

Darwin Initiative Annual Report

Darwin Project Information

Project Ref Number	15/018
Project Title	Developing land snail expertise in South and Southeast Asia
Countries	Sri Lanka, India, Nepal, Thailand, Laos, Vietnam, Malaysia
UK Contract Holder Institution	The Natural History Museum, London (NHM)
UK Partner Institution(s)	University of Nottingham
Host country Partner Institution(s)	The Wildlife Heritage Trust (WHT), Sri Lanka Ashoka Trust for Research in Ecology and the Environment (ATREE), India Centre for Biological Conservation (CBC), Nepal Chulalongkorn University, Thailand National University of Laos Hanoi University, Vietnam Universiti Sains Malaysia
Darwin Grant Value	£262,657
Start/End dates of Project	Start date: 1 May 2006 End date 30 April 2009
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	Annual Report 1
Project Leader Name	Fred Naggs
Project website	www.nhm.ac.uk/tropicalsnails
Author(s), date	Fred Naggs in consultation with Dinarzarde Raheem and the following project leaders: Somsak Panha (Thailand); Rohan Pethiyagoda (Sri Lanka); N. Aravind (India); Prem Budha (Nepal); .30 th June 2007

1. Project Background

The Mollusca are second only to insects in terrestrial diversity. They are powerful research tools in evolutionary biology and for understanding patterns of global biological diversity and conservation needs. They are sensitive indicators of habitat change as exemplified by the fact that there are more recorded extinctions of land snails than for all other animal groups combined. There are few terrestrial malacologists world wide and very few in tropical countries where the greatest diversity of species occurs. This project seeks to build expertise and capacity in land snail work in South and Southeast Asia to foster regional cooperation and build on the regional centre of expertise available at Chulalongkorn University, Thailand

2. Project Partnerships

Thailand

The main regional partnership for Southeast Asia is with Professor Somsak Panha and colleagues at Chulalongkorn University. We communicate on a daily basis, work together very closely in running and developing the project and jointly edit *The Natural History Journal of Chulalongkorn University*.

Laos, Vietnam, Malaysia

Prof. Panha has direct responsibility for day to day coordination with other project partners in Southeast Asia. The partnership in Cambodia did not get off the ground and, in consultation with the Darwin Secretariat, we established a replacement partnership in Malaysia. The Malaysian and Vietnamese partnerships are progressing extremely well with field programmes in place and joint surveys in progress. The partnership in Laos is more limited and relies on direct participation with Thai partners. In the original application we recognised that partnerships would not all deliver the same level of activity and we anticipated that we would need to adopt a flexible approach with project partners when focusing activity and resources. We are very satisfied with the current profile of partnership activity. Faunal surveys are the basis for identifying taxa, establishing and enhancing national reference collections, compiling species lists, databases, publishing faunal guides and research.

Sri Lanka, India and Nepal

Fred Naggs and Dinarzarde Raheem have direct responsibility for coordinating the Sri Lankan, Indian and Nepalese projects. These are all running as planned, have field programmes in place and are building the information base that will allow delivery of projected outputs. The Sri Lankan and Indian projects both have a strong institutional base but this is not the case in Nepal. From Fred Naggs' first visit in November, 2006, it was clear that, following the political problems that have beset Nepal, civil society is near collapse, institutional capacity is poor and interaction with the international academic community is minimal. In addition, there have been no previous faunal studies of Nepalese snails from which the project workers can start from. Project partners in Nepal are capable and enthusiastic but isolated and with few resources; there is a need to provide more basic support to the project in Nepal than for other projects.

UK partnerships

University of Nottingham

Collaboration with Chris Wade at the University of Nottingham has progressed well and our molecular studies and publications have continued to demonstrate ancient origins for some faunal components and the phylogenetic distinctness of some taxa that enhances their previously unrecognised conservation value as rare or unique representatives of ancient lineages.

University of Cambridge

We are extending our collaborative links to include Richard Preece, Department of Zoology, University of Cambridge, in our Darwin Initiative project. Richard has additional funding from Cambridge that will allow him to participate in our 2007-2008 field programme. Our collaboration will seek to establish patterns of change in land snail faunal composition through time. This will be of considerable value in establishing past habitat and climate change in our study areas and allow informed projections of the pattern and impact of future climate change to be developed. Our immediate interest will be the value of this information for recognising threats to faunas from climate change and in establishing long term conservation measures. The results of these studies are also likely to have extensive applied value relating to future land use.

