Land Snails as Models for Biodiversity Assessment in Sri Lanka

Annual Report
March 2004

Darwin Initiative for the Survival of Species

Annual Report

1. Darwin Project Information

Project Ref. Number	*E1 DPO 1*
Project Title	*Land snails as models for biodiversity assessment in Sri Lanka*
Country(ies)	*Sri Lanka*
UK Contractor	*The Natural History Museum*
Partner Organisation(s)	*Ministry of Environment & Natural Resources*
Darwin Grant Value	*£68,500*
Start/End dates	*1.12.2003 – 31.10.2005*
Reporting period (1 Apr 200x to 31 Mar 200y) and report number (1,2,3..)	*Reporting period: 1.12.2003 – 31.3.2004* *Report number: 1*
Project website	
Author(s), date	*Fred Naggs & Dinarzarde Raheem* *10th June 2004*

2. Project Background

This Post Project Funding work seeks to build on the success of the 1999 –2002 project *Land snail diversity in Sri Lanka* by conducting taxonomic revision and the description of new taxa at the Natural History Museum, London. Further research will form a basis for conservation measures.

3. Project Purpose and Outputs

- Taxonomic and systematic revisions with descriptions of new species
- Advanced training and research experience for Dinarzarde Raheem, the 1999-2002 Sri Lankan project manager.
- Training and work experience in electronic media communication for Hasantha Sanjeewa.
- At least five research papers on the following subject areas: taxonomy and systematics, distribution and conservation.
- Expansion of the interactive CD-ROM guide and publication of a new edition.
- A new field guide structured to show species associated with different habitat types and including pest and exotic species.
- Provision of an IUCN Red List evaluation of the Sri Lankan land snails.
- An assessment of the distribution of land snail diversity in Sri Lanka and of key areas for conservation.

Our projected timetable anticipated that the project could start at the beginning of October but the grant approval process resulted in a December 2003 start date when

Fred Naggs was away on fieldwork and he could not commence work on the project until January 2004. The Darwin Secretariat is aware of a three-month delay in our projected outputs. As a result of missing the deadline for IUCN Red Listing data we will complete the IUCN assessment towards the end of the project when a more informed evaluation can be given.

4. Progress

This is a new project following from the 1999 - 2002 project *Land snail diversity in Sri Lanka*. The original project was a survey based capacity building programme to provide training and establish resources on land snails in Sri Lanka. The large number of newly discovered species and recognition that major revisions of the snail fauna were required were the main justification for the current project.

The project is in its early stages. Dinarzarde Raheem has reviewed the status of species collected in the 1999-2002 surveys and our current assessment is given in Appendix 1. Of the 160 species level taxa recorded from the surveys, 145 are considered to be 'native' taxa, of which 83 have previously been described. Of the 53 unidentified 'native' species 40 are undescribed and the status of the remaining 13 possibly distinct taxa has not been determined yet. The described endemic species number 72. Discounting the taxa of unknown status, but adding 15 exotic species, most of which are recent introductions, 77% of the recorded species are endemic to Sri Lanka. One paper has been submitted for publication and three are in preparation.

One paper has been submitted for inclusion in the Raffles Zoological Bulletin special supplement on Sri Lanka, *The Darwin Initiative project on Sri Lankan land snails: patterns of diversity in Sri Lankan forests,* scheduled for publication in December 2004. Three papers are in preparation: one on the taxonomy of the endemic genus *Ratnadpvipia,* one on the molecular phylogenetic relationships of stylommatophora, including Sri Lankan taxa and an overview of regional historical biogeographical relationships.

Work plan for the next reporting period:

April 2004: Hasantha Sanjeewa to start at NHM for six months carrying out technical support and being provided with training on text input, image editing and mapping for CD-ROM.

June 2004: submit paper for publication on phylogenetic relationships

July 2004. Submit paper for publication on *Ratnadvipia*

July 2004. Fred Naggs to visit Sri Lanka and assess current position of biodiversity under the new Sri Lankan government (externally funded)

July 2004: Fred Naggs to give an invited presentation at the World Malacological Congress in Perth on the wider relationships of the Sri Lankan snail fauna

September 2004: Hasantha Sanjeewa to return to Sri Lanka

October 2004. Submit paper for publication on the wider relationships of the Sri Lankan snail fauna

January 2005 Submit paper for publication on species descriptions

5. Partnerships

The Sri Lankan government, through its Ministry of Environment, was embarking on a new initiative to establish an inventory of its biota. Legislation was to be presented for parliamentary approval in February 2004 that would set up a National Biodiversity Authority and a Rainforest & Biodiversity Institute. Despite the parliamentary government holding a majority and having three years to run, in November 2003 the

Sri Lankan president exercised her executive powers to suspend parliament and call elections to be held on 2nd April 2004. In the short term we are not affected by the uncertainty in Sri Lanka because our current programme is based at the NHM.

