting has resulted in only small colonies being found. However, the trainees have identified other insectivorous bats from which guano is collected, all be it on a smaller scale, and are applying the same techniques to these.

Collaboration with other projects include inclusion in a forthcoming regional conference on SE Asian bats where I will chair a session and 3 trainees (Myanmar, Thailand and Cambodia) will present findings.

3. Project progress

3.1 Progress in carrying out project activities

Repeatable accurate population estimates: Key roosts selected for regular monitoring have been visited three times per year, one per season (although seasons vary depending on country). A database has been established in Myanmar where Aye Thi Da is conducting her PhD on validating monitoring techniques and estimating population size and recordings and photos from each country are passed to her. A manuscript is now in preparation which will validate the use of these techniques in estimating population size and present actual population estimates made under standardized conditions. Noteworthy progress has been made in Cambodia where a new co-funded project officer has been successful in increasing the number of known roosts from 2 to 8 with excellent recordings of emerging bats.

Village stewardships: Our approach to stewardships is evolving rapidly. The challenge here is that almost every roost has a different situation concerning ownership, local governance use and perceived value etc. Meaningful stewardship agreements can only be achieved when there is a good understanding of all the factors involved. And this takes time and trust. It is also usually the Darwin Trainee that is pivotal in this situation and all concerned have made good progress in this respect. We have sought to validate the information we obtain and so have concentrated our semi-structured interviews on economics and structure of the trading. If villagers give honest financial details it usually means there is trust. By forward and backward tracking of transactions we are able to get a far more accurate picture of the socio-economics and also by highlighting where appropriate where profits can be increased a great deal of trust has been earned. We have also identified key roosts which are under threat from unsustainable harvesting and particular attention and education and awareness programmes have been initiated at these sites.

Training 12 trainees: This output is more easily measured and progressing well. In Myanmar and Thailand existing core trainees have continued to research population estimation, diet, economics and habitat use. Two new MSc students and a new PhD student have been trained in Myanmar and are working well. 4 theses have been produced and successfully defended and have copies have been mailed with this report. The PhD was highly commended for its originality by the external examiner. This PhD study began in 2004 and was the original stimulus for this project. Dr Nu Nu Aye has now transferred to Myiek University in Southern Myanmar(Burma) where she has already established a new bat research group with postgraduates. Of particular note was a highly successful project conference which was essentially a field workshop at a known roost attended by 15 trainees, partners and staff.

3.2 Progress towards Project Outputs

Repeatable accurate population estimates: this output is on track with database established and technique manuscript in preparation.

Village stewardships: this output needs revision and we are very interested in taking up the reviewers' offer of advice on this matter. Our view is that the management of this output adapts but we have been more concerned with adapting it than feeding those adaptations back into the log frame.

Training 12 trainees: 4 theses produced, three PhDs underway, 5 MSc's underway and one field officer in Cambodia.

3.3 Standard Output Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	TOTAL
1AB	Submit and attain PhD		1 My			
2	MSc attainment		2 My			
3	BSc		1 Vn			
4A	Undergraduate Training	1Vn				
4C	Postgraduate training	4 My 2 Thai 1 Vn	6 My 2Thai 2Vn			
4 D	Training weeks	22	24			
5	1 year training non academic		1 Cam			
8	Incountry weeks	22	24			
12A	Database established		1			
14A	Project Conference	1	1			
15AB	Press release	2	2			
17AB	networks	2	2			
20	Asset Transfer	£7000	£2500			
23	Matched Funding	£3800	£6500			
New - Project specific measures						

Table 2 Publications

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

3.4 Progress towards the project purpose and outcomes

The purpose is to protect the guano bat and the livelihoods it provides. Progress in physical protection has been made at local level around every roost that has been visited. Everywhere the project touches awareness is raised about the value of bats. This raises their profile on local agendas and will have a lasting impact. Measuring this in a meaningful way however is difficult. At key sites where harvesting occurs we are trying to measure change in attitude. And perhaps this can be included as an indicator of success. Livelihood protection should progress from a combination of physical protection (so the bats are always there to supply the guano) and from an understanding of use, value and trading mechanisms to ensure livelihoods are sustainable and profits are equitably shared.

3.5 Progress towards impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

Capacity is being built highlighted by the doctorate of Dr Nu Nu Aye and her establishing a new research group focussed on biodiversity. Unsustainable harvesting is being addressed where it is found using a combination of research and awareness to demonstrate the value of the animals that are lost and the unsustainable removal of animals from the population. The human populations living with the bats are seeing benefits increase where prices are renegotiated because of better understanding of trade structure and where beneficial ethnobiological information on how to use guano as a fertilizer is exchanged along the network.