The UK lead institution: The Natural History Museum, London

The Natural History Museum provides key resources with unparalleled regional specimen and literature reference material that provides the essential tools for identifying survey material and building national databases and reference collections. We have an excellent team and outstanding support in the Zoology Department is provided for financial management by Jeni Stewart and for our database work and Geographical Information (GIS) investigations by Jim Chimonides. Additional support in delivering computer generated reports and illustrated species lists is provided by Tim Conyers. We also have excellent support for imaging work from Harry Taylor (NHM Public Engagement Group). Our ecological work is carried out with collaboration from the Soil Biodiversity group in the Department of Entomology.

Fred Naggs and Dinarzarde Raheem have extensive experience of land snail systematics and ecology and of running land snail field projects in Asia. Engagement with CBD objectives is an extension of the traditional activity of research and collections services at the NHM. The appointment of Fred Naggs as Biodiversity and Conservation Officer in the Department of Zoology in 2003 is aimed at focussing attention on CBD objectives and is demonstration of the support the NHM is providing for running Darwin Initiative projects.

Other Collaborations:

Thierry Backeljau, University of Antwerp, has joined in collaborating with the project in Nepal, is providing additional training in malacology for Prem Budha and has accepted Prem Budha's research output as the basis for a PhD project.

Our project partners work within extensive national networks, academic institutions, government agencies and NGOs. For example, in Thailand our project personnel are based in three universities and Prof. Panha is a visiting lecturer throughout Thailand and gives numerous presentations about our projects, particularly on the National Biodiversity Training Programme. All project partners have contacted National CBD focal points and provide NFPs with project updates.

3. Project progress

3.1 Progress in carrying out project activities

All seven country projects are field survey based and the outputs (illustrated species lists, field guides, taxonomic revisions, compilation of databases, publication of research, building of reference and frozen tissue collections) are dependent on establishing effective field programmes, recording data and collecting specimens.

Project launch

The project was launched at our 16th-21st May, 2006 workshop meeting in Bangkok with international project partners, 8 Thai participants, and Dinarzarde Raheem, Jeni Stewart and Fred Naggs from the NHM. Three days of presentations, training sessions and discussions was followed by training at a field station in a limestone habitat in Saraburi Province, Central Thailand.

Setting up country projects and field survey programmes

India and Sri Lanka

The Bangkok workshop was followed by UK participants reviewing the Indian project based at ATREE from 28th May to 9th June, 2006, and initiating the Indian field surveys.

From 9th – 15th June UK participants visited Sri Lanka and the field project at Agrapatana before returning to Bangkok on 16th June for lab based work at Chulalongkorn University and returning to the UK on 19th June.

Dinarzarde Raheem was based in Sri Lanka and India from November 2006 to January 2007 working with project partners on the field project, identifying and documenting reference collections and initiating data recording. The Sri Lankan training workshops in forest reserves have been postponed until July 2007 when they will be combined with a series of faunal workshops funded by the World Bank.

Vietnam

Somsak Panha and Chirasak Sutcharit (Chulalongkorn University) ran a field-based training workshop with five University of Hanoi project partners led by Prof. Nguyen Xuan Quynh from 22nd – 27th July, 2006, which was followed by a visit to Bangkok by Prof. Quynh from 10th-16th February, 2007, to plan future joint field surveys in Vietnam.

Malaysia

From 19th – 23rd September, 2006, six Malaysian participants joined lectures and field surveys in Malaysia with a Thai team led by Prof. Panha followed by a training programme in Bangkok 10th – 16th February, 2007 run for Malaysian students and university staff working on the project.

Laos

The training and review of field work in Laos was carried out by Somsak Panha and Chirasik Sutcharit at the National University of Laos, Vientien from 26th – 30th September 2006 with participation of 6 Laos teaching staff.

Nepal

Fred Naggs visited Nepal from 31st October to 11th November, 2006 and accompanied Prem Budha in the field and provided training in identification and curation of specimens. This was followed by a further visit to Nepal by Dinarzarde Raheem and Fred Naggs from 17th March to 29th March. Detailed training was provided on sampling methodology, identification and preservation methodology.