6. Impact and Sustainability

In the current uncertainty about the biodiversity agenda in Sri Lanka our plans for involvement in a new Sri Lankan Biodiversirty Authority and Rainforest & Biodiversity Institute are on hold.

7. Outputs, Outcomes and Dissemination

Because the project started in December rather than October 2003 and Fred Naggs was not available until January 2004, the project is behind the original schedule as set out in the project application. Having missed the deadline for submitting ICZN data for publication this year there is no longer any urgency about supplying this information and it will be submitted when the taxa are fully evaluated.

Table 1. Project Outputs (According to Standard Output Measures)

Code No.	Quantity	Description
11B	2	1) Title: The Darwin Initiative project on Sri Lankan land snails: patterns of diversity in Sri Lankan forests. Authors: Fred Naggs, Dinarzarde Raheem, Kithsiri Ranawana and Yasantha Mapatuna. Submitted to the *Raffles Bulletin of Zoology* on 11th Feb 2004 for inclusion in a special Sri Lankan supplement.

8. Project Expenditure

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

Item	Budget (please indicate which document you refer to if other than your project schedule)	Expenditure	Balance
Rent, rates, heating, overheads etc			
Office costs (e.g. postage, telephone, stationery)			
Travel and subsistence			

Printing	
Conferences, seminars, etc	
Capital items/equipment	
Others	
NHM Overheads (revised)	
Work permits	
Salaries (specify)	
D Raheem (revised)	
TOTAL	

9. Monitoring, Evaluation and Lessons

We are working to clearly defined objectives that can primarily be measured as published outputs.

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2003/2004

Project summary	Measurable Indicators	Progress and Achievements April 2003-Mar 2004	Actions required/planned for next period
Goal*:* 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 • 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			
Purpose Provide a leading example of post-survey taxonomic revision with new species and higher level taxa descriptions. Establish a baseline of land snail diversity and distributions and assessment of threatened status to enable conservation measures to be put in place. Publish results in peer reviewed journals and disseminate information to a wide audience by means of a CD-ROM, the WWW, field guide and scientific and public presentations.	1. attributing species-level taxa to generic categories. 2. resolution of species limits of new taxa**.** 3. revision of species and generic level systematics 4. establishing IUCN red list categories for all of the land snail species, including undescribed taxa as set out in the IUCN programme at http://www.redlist.org/info/programme.html 5. preparation of papers for publication on taxonomic, systematic, conservation and	1. see appendix 1 5. one paper submitted, three in preparation	6. Hasantha Sanjeewa to work on developing CD-ROM particularly

	distributional information 6. preparation of CD-ROM 7. preparation of user-friendly snail guide 8. placing summary of project information on WWW.		during April – September 2004 visit Hasantha Sanjeewa
Outputs			
1. taxonomic revisions	1,2 publication of taxonomic revision papers and new species descriptions	*(report completed activities and outcomes that contribute toward outputs and indicators)*	Paper on taxonomy of *Ratnapvipia* including new species, to be submitted for publication in July 2004
2. descriptions of new species			Paper with new species descriptions to be submitted for publication in January 2005
3. evaluation of entire recorded land snail fauna for IUCN red listing	3. submission of information on extinction threat categories for all of the recorded Sri Lankan snail fauna to IUCN		
4. publications on distribution and conservation	4. publication of analytical paper(s) on aspects of Sri Lankan land snail distributions		Paper submitted on patterns of snail diversity in Sri Lankan forest for inclusion in special Sri Lankan supplement of the Raffles Bulletin of Zoology
5. major development of CD-ROM	5. addition of new species to CD-ROM, a summary of information for all species, including facsimilies of		

	the primary literature, images of living specimens, habitat views and distribution maps		
6. user friendly guide	6. preparation of a user-friendly, laminated folding guide giving common species of different types, including pest species		
7. summary information on WWW	7. presentation of summary information on www		

