Darwin Initiative

Annual Report

1.   Darwin Project Information

Project Ref. Number	14-006
Project Title	***Conservation of Small Vertebrates in Tsingy Bemaraha National Park, Madagascar***
Country(ies)	United Kingdom and Madagascar
UK Contractor	University of Aberdeen
Partner Organisation(s)	Department of Animal Biology, University of Antananarivo, Madagascar
Darwin Grant Value	£161,100
Start/End dates	1 October 2005 30 September 2008
Reporting period	1 October 2005 to 31 March 2006 Annual report number 1
Project website	
Author(s), date	Richard K. B. Jenkins and Paul A. Racey

2.   Project Background

- Briefly describe the location and circumstances of the project and the problem that the project aims to address.

Tsingy Bemaraha National Park is an area of exceptional biodiversity even for a country such as Madagascar. It has species of bird, reptile, frog and lemur that are endemic to the park. The park is located in the mid-west of Madagascar and consists of dry deciduous forest on karst limestone substratum. The many deep canyons provide water throughout the year and this humidity is thought to be one of the reasons that so many species, usually restricted to the eastern rain forests, are found in the park.

The dry deciduous forests of western Madagascar have received much less attention from conservationists than the eastern rainforests. Forested areas in the west continue to recede because of charcoal production, agricultural expansion and bush fires.

During 2003 a bat team from a previous Darwin Initiative project visited Tsingy Bemaraha and surveyed its forests and caves. The survey discovered the highest species richness of any site in Madagascar and a species new to science. During these visits a good working relationship was established with the park's management team (ANGAP) and they requested that we return to the site and expand our conservation programme to include other vertebrates. It seems that each new inventory of the park results in a description of a new species, with the reptile fauna of particular importance. ANGAP, charged with managing the endemic fauna, need more

information on the priority species, require training in specific activities, and requested advice about habitat management and assistance to design and implement new ecological monitoring programme for the park.

3. Project Purpose and Outputs

- State the purpose and outputs of the project. Please include your project logical framework as an appendix and report achievements and progress against it (or, if applicable, against the latest version of the logframe).

The main purpose of the project is to conserve the endemic vertebrates of Tsingy Bemaraha National Park. We will achieve this through an integrated programme that includes:

i)   Training park guides in identification and natural history

ii)   Conducting conservation research on the ecology of the park's endemic species

iii)   Making biodiversity assessment of parts of the park that have yet to be visited by biologists

iv)   Design a monitoring programme that can be conducted with the resources available to ANGAP

v)   To raise the capacity of the ANGAP team

vi)   Training Malagasy students

We listed seven main outputs in the original proposal:

i)   Ecological monitoring protocol for priority species

ii)   Conservation plans for priority species

iii)   Informed and trained guides and Malagasy students.

iv)   A key to the park's reptiles

v)   ANGAP staff trained in GIS

vi)   Schools education project

vii)   Media coverage and website

- Have the outputs or proposed operational plan been modified over the last year, for what reason, and have these changes been approved by the Darwin Secretariat? (Please note that any intended modifications should be discussed with the Secretariat directly rather than making suggestions in this report).

In discussion with the park staff we have identified the need to hold a workshop about the conservation of the dwarf endemic chameleon *Brookesia perarmata*. This animal is endemic to the north of the park, is CITES Appendix I and listed as vulnerable to extinction by the IUCN. There are continued reports of animal collectors in the park and this continues to be a target species despite the ban on international export. The workshop will promote greater collaboration between ANGAP, the Ministry of the Environment, the police and Air Madagascar leading to a revised conservation plan for the species.

4. Progress

- Please provide a brief history of the project to the beginning of this reporting period. (1 para)

This is the first report for the project and covers a period of six months since the 1st October 2005.

- Summarise progress over the last year against the agreed baseline timetable for the period and the logical framework (complete Annex 1). Explain differences including any slippage or additional outputs and activities.

Progress has followed the project implementation timetable in the original proposal. A project planning meeting was held during October 2005 in Antsalova where Dr Richard Jenkins, Professor Paul Racey, and Hery Lala Ravelomanantsoa, the park Director, discussed the overall objectives of the project and refined the work plan for the next 12 months. Mr. Ravelomanantsoa explained the periods when his staff would be available for training or fieldwork and reiterated the conservation priorities for the park.