Visits to UK

Our Thai project partners Pongpun Prasankok and Piyoros Tongkerd visited the NHM August to September, 2006. They worked through the NHM SE Asian specimen reference collections and arranged imaging of material with H. Taylor in the NHM photographic studio for incorporation into the database. Prem Budha visited the NHM January to February 2007 and began comparisons of his material with reference material in the collections. Following Fred Naggs's visit to Nepal in November, 2006, it was clear that microscopes and dissection material available to Prem Budha in Nepal were totally inadequate. A Malacological Society of London Award of £1,000 allowed a Nikon dissecting microscope and precision dissecting equipment to be purchased and taken back to Nepal.

3.2 Progress towards Project Outputs

Illustrated species lists

Faunal lists will be generated from the dedicated interactive database that has been constructed for the project in the past year. Survey data, images from the field and from reference collection material, are being added to the database. The flow of incoming data was initially slow as the field programmes took time to establish but the flow of information is increasing as the field surveys progress. The Chulalongkorn University lab is compiling data for the SE Asian projects but, to ensure that we remain on target for delivering outputs, we are engaging part time volunteers and taken control of organising entries on the project database at the NHM.

Field guides

We are compiling an image library on the database and the images will be a major component of the field guides, which will be compiled towards the end of the project when we have assembled relevant data.

Taxonomic revisions

Taxonomic revisions are progressing at different rates in different countries. In Lao, Vietnam and Malaysia we are working on compiling basic species lists, reviewing species limits and revising many generic attributions. In Nepal many of the species being collected appear to be undescribed but they need to be critically evaluated against described species from the surrounding areas of Himalayan India; there appear to be several new genera. We are in the process of describing some 50 new species from Sri Lanka. There has been extensive degradation of habitats in the Western Ghats in the past few decades and this may explain why the initial Indian surveys have not produced the diversity of species expected from the pioneering investigations carried out in the nineteenth century and monographed in the *Fauna of British India Mollusca* series. The most intensive surveys are being carried out by the large team of Thai project workers. In tandem with making many additions to the Thai species list we are working through the fauna and revising the taxonomy of different groups, particularly the high diversity of micro molluscs found on limestone hills.

Compilation of national databases and regional database

A dedicated database founded on Microsoft Access has been created. It comprises 27 tables of which 10 are for primary data: 5 text and 5 for pictures 15 are pick-lists 2 are linking query hubs. The tables are presented through two screens one primarily orientated towards data entry and relationship linking the second for viewing and selecting the assembled data (See Annex 3, Appendix 1).

Publication of research papers and conservation strategies

We are on target for submitting a minimum of 12 research papers. Five papers have been published and a further three have been submitted for publication during the reporting period (Table 2).

Dissemination of outputs on WWB and through media

Our project website www.nhm.ac.uk/tropicalsnails includes an online guide to the Sri Lankan land snail fauna at: <http://intern.nhm.ac.uk/jdsml/research-curation/projects/tropical-land-snails/taxa.dsm> and publications at: <http://intern.nhm.ac.uk/jdsml/research-curation/projects/tropical-land-snails/publications.dsm>. Our project has been featured for a full length ½ hour TV program on Thai National Television on the channel 5 popular science series 'Knowledge is Light'. This showed interviews with project members, lab and field work and sequences of living snails and has been broadcast twice in the past year. A second program has been recorded for future broadcasting. All projects have reported preparation and distribution of newsletters. Updates have been provided in *Chulalongkorn University Newsletter* and a feature on the project was published in *Bangkok Business*.

Building of national reference collections

Specimens from the country surveys are being housed in all of the host country partner institutions with sets of duplicate SE Asian collections also being housed in the Chulalongkorn University Museum collections.

Contribution of material to the Frozen Ark

Frozen and/or 100% ethanol tissue collections are being held in the Indian and Nepalese project partner institutions and samples from Thailand, Laos, Vietnam and Malaysia are at Chulalongkorn University. Chulalongkorn University is considering being registered as a formal Frozen Ark storage facility for the region. New regulations governing transport of 100% ethanol mean that international transport of specimens is much more costly than anticipated and transport to the Frozen Ark facility at the NHM is not being pursued at the moment.