Appendix 1

Species	Native Taxa	Described Taxa	New Species and Subspecies	Status unknown	Described Endemics
Acavus haemastoma	1	1	0	0	1
Acavus phoenix	1	1	0	0	1
Acavus superbus	1	1	0	0	1
Aulopoma grande	1	1	0	0	1
Aulopoma *sp. A*	1	0	0	1	0
Aulopoma *sp. C*	1	0	0	1	0
Aulopoma *sp. D*	1	0	0	1	0
Aulopoma *sp. E*	1	0	1	0	0
Aulopoma *sp. F*	1	0	1	0	0
Beddomea albizonata-*aggregate*	1	1	0	0	1
Beddomea ceylanica *(?)*	1	1	0	0	1
Beddomea trifasciatus-*aggregate*	1	1	0	0	1
Corilla adamsi	1	1	0	0	1
Corilla beddomeae	1	1	0	0	1
Corilla carabinata	1	1	0	0	1
Corilla colletti	1	1	0	0	1
Corilla erronea	1	1	0	0	1
Corilla humberti	1	1	0	0	1
Corilla odontophora	1	1	0	0	1
Corilla sp. *(Handapan Ella)*	1	0	0	1	0
Cryptozona bistrialis	1	1	0	0	0
Cryptozona ceraria	1	1	0	0	1
Cryptozona chenui	1	1	0	0	1
Cryptozona semirugata	1	1	0	0	0

Cyathopoma mariae	*1*	*1*	*0*	*0*	*1*
Cyathopoma sp. *(Uva)*	*1*	*0*	*1*	*0*	*0*
Cyathopoma sp. *(turritite)*	*1*	*0*	*1*	*0*	*0*
Cyathopoma ceylanica	*1*	*1*	*0*	*0*	*1*
Cyathopoma *sp. F*	*1*	*0*	*1*	*0*	*0*
Cyclophorus involvulus	*1*	*1*	*0*	*0*	*0*
Cyclophorus menkeanus-*aggregate*	*1*	*1*	*0*	*0*	*1*
Eupecta colletti	*1*	*1*	*0*	*0*	*1*
Euplecta concavospira-*aggregate*	*1*	*1*	*0*	*0*	*1*
Euplecta emiliana	*1*	*1*	*0*	*0*	*1*
Euplecta gardeneri	*1*	*1*	*0*	*0*	*1*
Euplecta hyphasma	*1*	*1*	*0*	*0*	*1*
Euplecta *sp. B*	*1*	*0*	*1*	*0*	*0*
Euplecta *sp. Y*	*1*	*0*	*1*	*0*	*0*
3. Euplecta indica-aggregate *(small and turbinate)*	*1*	*1*	*0*	*0*	*1*
Euplecta isabellina	*1*	*1*	*0*	*0*	*1*
Euplecta layardi	*1*	*1*	*0*	*0*	*1*
Euplecta partita-*aggregate*	*1*	*1*	*0*	*0*	*1*
Euplecta prestoni	*1*	*1*	*0*	*0*	*1*
Euplecta semidecussata	*1*	*1*	*0*	*0*	*0*
Euplecta sp. *(dwarf, like* verrucula*)*	*1*	*0*	*1*	*0*	*0*
Euplecta sp. *(Moneragala, arboreal)*	*1*	*0*	*0*	*1*	*0*
Euplecta sp. *(montane, turritite)*	*1*	*0*	*0*	*1*	*0*
Euplecta sp. *(*phideas*)*	*1*	*1*	*0*	*0*	*0*
Euplecta travancorica praeeminens	*1*	*1*	*0*	*0*	*0*
Satiella *sp. A*	*1*	*0*	*1*	*0*	*0*
Eurychlamys *sp. B*	*1*	*0*	*1*	*0*	*0*
Eurychlamys regulata	*1*	*1*	*0*	*0*	*1*
Glessula *(?)* capillacea	*1*	*1*	*0*	*0*	*1*
Glessula parabilis	*1*	*1*	*0*	*0*	*1*

