

Darwin Initiative: Half Year Report

(due 31 October 2007)

Project Ref. No.	15/001
Project Title	Bees, Biodiversity, and Forest Livelihoods in the Nilgiri Biosphere Reserve, India
Country(ies)	India
UK Organisation	University of East Anglia/ODG
Collaborator(s)	Bees for Development, Keystone Foundation and CAER University of Reading
Project Leader	Dr Janet Seeley
Report date	22 nd October 2007
Report No. (HYR 1/2/3/4)	HYR 2 (April-October 2007)
Project website	http://www1.uea.ac.uk/cm/home/schools/ssf/dev/people/academic/seeley/Research/NilgiriBiodiversity

1. Outline progress over the last 6 months (April – September) against the agreed baseline timetable for the project (if your project has started less than 6 months ago, please report on the period since start up).

Date	Key milestones	Progress
By end of Mar 07	4 people (3 senior staff from State Forest Department and 1 legal advisor) trained on mountain biodiversity with respect to CBD for 2 weeks in UK	This training was postponed (because the senior staff were unable to travel in March because of tasks associated with the end of the financial year). Three people took part in this training (legal advisor, senior forester from Kerala and Keystone director). Two senior foresters were not granted Government of India clearance to take part. They have since been briefed by participants and the reports on the training shared with them. Report produced.
By end of May 07	5 people trained on livelihoods analysis and local governance by UK expert	Prof Adam Pain (ODG) visited Kotagiri in June 2007 and provided training to project staff on livelihoods analysis/governance related analysis and discussed the market research in addition, a brief workshop on analytical writing, (requested by some of the team) was run.
By end of June 07	Third media report provided to press, radio, TV in UK and India (national and local)	Reports on the project have appeared in the Indian Press and in the magazine produced by Bees for Development. In addition, a publicity/information booklet has been prepared, which was shared with participants at the Apimondia congress in Melbourne and is available to visitors to the Indigenous Bees and Biodiversity research unit at Kotagiri and the Bee Museum in Ooty.
Sep 07	Project presented at 40 th Apimondia International Congress in Melbourne, Australia	Four team members from Keystone and Dr Nicola Bradbear (Bees for Development) attended this Congress. A Symposium – Darwin Initiative: Bees and biodiversity in developing countries was held, with presentations by the team, as well as papers from researchers doing pertinent work in Africa, North and South America.

In addition, data collection has continued according to our agreed schedule on livelihood-relevant indigenous bee species (identification, classification, distribution and ecology); cataloguing of melliferous flora and livelihood information at 5 sites.

We were asked to include an elaboration on how the 'research methods are actually being conducted' with our next Annual report. We have included a short annex on this with this half-yearly report, because we thought it would be helpful in explaining what we are doing.

2. Give details of any notable problems or unexpected developments that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

We have received clearance from the National Biodiversity Authority of India for this research but we are still seeking permission for sample collection from the State Forest Department of Kerala. The Government of Tamil Nadu, Department of Environment & Forests has recently asked for some further clarification regarding the project. The Principal Chief Conservator of Forests & Chief Wildlife Warden has recommended that permission be given. While the collection of samples is delayed in the Kerala site, other aspects of data collection (including observation of flora and fauna) are going ahead at that site. We are in discussion with the Kerala authorities to gain the necessary clearance so that sample collection does not get delayed further.

An unexpected, but very welcome, development has been an invitation from the Secretary, Government of India Ministry of Environment and Forests, to meet with both project staff and representatives of the three State Forestry Departments in Delhi on 24 October 2007 in order to discuss how the Darwin Initiative Project principles can be extended to new policy initiatives within the Nilgiri Biosphere Reserve.

Have any of these issues been discussed with the Darwin Secretariat and if so, have changes been made to the original agreement?

No. We do not anticipate having to make any changes to our timetable because of the Kerala delay

Discussed with the DI Secretariat: no, in..... (month/yr)

Changes to the project schedule/workplan: no, in.....(month/yr)

3. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures? No

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document.

Please note: Any planned modifications to your project schedule/workplan or budget should not be discussed in this report but raised with the Darwin Secretariat directly.

Please send your **completed form email** to Eilidh Young, Darwin Initiative M&E Programme at Darwin-Projects@ectf-ed.org.uk . The report should be between 1-2 pages maximum. **Please state your project reference number in the header of your email message eg Subject: 14-075 Darwin Half Year Report**

Annex

Research Methods

Flora -- Approach and Methods

The flora part of the study has three components

- Phenology
- Focal Observation
- Pollen Collection

Methodology for Phenology

Recording phenology:

In the 1 ha plot, an inventory of the plant species is recorded.