3.2 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
Established codes						
1A	2 Thai funded PhD students (Chulalongkorn University) 1 Nepalese PhD student with Belgian funding (University of Antwerp)	3				
4A	28 students on 1 week molluscan course in Bangkok 60 TYPIN students on 2 half week courses	88				
4B	28 students on 1 week molluscan course in Bangkok 60 TYPIN students on 2 half week courses	2				
6A	May 2006: Workshop in Bangkok May 2006: Field Training in Saraburi Province July 2006: Field Training in Vietnam February 2006: Training for Vietnamese in Bangkok September 2006: Training in Malaysia Training Community Forest personnel, Nepal Nepal March 2007: Sampling methodology, training for project staff, local participants and University students in Kathmandu	30 30 8 1 8 10 12				

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	TOTAL
6B	May 2006: Workshop in Bangkok	1				
	May 2006: Field Training in Saraburi Province	1				
	July 2006: Field Training in Vietnam	1				
	February 2006: Training for Vietnamese in Bangkok	1				
	September 2006: Training in Malaysia	1				
	Training Community Forest personnel, Nepal	1				
	Nepal March 2007: Sampling methodology, training for project staff, local participants and University students in Kathmandu	1				
7	Bangkok workshop training manual	1				
8	F. Naggs and D. Raheem: Thailand, Nepal, India, Sri Lanka.	26				
11A	Published peer reviewed papers as in Table 2	5				
11B	4 as in 11B plus 3	7				
12A	Computer databases are being developed in partner countries	7				
13A	Reference collections are being established in Nepal, Laos, Malaysia and Vietnam	4				
13B	Collections are being enhanced in Sri Lanka, India and Thailand	3				
14A	National meetings presenting findings held in Thailand, Sri Lanka, India, Nepal	4				

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	TOTAL
15A	National Press releases in Sri Lanka, India, Nepal, Thailand, Laos, Vietnam and Malaysia	7				
15B	Local press releases in India and Nepal	2				
16A	National newsletters in Sri Lanka, India, Nepal, Thailand and Vietnam. No confirmation of newsletter from Laos and Malaysia (Malaysia was late joining the project)	5				
16B	50 copies each for Sri Lanka, India, Nepal and Vietnam. First Annual Report in Chlalongkorn Journal 1,000 copies	1250				
17A	S & SE Asian network established between all participating countries	1				
17B	Dissemination of project activity and joint participation with 6 Thai universities under existing programme.	1				
18A	Two broadcasts of full ½ hour TV programs on Thai national TV. One more recorded for future broadcasting	3				
19A	Local radio broadcast in Nepal	1				
20	£1,366 in Nepal plus additional £1,000 for microscope and dissecting equipment from Research Award from The Malacological Society of London	£2,366				

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	TOTAL
22	6 plots in Sri Lanka 3 plots in India					
23	NHM £36,165 staff costs ATREE £4,851 staff costs equipment and consumables ATREE for students: £2,277 University of Nottingham £9,335 salary costs Chulalongkorn University £26,674 salary costs and travel and equipment Malacological Society of London Research awards: £1,000 for D. Raheem £1,000 for P. Budha British Ecological Society for D. Raheem: £500 TOTAL:£81,802					
New - Project specific measures						

Table 2 Publications

Type	Detail	Publishers	Available from	Cost £
Journal	Science & Biodiversity: the predicament of Sri Lanka. Pethiyagoda, R. et al. 2007.	Current Science 92: 426-427	http://www.ias.ac.in/currsci/feb252007/426.pdf	free
Journal	Developing land snail expertise in South and Southeast Asia, a new Darwin Initiative project.	The Natural History Journal of Chulalongkorn University 6: 43-	http://internt.nhm.ac.uk/jdsm/research-curation/projects/tropical-land-	free