Glessula *sp. (montane, micro)*	*1*	*0*	*0*	*1*	*0*
Glessula ceylanica	*1*	*1*	*0*	*0*	*1*
Glessula *sp. A*	*1*	*0*	*0*	*0*	*0*
Glessula *sp. B*	*1*	*0*	*1*	*0*	*0*
Glessula *sp. C*	*1*	*0*	*1*	*0*	*0*
Glessula veruina	*1*	*1*	*0*	*0*	*1*
Indoartemon layardianaus	*1*	*1*	*0*	*0*	*1*
Indoartemon *sp.*	*1*	*0*	*1*	*0*	*0*
Japonia conulus	*1*	*1*	*0*	*0*	*1*
Japonia sp. *(Viharekele)*	*1*	*0*	*1*	*0*	*0*
Japonia sp. *(like* binoyae*)*	*1*	*0*	*1*	*0*	*0*
Japonia vesca	*1*	*1*	*0*	*0*	*1*
Kaliella barrakporensis	*0*	*0*	*0*	*0*	*0*
Kaliella colletti *(?)*	*1*	*0*	*0*	*0*	*1*
Landouria radleyi	*1*	*1*	*0*	*0*	*1*
Leptopoma semiclausum	*1*	*1*	*0*	*0*	*1*
Leptopomoides halophilus	*1*	*1*	*0*	*0*	*1*
Leptopomoides taprobanensis	*1*	*1*	*0*	*0*	*1*
Macrochlamys vilipensa	*1*	*1*	*0*	*0*	*0*
Macrochlamys *sp. (Sinharaja, montane)*	*1*	*0*	*0*	*1*	*0*
Micraulax coeloconus	*1*	*1*	*0*	*0*	*0*
Microcystina lita	*1*	*1*	*0*	*0*	*1*
Microcystina *sp ?*	*1*	*0*	*1*	*0*	*0*
Micropulmonate sp. A	*1*	*0*	*1*	*0*	*0*
Mirus panos	*1*	*1*	*0*	*0*	*1*
Mirus stalix	*1*	*1*	*0*	*0*	*1*
Nicida delectabilis	*1*	*1*	*0*	*0*	*1*
Oligospira poleii	*1*	*1*	*0*	*0*	*1*
Oligospira skinneri	*1*	*1*	*0*	*0*	*1*
Oligospira waltoni	*1*	*1*	*0*	*0*	*1*
Phaedusa ceylanica	*1*	*1*	*0*	*0*	*1*
Philalanka circumsculpta-*aggregate*	*1*	*1*	*0*	*0*	*1*
Philalanka sinhila	*1*	*1*	*0*	*0*	*1*

Philalanka lamcabensis-*aggregate*	*1*	*1*	*0*	*0*	*1*
Philalanka thwaitesi	*1*	*1*	*0*	*0*	*1*
Pterocyclus cumingi-*aggregate*	*1*	*1*	*0*	*0*	*0*
Rhachistia pulcher	*1*	*1*	*0*	*0*	*0*
Ratnadvipia irradians	*1*	*1*	*0*	*0*	*1*
Ratnadvipia *sp. A*	*1*	*0*	*1*	*0*	*0*
Ravana politissima	*1*	*1*	*0*	*0*	*1*
Ruthvenia clathratula	*1*	*1*	*0*	*0*	*1*
Scabrina *(?)* brounae	*1*	*1*	*0*	*0*	*1*
Sivella *sp.*	*1*	*0*	*0*	*1*	*0*
Eutomopeas layardi-*aggregate*	*1*	*1*	*0*	*0*	*1*
Theobaldius annulatus-*aggregate (LCDZ & IZ)*	*1*	*1*	*0*	*1*	*1*
Theobaldius annulatus-*aggregate (LCWZ)*	*1*	*1*	*0*	*1*	*0*
Theobaldius bairdi	*1*	*1*	*0*	*0*	*1*
Theobaldius layardi	*1*	*1*	*0*	*0*	*1*
Theobaldius sp. *(allied to sp. C)*	*1*	*0*	*0*	*1*	*0*
Theobaldius sp. *(unusual operculum)*	*1*	*0*	*1*	*0*	*0*
Theobaldius *sp. A*	*1*	*0*	*1*	*0*	*0*
Theobaldius *sp. C*	*1*	*0*	*1*	*0*	*0*
Thysanota bicillata	*1*	*1*	*0*	*0*	*1*
Thysanota eumita	*1*	*1*	*0*	*0*	*1*
Tortulosa aureus	*1*	*1*	*0*	*0*	*1*
Tortulosa austeniana	*1*	*1*	*0*	*0*	*1*
Tortulosa marginata	*1*	*1*	*0*	*0*	*1*
Tortulosa nevilli	*1*	*1*	*0*	*0*	*1*
Tortulosa pyramidata	*1*	*1*	*0*	*0*	*1*
Tortulosa *sp. (Handapan Ella)*	*1*	*0*	*1*	*0*	*0*
Tortulosa prestoni	*1*	*1*	*0*	*0*	*1*
Tortulosa *sp. (*templemani *or ally)*	*1*	*0*	*0*	*1*	*0*
Tortulosa cumingi-*aggregate*	*1*	*1*	*0*	*0*	*1*

Tortulosa blanfordi *new sub species*	*1*	*1*	*0*	*0*	*1*
Other New species	*10*	*0*	*10*	*0*	*0*
New sub-species	*8*	*0*	*8*	*0*	*0*
	145	***83***	***40***	***13***	***72***

TOTAL

Exotic species	***15***
Described Native Species	***10***
Described Endemic Species	***72***