4. Monitoring, evaluation and lessons

Monitoring and evaluation of training and capacity building is continuously conducted during joint field research and production of theses and manuscripts. My postdoc and I have spent a great proportion of our time working with trainees to improve English and statistics skills. It is hoped that some but not all, will be able to publish their own peer reviewed manuscripts. Lessons learned here concern structure of teaching in sampling statistics and writing up results at an early stage.

Evaluation and monitoring of the stewardships has been discussed previously in this report. Actual hard copy details of stewardships include video pledges and local agreements where appropriate but evaluating whether the magnitude of the impact is problematic, because it is not possible to assess before and after intervention in any meaningful way. Critical roosts where threats have been identified are different and here care has been taken to assess the situation before and after agreements and awareness has taken place.

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

The previous review highlighted a need to balance the nature science research with more social science aspects. This resulted in a drive to collect more socio-economic and ethnobiological information that can be applied. Furthermore links with NGOs have been strengthened with the joint field officer in Cambodia and with a move to involve local NGOs in Vietnam. Links are also being formed with an ARCworld project in Cambodia an avenue suggested by the reviewer.

6. Other comments on progress not covered elsewhere

Noteworthy refining of methods would be the socio-economics and structure of the guano trade and its interpretation to maximise benefits where it is needed.

The most significant problem encountered is obtaining matched funding and this has limited what trainees are able to achieve and at times dented confidence. All major requests for funding have been declined. I will seek to rectify this by improving and increasing applications.

There are no terminal risks but the project could do more with sufficient backing.

7. Sustainability

Again here the sustainability of the project is related to how stewardships are agreed in the long term. Interest is increasingly coming from development organisations, for example DANIDA in Cambodia and Vietnam are interested in how recommendations can be taken forward. The WCS field officer has been invited to present his findings at a workshop on alternative livelihoods and this avenue will be explored further.

8. Dissemination

Dissemination takes place through the network of roost owners and researchers and this will continue in Myanmar where the Yangon bat research group has been firmly established and other groups are being formed. In Thailand collaboration with the Wildlife Department should result in long term commitment to continue after the life of the project.

9. Project Expenditure

Table 3 Project expenditure during the reporting period (Defra Financial Year 01 April to 31 March)

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

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2006/07

Project summary	Measurable Indicators	Progress and Achievements April 2006 - March 2007	Actions required/planned for next period
<p>Goal: <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><i>The conservation of biological diversity,</i></p> <p><i>The sustainable use of its components, and</i></p> <p><i>The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</i></p>			<p><i>(do not fill not applicable)</i></p>
<p>Purpose</p> <p>The Southeast Asian guano bat and the sustainable livelihoods it provides protected through a trans-boundary network of researchers, local guano collectors and international treaty (CMS).</p>	<p>Population monitoring system for major roosts functioning by year 3. Research quantifying effects of disturbance and economic benefit of insect pest control. Effective best practice management and implementation of village stewardship agreements by year 3. <i>Tadarida plicata</i> scheduled for inclusion, in Appendix II of the CMS by year 3.</p>	<p>Major roosts identified and monitoring continues. Manuscript on population estimation techniques in prep. Diet and consumption of pests manuscript in prep. Village stewardship agreements progressing.</p> <p>Molecular comparisons of seasonal and permanent colonies across continent, carried out at UA, is inconclusive in confirming migration.</p>	<p>Manuscripts produced by in country researchers on population monitoring economic and ecosystem benefits.</p> <p>Increase participation of villagers in stewardship agreements. Especially Cambodia.</p> <p>Continue to demonstrate migration using number of techniques.</p>
<p>Output 1.</p> <p>Repeatable accurate population estimates obtained for major colonies in all countries by in-country biologists.</p>	<p>4 core staff in Thailand and Myanmar and at least 2 core staff in other host countries trained to monitor major colonies and quantify economic benefits.</p>	<p>This object is progressing well. Key roosts have been selected because of their size, location and stewardship which should allow repeatable monitoring to continue over a large time scale. The roost monitoring database has been established in Yangon where a PhD is being carried out specifically looking at validating population estimation techniques. Real progress has been made in Cambodia where the WCS field officer</p>	