We recruited three, (not two as in the original proposal), Darwin Trainees from two university departments in Madagascar. One trainee conducted the first survey of the bats in the north of the park and the other two worked on chameleon conservation projects.

We have recruited four Darwin Assistants for the project as set out in the timetable. Mr. Ravelomanantsoa strongly encouraged us to concentrate our work, at least initially, on reptiles. ANGAP head-quarters in Antananarivo have requested new conservation and monitoring plans from all its parks and because Bemaraha's chameleons (especially *B. perarmata*) is a priority species he is expected to deliver revised or new action plans and monitoring protocols. He requested immediate assistance to achieve this goal and we therefore appointed two Malagasy herpetologists for the first year with the ornithologist appointment deferred. We also appointed a small-mammal ecologist and bat specialist during the same period.

We conducted three major fieldwork projects during the period. In the dry season, October and November, a team surveyed the bats in the caves and forests in Antsalova and Bekopaka and a separate team studied the conservation ecology of a near-threatened fruit bat (*Rosuettus madagascariensis*). From January until March, our herpetology team visited four sites in the north of the park to collect information on the population structure, abundance and habitat use of chameleons.

Classroom-based training was postponed by two months and will take place in May 2006. This was because the tourist guides are based in the south of the park where there is no access by road or aircraft during the rains (the low season for tourists). Tourists begin to arrive in June and numbers grow steadily until November when the water levels begin to rise. We have selected early June for the guide training to coincide with the opening of the road to the south of the park following the rains and the lull before the tourism season begins in full.

We funded eight ANGAP staff, including the director of Programme Bemaraha, the director of the park and the chief conservation officer, to attend training courses, one on GPS use and on GIS/ArcView.

Dr Richard Jenkins reviewed the *Plan de Gestion de la Conservation du Complexes d'Aires Protégées Tsingy de Bemaraha* 2005-2008 for Dr James MacKinnon, an ANGAP Technical Advisor.

It is very difficult for the park team to fully understand the biodiversity of the park without access to the relevant literature. There have been many new species of vertebrate discovered from the park in recent years and the descriptions are usually published in relatively obscure journals. We therefore collated all recent publications

on the biodiversity of the park into two volumes and a CD and presented three copies of each to the park's team. Hard copies have been sent to ECTF.

- Provide an account of the project's achievements during the last year. This should include concise discussion on methodologies and approaches by the project (e.g. research, training, planning, assessment, monitoring) and their consequences and impacts as well as results. Please **summarise** content on methodologies and approaches, and, if necessary, provide more detailed information in appendices (this may include cross-references to attached publications).

<u>Research</u>

There is great uncertainty about the extent to which Malagasy bats are dependent on intact forest for roosting or foraging. This stems from a reliance on species inventories that do not collect information on population abundance, animal movement or ecology. Using mist-nets and acoustic survey methods we completed two transects, each approximately 10 km long, from the edge of the park west towards outlying towns. One of the transects, at Antsalova, consisted of virtually forest-less habitats between the park and the town, whilst the Bekopaka transect in the south was characterised by the presence of degraded forests. Data entry and analysis are underway by a Darwin Trainee in Antananarivo. This study will identify which species have a close association with the karst, which are more common near human habitation and which require forests for feeding. The type of information was noticeably absent from a recent discussion on the conservation of Malagasy bats during the Global Mammal Assessment workshop in Antananarivo 2005 which provided data of use to both the park and other sites in Madagascar.

Despite repeated inventories of the herpetofauna of the park by different teams since the mid-1990s there are no data available on the ecology of the priority species and ANGAP is still without a reliable and robust monitoring method. We visited four sites in the north of the park, representing a gradient in both forest degradation and climate, to investigate the ecology of the park's chameleons and to collect data that we can use to develop a monitoring programme. We surveyed chameleons along rope transects (300 m every night) at night in different habitats and also surveyed paths and trails; ANGAP have asked us to investigate whether their previous trail surveys are likely to be representative of the chameleon abundance and composition inside the forest. The team also collected specimens of other herpetofauna and linked up with a German herpetology team during March to collaborate on taxonomy and descriptions of new species.