Type	Detail	Publishers	Available from	Cost £
	Naggs, F. Panha, S, Raheem, D.2006.	46.	snails/publications.dsml	
Folding guide	An illustrated guide to the land snails of Sri Lanka forest and cultivated habitats. Raheem, D., and Naggs, F. 2006	Natural History Museum, London	http://intern.nhm.ac.uk/jdsml/research-curation/projects/tropical-land-snails/publications.dsml	free
Journal	The Sri Lankan endemic semi-slug <i>Ratnadvipia</i> (Limacoidea: Ariophantidae) and a new species from Southwestern Sri Lanka. Raheem, D. & Naggs, F. 2006	Systematics and Biodiversity 4 : 99-126.	http://intern.nhm.ac.uk/jdsml/research-curation/projects/tropical-land-snails/publications.dsml	free
Journal	Karyotypes of operculate land snails of the genus <i>Cyclophorus</i> (Prosobranchia; Cyclophoridae) in Thailand. Kongim, B. Naggs, F. and Panha, S. 2006	Invertebrate Reproduction and Development 49 : 1-8.	Reprints currently available from: F.Naggs@nhm.ac.uk	Some free reprints available. *Pdf file of paper attached to email with report
WWW	Sri Lankan Land snail taxa: illustrated list	Natural History Museum, London	http://intern.nhm.ac.uk/jdsml/research-curation/projects/tropical-land-snails/taxa.dsml	free
Journal	Evolutionary relationships among the Pulmonata land snails and slugs (Pulmonata, Stylommatophora). Wade, C.M., Mordan, P.B., and Naggs, F. 2006	Biological Journal of the Linnean Society 87 : 593-610.	Reprints currently available from: F.Naggs@nhm.ac.uk Available from the Linnean Society of London see: http://www.linnean.org/index.php?id=105	Some free reprints available. *Pdf file of paper attached to email with report

3.3 Progress towards the project purpose and outcomes

The establishment of Chulalongkorn University as a regional centre of expertise is well under way and the Thai project workers are closely involved with the regional surveys. Surveys are in active progress and are the source of material for most of our projected outputs.

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

Our investigations of land snails are providing base line information on a key indicator group that will be of essential value in future investigations on habitat change, changes in distribution, threats to survival and for responding with appropriate conservation measures.

4. Monitoring, evaluation and lessons

We are closely following progress in each of the seven country projects by visits and email communication. Because of the geographical scope of the project, monitoring in country and hosting groups of project visitors are major components of the UK lead institution's contribution.

5. Other comments on progress not covered elsewhere

This is a large and very demanding project but project partners have demonstrated strong motivation and commitment. Different partners offer very different levels of experience and a wide range of access to resources locally and in partner institutions; there are marked cultural and political differences. We recognise the need to accept that not all partnerships will be in a position to deliver the same standard of output and it is essential for us to remain flexible in providing additional support where needed.

6. Sustainability

As a multinational project we face different national constraints some ephemeral, some probably longer term. The whole thrust of the project is towards providing base line data and the network, skills and resources to deliver long term objectives. We are ever mindful of sustainability being the ultimate justification.

7. Dissemination

We are providing extensive dissemination of outputs to a broad audience with TV and press coverage, outreach activities with community networks, local environmental and natural history groups, newsletters and public meetings. Detailed information is being collated for the various outreach activities of country projects that will be appended to the final report.

8. .

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: To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</p> <p>The conservation of biological diversity,</p> <p>The sustainable use of its components, and</p> <p>The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</p>		<p>(report on any contribution towards positive impact on biodiversity or positive changes in the conditions of human communities associated with biodiversity eg steps towards sustainable use or equitable sharing of costs or benefits)</p>	<p>(do not fill not applicable)</p>
<p>Purpose</p> <p>To develop a long-term relationship between the NHM and Chulalongkorn University, establishing Chulalongkorn University as a regional centre of land snail expertise.</p>	<p>Setting up land snail projects in South and Southeast Asia that are supported regionally and with long-term cooperation from the NHM. Establish reference collections, national databases and a regional database, provide training, develop research output with raised standards, publish local snail guides. Develop and publish conservation strategies based on snails as key indicators.</p>	<p>Field surveys are up and running in all seven project countries. Reference collections are being established and databasing is in progress. Joint research is being conducted with several papers published, others submitted and a number in preparation.</p>	<p>more of the same.</p>