		has increased the number of known roosts from 2 to 8.
<p>Activity 1.1</p> <p>Areas identified for new roost searches. Protocol and equipment (x2) for counting bats established. Yr 1: 10 principal roosts counted in different seasons, disturbance and economic benefits assessed. Yr 2,3: Further major roosts monitored, disturbance and economic benefits assessed.</p>		<p>New roost searches have resulted in around a dozen new roost discoveries, mainly in Myanmar and Cambodia but also in Thailand. No large roosts have been found in Vietnam. Two sets of monitoring equipment have been established. One set is permanently in Myanmar, the other is used in both Thailand and Cambodia. Seasonal counts are progressing well as is technique. Economic benefits have been assessed (see PhD) and manuscripts in prep. Major threats from harvesting have been identified in Myanmar and Cambodia and an awareness and education programme has been initiated</p>
Activity 1.2,		
<p>Output 2.</p> <p>Village Stewardship Agreements in place and functioning</p>	<p>Strategy developed by villagers around 10 key roosts in conjunction with Darwin Trainees</p>	<p>It has been interesting and challenging to progress this output. The real challenge is how to approach the varied ownership models for each cave and country.</p>
<p>Activity 2.1. Finalised villager questionnaire. Yr 2: Develop village conservation stewardship agreements on the basis of information collected in Yr1. Yr 3 Establish village stewardship network and raise awareness.</p>		<p>At every roost visited information is obtained on ownership/stewardship and to clarify the best way to progress with agreements. Agreements can take time and so identification of problem roosts and finding a solution there has taken priority. The methodology of this activity is progressing in Cambodia where WCS field staff are proving invaluable</p>
Activity 2.2.		
<p>Output 3.</p> <p>Training of 12 Darwin trainees</p>	<p>12 members trained and able to carry out all aspects of the project by Yr3.</p>	<p>Core team continue to work on major outputs, new team members trained and carrying out duties, 4 theses successfully defended, 1 new independent research group established.</p>

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal:</p> <p>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: none"> • the conservation of biological diversity, • the sustainable use of its components, and • the fair and equitable sharing of benefits arising out of the utilisation of genetic resources 			
<p>Purpose</p> <p>The Southeast Asian guano bat and the sustainable livelihoods it provides protected through a trans-boundary network of researchers, local guano collectors and international treaty (CMS).</p>	<p>Population monitoring system for major roosts functioning by year 3.</p> <p>Research quantifying effects of disturbance and economic benefit of insect pest control</p> <p>Effective best practice management and implementation of village stewardship agreements by year 3.</p> <p><i>Tadarida plicata</i> scheduled for inclusion, in Appendix II of the CMS by year 3.</p>	<p>Population estimates, methods for monitoring <i>T. plicata</i>, and research results published in peer-reviewed journals.</p> <p>Reports and video pledges of village stewardship agreements by partner organisations and in country NGO's.</p> <p>CMS Appendix II.</p>	<p>The bats can be reliably counted.</p> <p>Disturbance effects can be quantified.</p> <p>Insect pest species are consumed and their economic impact can be quantified.</p> <p>Local villagers are amenable to stewardship.</p> <p>Governments remain supportive of the project.</p> <p><i>Tadarida plicata</i> is a migratory species.</p>
<p>Outputs</p> <p>Repeatable accurate population estimates obtained for major colonies in all countries by in-country biologists.</p>	<p>4 core staff in Thailand and Myanmar and at least 2 core staff in other host countries trained to monitor major colonies and quantify economic benefits.</p>	<p>Monitoring database</p> <p>Field reports</p> <p>Publications</p> <p>Species Action Plan</p>	<p>Trainees are not transferred to different institutions. Suitable individuals can be found in all countries.</p>

Village Stewardship Agreements in place and functioning	Strategy developed by villages around 10 key roosts in conjunction with Darwin Trainees	Reports, video pledges from village meetings	Villagers are willing to participate
Training of 12 Darwin trainees	12 members trained and able to carry out all aspects of the project by Yr3.	Outputs from monitoring:- database, guidelines and publications	Trainees are not transferred or cannot attend courses.
Activities Workshops/ courses:	Activity Milestones (Summary of Project Implementation Timetable) Yr 1, 2: Project planning/selection core international team. Workshops/courses on population monitoring, GIS, bat ecology, insect sampling. Yr 2, 3: courses on ecotourism and conservation, stewardship and awareness workshops.		
Field Research Programme	Areas identified for new roost searches. Protocol and equipment (x2) for counting bats established. Finalised villager questionnaire. Yr 1: 10 principal roosts counted in different seasons, disturbance and economic benefits assessed and villagers questioned. Yr 2,3: Further major roosts monitored, disturbance and economic benefits assessed .		
Village Stewardships	Yr 2: Develop village conservation stewardship agreements on the basis of information collected in Yr1. Yr 3 Establish village stewardship network and raise awareness.		