Training

Three new Darwin Trainees have been engaged in conservation field projects where they receive tuition in a number of techniques before beginning a period of close-supervision during the data entry and analysis stage.

(i)   Tojo Ramihangihajason (Département de Biologie Animale, Faculté des Sciences, Université d'Antananarivo): Morphology and habitat use of bats in Parc National Tsingy de Bemaraha (writing up)

(ii)   Hantalalaina Elisoa Fideline (Département de Biologie Animale, Faculté des Sciences, Université d'Antananarivo): habitat selection by *Brookesia* chameleons

(iii)   Raphali Rodlis Andriantsimanarilafy: (Département de Biologie, Faculté des Sciences, Université de Toliara): biogeography of chameleons in Parc National du Tsingy de Bemaraha

Eight members of the park's management team learned how to transfer way-points from GPS to computers and use ArcView to produce maps. Although the park's conservation agents already carry GPS units in the field and log sightings of lemurs, tree-cutting or animal traps, the data were never treated electronically and nobody in their team was able to download the way-points and integrate them into a map of the park.

- Discuss any significant difficulties encountered during the year and steps taken to overcome them.

There are no significant difficulties encountered during the reporting period.

- Has the design of the project been enhanced over the last year, e.g. refining methods, indicators for measuring achievements, exit strategy?

There was no major change to the project other than the planned *Brookesia* workshop described above.

- Present a timetable (workplan) for the next reporting period.

April: Supervised study of Darwin Trainees, identification of herpetological specimens

May: Education project in four primary schools in Antsalova

June: Training course for park tourism guides, cave monitoring and research on bats, herpetological survey (caves and forest)

July: Poster on bat conservation donated to the park's new visitor centre.

August: Research on small mammals

September: Research on small mammals

The three Malagasy masters students who have completed their fieldwork will analyse and write-up their results during this period.

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

- Have you responded to issues raised in the review of your last year's annual report? Have you discussed the review with your collaborators? Briefly describe what actions have been taken as a result of recommendations from last year's review.

Not relevant

6. Partnerships

- Describe collaboration between UK and host country partner(s) over the last year. Are there difficulties or unforeseen problems or advantages of these relationships?

There have been no unforeseen problems with the relationship between the University of Aberdeen and the ANGAP team in the park. As the project was designed around a request from the park, we have received excellent cooperation at every level. The close collaboration allows us to sensibly plan our activities, whilst taking into account the availability of people and other resources, leading to an effective programme of events.

- Has the project been able to collaborate with similar projects (Darwin or other) in the host country or other regions, or establish new links with / between local or international organisations involved in biodiversity conservation

We have collaborated with a group of French speleologists who are preparing a book and article about the caves in the park and submitted written contributions plus photographs.

We have submitted as case study about the park to the forthcoming IUCN Karst Guidelines book

We have agreed to collaborate with Dr. Frank Glaw and Professor Miguel Vences over herpetological advances in the park. They will provide our team with technical support and training on taxonomy and species descriptions and we will conduct taxon-specific searches in previously unvisited areas of the park based on their recommendations.

7. Impact and Sustainability

- Discuss the profile of the project within the country and what efforts have been made during the year to promote the work. What evidence is there for increasing interest and capacity for biodiversity resulting from the project? Is there a satisfactory exit strategy for the project in place?

We have a growing profile nationally (as an NGO) and locally, especially in Antsalova. We have promoted the work on local radio in Antsalova and our efforts are becoming better known to other people within ANGAP. The project's profile is likely to grow further in response to our results and achievements.

Although our project includes an element of student training, the main objective is to leave behind a monitoring plan that ANGAP can follow without the need for additional funding, resources or technical expertise. Part of this process will involve a conservation assessment of the species and habitats which will only recommend monitoring certain species or indicator species. At the moment, the park is responsible for monitoring all of its priority species, but some (like the freshwater turtle *Erymnochelis madagascariensis*) are virtually impossible to monitor. Our legacy will be to direct limited resources to the most useful activities.