Project summary	Measurable Indicators	Progress and Achievements April 2006 - March 2007	Actions required/planned for next period
<p>Outputs</p> <ol style="list-style-type: none"> 1. Illustrated species lists for six countries. 2. Field guides for six countries. 3. Taxonomic revisions. 4. Compilation of national databases and regional database. 5. Publication of research papers. and conservation strategies. 6. Dissemination of outputs on WWW and through media. 7. Build specimen reference collections. 8. Contribute material to Frozen Ark – new objective 	<ol style="list-style-type: none"> 1. Publication of illustrated species lists for regions covered in project in India, Nepal, Thailand, Laos, Cambodia and Vietnam. 2. Publication of six field guides. Suitable for use by schools, universities and naturalists. 3. Publication of taxonomic revisions. 4. Web access to regional database. 5. Publication of research papers on distribution, faunal origins, status and conservation. 6. Project web site, media coverage. 7. Collections established in partner countries. 8. Contribution of material to Frozen Ark 		<ol style="list-style-type: none"> 1, 2 and will be produced towards the end of the project when we have the benefit of access to other project outputs. 3. taxonomic revisions have been published, submitted and are in preparation 4. Databasing is in progress 5. Papers being published: conservation; strategies will be developed from information gleaned from surveys is analysed. 6. We are placing outputs on our project website and using the media to promote project activity 7. Collections are being established / developed in partner institutes. 8. Molecular samples are being established for all of the projects but are not stored in the dedicated Frozen Ark collections because of new controls on the transport of this material.

Annex 2 Project's full current logframe

LOGICAL FRAMEWORK

19. Please enter the details of your project onto the matrix using the note at Annex B of the Guidance Note. This should not have substantially changed from the Logical Framework submitted with your Stage 1 application. Please highlight any changes.