8. Post-Project Follow up Activities (max 300 words)

This section should be completed ONLY if your project is nearing completion (penultimate or final year) and you wish to be considered to be invited to apply for Post Project Funding. *Each year, a small number of Darwin projects will be invited to apply for funding. Selection of these projects will be based on promising project work, reviews to date, and your suggestions within this section. Further information on this scheme introduced in 2003 is available from the Darwin website.*

- From project progress so far, what follow-up activities would help to embed or consolidate the results of your project, and why would you consider these as suitable for Darwin Post Project Funding?

- What evidence is there of strong commitment and capacity by host country partners to enable them to play a major role in follow-up activities?

9. Outputs, Outcomes and Dissemination

- Explain differences in actual outputs against those agreed in the initial 'Project Implementation Timetable' and the 'Project Outputs Schedule', i.e. what outputs were not or only partly achieved? Were additional outputs achieved?

Classroom-based training for guides has been moved from March to June in response to the availability of the guides and local weather conditions. All other key milestones for the period were achieved. Additional outputs included GIS/GPS training for guides and a survey of bats in caves and forests.

- Provide details of dissemination activities in the host country during the year, including information on target audiences. Will dissemination activities be continued by the host country when the project finishes, and how will this be funded and implemented?

In the first six months of the project our dissemination activities were limited to broadcasts on local radio about the value of biodiversity research and the importance of the park.

- Please expand and complete Table 1. **Quantify** project outputs over the last year using the coding and format from the Darwin Initiative Standard Output Measures (see website for details) and give a brief description. Please list and report on appropriate Code Nos. only. The level of detail required is specified in the Guidance notes on Output Definitions, which accompanies the List of Standard Output Measures

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

Code No.	Quantity	Description
2	3	Three Malagasy DEA (masters students) engaged in research projects
3	9	Eight host-country partners and one Malagasy DEA student completed accredited courses in GIS/GPS
3	1	One Malagasy Darwin Trainee completed a computer training course
5	4	Four Malagasy Darwin Assistants received training and supervision from the Darwin Fellow. Training was full time as the assistants are permanently engaged on the project and included topics such as project planning, fund raising and statistical analysis
7	1	Two volumes of publications on the biodiversity of Tsingy Bemaraha National Park provided to the management authority
8	Nine weeks	Richard Jenkins
	Four weeks	Paul Racey
19C	2	Local radio programmes
23	$10,250	Raised for chameleon conservation in western Madagascar from the BP Conservation Programme

- In Table 2, provide full details of all publications and material produced over the last year that can be publicly accessed, e.g. title, name of publisher, contact details, cost. Details will be recorded on the Darwin Monitoring Website Publications Database. Mark (*) all publications and other material that you have included with this report.

Table 2: Publications

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

10. Project Expenditure
- Please expand and complete Table 3.

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

- Highlight any recently agreed changes to the budget and explain any variation in expenditure where this is +/- 10% of the budget.

11. Monitoring, Evaluation and Lessons
- Discuss methods employed to monitor and evaluate the project this year. How can you demonstrate that the outputs and outcomes of the project actually contribute to the project purpose? i.e. what are the indicators of achievements (both qualitative and quantitative) and how are you measuring these?

Each October and April, meetings between the Darwin team and the park director set out the work plan for the forthcoming six-month period. It is against this that we monitor the progress of the project. Within this, the Darwin team aims to follow the log framework and project implementation timetable whilst incorporating emerging issues and constraints from the park's director. All of our major targets of field work and training have been achieved.

The Darwin Fellow was invited to review the park's management plan even before the project started. This highlights the fact that ANGAP is open to and encourages technical input from external sources and is strong evidence that the final results and recommendations of the project will be incorporated into the next plan (2009-2012). ANGAP's conservation plan also has log frameworks and indicators of achievement and evaluation. Our results will assist ANGAP to better achieve its main goals and to demonstrate that the management team is competent, skilled and up-to-date.

- What lessons have you learned from this year's work, and can you build this learning into future plans?

Emerging issues that the host-country partner invites assistance with must be incorporated into our programme when they fall within the general remit of the project.

12. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum)

■ I agree for ECTF and the Darwin Secretariat to publish the content of this section

In this section you have the chance to let us know about outstanding achievements of your project over the year that you consider worth highlighting to ECTF and the Darwin Secretariat. This could relate to achievements already mentioned in this report, on which you would like to expand further, or achievements that were in addition to the ones planned and deserve particular attention e.g. in terms of best practice. The idea is to use this section for various promotion and dissemination purposes, including e.g. publication in the Defra Annual Report, Darwin promotion material, or on the Darwin website. As we will not be able to ask projects on an individual basis for their consent to publish the content of this section, please note the above agreement clause.

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 *(insert original project purpose statement)* To conserve the small vertebrates of Tsingy Bemaraha National Park by training Malagasy students and guides in fieldwork surveys, leading to the implementation of a new monitoring program, prioritised conservation action and sustainable tourism activities	*(insert original purpose level indicators)* New monitoring programme Yr 3 Tourism advice heeded Yr 2 Better guides Priority species identified Yr 2 Conservation plans prepared Yr 3	*(report impacts and achievements resulting from the project against purpose indicators – if any)* Field work to collect the data needed to design new monitoring protocol and prepare conservation plans Reviewed the park's current management plan (2005-08)	*(report any lessons learned resulting from the project & highlight key actions planning for next period)*
Outputs			
(insert original outputs – one per line)	*(insert original output level indicators)*	*(report completed activities and outcomes that contribute toward outputs and indicators)*	*(report any lessons learned resulting from the project & highlight key actions planning for next period)*

Ecological monitoring protocol	Data collection, manual		
Species action plans	Data collection, publications		
Informed and trained guides	Attendance at training courses		
Trained Malagasy students	Supervisor visits and theses	Certificates from training courses in computing, GIS and GPS	
Reptile guide book	Guide book published		
ANGAP staff to attend GIS courses	Certificates	Eight ANGAP staff completed two training courses, 5 days on GIS and three days on GPS. Certificates send to Darwin	
Media coverage	TV and radio broadcasts	Broadcast on Radio Tsingy in Antsalova	
Project website	Website address		

Note: Please do NOT expand rows to include activities since their completion and outcomes should be reported under the column on progress and achievements at output and purpose levels.

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
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 benefits arising out of the utilisation of genetic resources**			
Purpose *To conserve the small vertebrates of Tsingy Bemaraha National Park by training Malagasy students and guides in fieldwork surveys, leading to the implementation of a new monitoring program, prioritised conservation action and sustainable tourism activities*	Ecological monitoring programme tested and running by yr 3 Levels of tourism controlled in sensitive habitats/caves by yr 2 Improved ability of tour guides to educate park visitors Most threatened species identified (yr 2) and conservation action implemented (yr 3)	Field surveys, data collection and student theses Questionnaires to tourists at start and end of project Data quality checks after field phase Malagasy supervisors' visits	TBNP continues to receive in-country funds to support core-activities Guides attend classes and field workshops Park staff are made available Availability of students and teachers
Outputs *1 Ecological monitoring*	*1 Data collection* *2 Monitoring manual*	*Copies of all reports, databases, photographs, thesis, papers,*	*Park management receptive to recommendations and make appropriate improvements to*

programme implemented	*3 Papers (4) submitted*	*certificates, recordings and articles sent to Darwin*	*undertake interventions as required*
2 Action plans for small vertebrates	*4 Action plans published*		
3 Informed & trained guides (18)	*5 Students graduate*		
4 Malagasy students trained	*6 Guide book published*		
5 Education programme for guides	*7 Malagasy supervisors visit*		
6 Simple key to endemic reptiles	*8 Attendance at training sessions and courses*		
7 ANGAP senior conservation staff trained in GIS and data analysis	*9 TV and radio broadcasts*		
8 Media coverage			
9 Project website			

Activities	Activity Milestones (Summary of Project Implementation Timetable)
Tour guide education programme ANGAP conservation staff and Malagasy student training programme Field test followed by implementation of monitoring protocol Surveys of two other Tsingy sites Annual workshops *Publicity and dissemination*	*Project launch, team recruitment and first stakeholder workshop (Yr1)* *Field research and training projects, January-March and July-October, (Yrs 1 & 2)* *Stakeholder workshops November 2005, 2006 & 2007 and August 2008* *Schools environmental education project (yrs 1 & 2)* *Surveys of two other Tsingy protected areas (yr 3)* *Radio and TV broadcast, TBNP newsletters, poster and published documents (all years)*