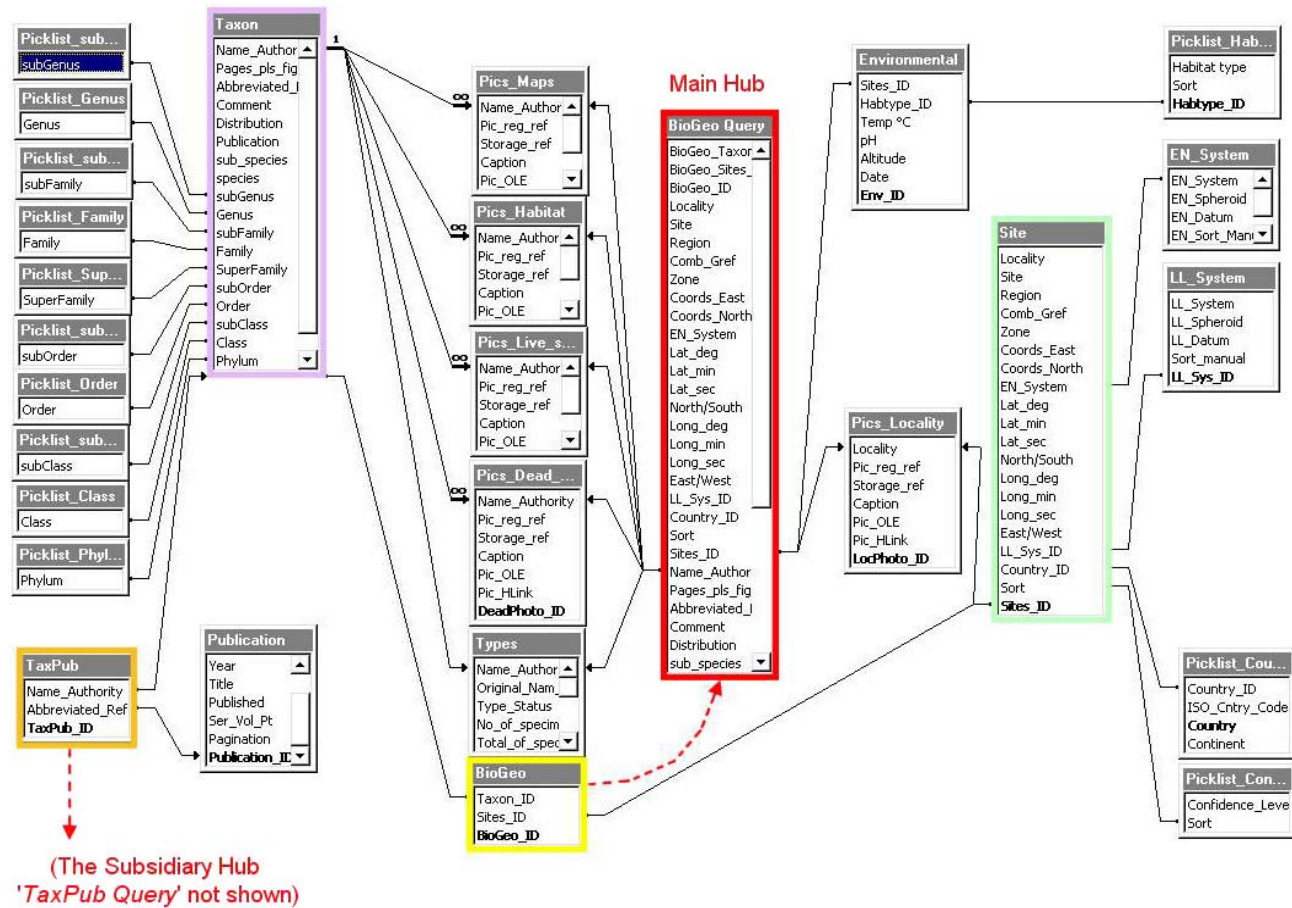
Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal:</p> <p>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but poor in resources to achieve</p> <ul style="list-style-type: 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>To develop a long-term relationship between the NHM and Chulalongkorn University, establishing Chulalongkorn University as a regional centre of land snail expertise.</p>	<p>Setting up land snail projects in South and Southeast Asia that are supported regionally and with long-term cooperation from the NHM. Establish reference collections, national databases and a regional database, provide training, develop research output with raised standards, publish local snail guides. Develop and publish conservation strategies based on snails as key indicators.</p>	<p>Outputs from survey based projects in India, Nepal, Thailand, Laos, Cambodia and Vietnam: establishment of reference collections; publication of results in peer-reviewed journals; publication of field and other guides. Web access to regional database and other outputs.</p>	<p>1. Political problems may limit activity in some of the associate partner countries. 2. Significant further increases in fuel prices and costs of international flights would result in adjustments to international travel arrangements.</p>
<p>Outputs</p> <p>1. Illustrated species lists for six countries. 2. Field guides for six countries. 3. Taxonomic revisions. 4. Compilation of national databases and regional database. 5. Publication of research papers and conservation strategies. 6. Dissemination of</p>	<p>1. Publication of illustrated species lists for regions covered in project in India, Nepal, Thailand, Laos, Cambodia and Vietnam. 2. Publication of six field guides. Suitable for use by schools, universities and naturalists. 3. Publication of taxonomic revisions. 4. Web access to regional database. 5. Publication of research papers on distribution, faunal origins, status and conservation. 6. Project web site, media coverage.</p>	<p>1. Published illustrated colour species lists. 2. Publication of six coloured field guides. 3/5. Submission for publication of taxonomic revisions and research papers (minimum of 12 papers: revised objective from partners). 4. Database available on web. 6. Access available to project web site; publication / presentation of media</p>	<p>Collaboration with Thailand is well established and proven to be robust and reliable. Some of the subsidiary partner countries are politically unstable and adjustments may have to be made, contracting activities in some countries, expanding in others.</p> <p>Partnerships in subsidiary countries hold up.</p>

<p>outputs on WWB and through media.</p> <p>7. Build specimen reference collections.</p> <p>8. Contribute material to Frozen Ark – new objective</p>	<p>7. Collections established in partner countries.</p> <p>8. Contribution of material to Frozen Ark</p>	<p>coverage.</p> <p>7. Collections held in institutes.</p> <p>8. Material held in Frozen Ark collections.</p>	
<p>Activities</p> <p>Conduct field surveys, establish reference collections, establish databases, analyse data, publish research, prepare illustrated species lists in printed and electronic form. Prepare field guides: communicate information on web and gain media coverage.</p>	<p>Activity Milestones</p> <p>Year 1. Launch project with training workshop at Chulalongkorn University with international partners.</p> <p>Years 1 and 2: run field programs.</p> <p>Years 1, 2 and 3: two members of Thai group spend two months per year working on identifying material (includes Laotian, Cambodian and Vietnamese) at NHM.</p> <p>Year 2: Indian and Nepalese partners work up their collections in London.</p> <p>Year 2: publish illustrated species lists.</p> <p>Year 3: publish illustrated guides to snails in the Western Ghats, India, Thailand and areas covered in surveys in Nepal, Laos, Cambodia and Vietnam. Submit a minimum of twelve papers to be published in peer-reviewed journals, covering subject areas presented in proposal, including conservation, and including results from work in Sri Lanka. Database to be available on web.</p>	<p>Assumptions</p> <p>This is an ambitious project and we recognise that capacities for participation vary greatly in different partner countries and assume that Defra will allow contraction in some areas and expansion in others if appropriate.</p>	

Annex 3

Appendix 1

1. Relationships on database



View of screen to show fields

Name_Authority: Ennea macradon (Blanford 1880)
Taxon_Taxon_ID: 769
BioGeo_ID: 19
Site: Nilgiris
Site_Sites_ID: 17
Locality: Nilgiris
Region: Western Ghats
Country: INDIA
Lat_deg: 0, **Lat_min:** 0, **Lat_sec:** 0, **North/South:** 0
Long_deg: 0, **Long_min:** 0, **Long_sec:** 0, **East/West:** 0
LL_system: [Dropdown]
Coords_East: 0, **Coords_North:** 0, **Zone:** [Dropdown]
Comb_Gref: [Dropdown]
EN_System: [Dropdown]
Confidence: Unknown
sub_specier: [Dropdown]
species: [Dropdown]
subGenus: [Dropdown]
Genus: [Dropdown]
subFamily: [Dropdown]
Family: [Dropdown]
SuperFamily: [Dropdown]
sub_Order: [Dropdown]
Order: [Dropdown]
sub_Class: [Dropdown]
Class: [Dropdown]
Phylum: [Dropdown]

Pics: Ennea macradon (Blanford 1880)
Caption: [Text Area]
Pic_req_ref: [Text Field]
Storage_ref: [Text Field]
Pic_HLink: [Text Field]
Select: x, **DeadPhoto_ID:** 13
Name_Authority: Ennea macradon (Blanford 1880)
Caption: [Text Area]
Record: 1 of 1

View of data input screen

Taxon
Types
Environmental
Pics Dead specimens
Pics Live specimens
Pics Locality
Pics Habitat
Pics Maps

Setup relationship between species (taxa) and sites

Name_Authority	Sites_ID	BioGeo_ID
Ennea macradon (Blanford 1880)	Nilgiris	19
Macrochlamys prava (Blanford 1904)	Beypur	20
Streptaxis subacutus (Blanford 1895)	South Canara	21
Ennea subcostulata (Blanford 1880)	Shewroy Hills	22
Streptaxis pronus (Blanford 1880)	Tinevelly Hills	23
Ennea turricula (Blanford 1899)	Anaimalais	24
Streptaxis scalptus (Blanford 1899)	Kolamalai	25
Streptaxis beddomei (Blanford 1899)	Anaimalais	26
*		(AutoNumber)

Setup relationship between species (taxa) and publication(s)

Name_Authority	Abbreviated_Ref	TaxPub_ID
Streptaxis scalptus (Blanford 1899)	Blanford 1899 P.Z.S.L.	12
Macrochlamys prava (Blanford 1904)	Blanford 1904 P.Z.S.L.	13
Streptaxis subacutus (Blanford 1895)	Blanford 1899 P.Z.S.L.	14
Ennea subcostulata (Blanford 1880)	Blanford 1880 J.A.S.B.	15
Ennea turricula (Blanford 1899)	Blanford 1899 P.Z.S.L.	16
Streptaxis pronus (Blanford 1880)	Blanford 1880 J.A.S.B.	17
Ennea macradon (Blanford 1880)	Blanford 1880 J.A.S.B.	18
Streptaxis beddomei (Blanford 1899)	Blanford 1899 P.Z.S.L.	19
*		(AutoNumber)

View Assembled Data
Picklist Phylum
Picklist Class
Picklist subClass
Picklist Order
Picklist subOrder
Picklist SuperFamily
Picklist Family
Picklist subFamily
Picklist Genus
Picklist subGenus

Record: 1 of 1