Phenological recording for trees:

The dominant species in the 1 hectare plot is tagged and the phenology is recorded.

Phenological recording for shrubs and herbs:

A 5*5 (min.5) quadrat is laid randomly in the 1ha and the phenological record is noted.

Schedule

The phenological recording is done once in a month.

Table 1. Data sheet for Phenology

Species name	Habit	SL	UL	BF	FF	EF	URF	RF	CL	LF	Remarks
--------------	-------	----	----	----	----	----	-----	----	----	----	---------

Methodology for Focal observation

In the 1 ha plot, two focal patches (A and B) of 20*20 quadrates are laid. The observations are made in these two focal patches A and B. During observation, the collector can move freely through the marked area for 30 minutes recording bees on flowers, nesting sites. The person doing the survey can move around as they want but are not allowed to spend more 5min at any single plant or flowering patch.

The plant species visited by bees are identified by directly observing bees foraging on the flowers of plants. The nature of the plants and whether it is a source of nectar and pollen can sometimes be determined by observing the bee's activity on the flower. If a bee thrusts its proboscis into the interior of the flower basin, the plant is a source of nectar. The plant may be identified as a source of pollen if bees are observed collecting pollen and carrying it in loads on their hind legs.

Table 2. Data sheet for Focal Observation

Site No.	Plot No.	Date	Local Name	Botanical name	Habit	Nectar/Pollen
----------	----------	------	------------	----------------	-------	---------------

Schedule

Focal observation is done once a month.

Methodology for Pollen collection

The pollen sample is collected from the legs of the bees that are foraging on flowers and from flowers visited by the bees in the focal observation patches. Using a hand net, the bee is caught and the pollen load is removed from the leg. The samples are

collected into vials and labelled. The samples and analysed following acetolysis procedure. Data is collected in the field and analysed in the laboratory.

Table 3. Data sheet: in the field

Site	Plot Number	Focal patch A/B	Date of collection	Pollen source (Flower / Pollen load)	Colour of pollen	Notes
------	-------------	-----------------	--------------------	--------------------------------------	------------------	-------

Table 4.Data sheet: in the lab

Site No.	Plot No.	Date	Pollen source (Flower / Pollen load)	Colour of pollen	Slide Ref.no.	Identification	Size (µm)	Shape	Surface	Observation/Remarks
----------	----------	------	--------------------------------------	------------------	---------------	----------------	-----------	-------	---------	---------------------

Schedule

Pollen sampling is done once a month.

Biodiversity – approach and methods

The biodiversity reports are being compiled and data input in both excel and word

Excel file Format

- Reporting for the biodiversity study for the months from January to May was as follows. It includes details on pantraps and observational data.

Table 5. Excel file format for Biodiversity Study (January to May)

Site	Name of the plot	Code	Date	Plot No.	Pantrap						NETTING for Beeload (Y/N)	Foraging observation (Number of visits)						Bees recorded	Major flowering plants	highlights/remarks
					Blue		Yellow		white			I		II		III				
					Bees	others	Bees	others	Bees	others		Patch A	Patch B	Patch A	Patch B	Patch A	Patch B			

- From the month of June onwards, the biodiversity report has had the following changes, i.e. inclusion of the honey bee (*Apis* sp. and *Trigona* sp.) data in the pantraps. The reason for the inclusion of the honeybee data is to give us information on the honey bees captured in the pan traps. Till March 2007, the excel file on biodiversity was sent every month. From April, this report is being sent out every two months in addition to the word files mentioned below.

Table 6. Excel file format for Biodiversity Study (June 2007 onwards)

Site	Name of the Plot	Code	Date	Plot	Pantrap												NETTING for Bee load (Y/N)	Foraging observation (Number of visits)						Bees recorded	Major flowering plants	mgngms/remarks														
					Blue				Yellow				White					I		II		III																		
					AD	AC	AF	TF	AD	AC	AF	TF	AD	AC	AF	TF		Patch A	Patch B	Patch A	Patch B	Patch A	Patch B																	

Word file Format

Till the month of May 2007, two word files were sent as the reporting format

1. The observation data
2. Details regarding ecology.

From June 2007 onwards the following changes were made:

The focal observation & ecology were combined and is being sent in the following format

1. Activities of the month
2. Observations
3. Highlights & Remarks

The reason for this change is to combine the two formats into one so that the entire information is captured in one report.

Honey bee nest density estimation

Methodology 1 : Reconnaissance surveys

This methodology was devised to estimate the nest density of *Apis dorsata* & other honey bee species.

Five km random routes were made in forested areas of the NBR. It was decided to make 2 such routes in each forest range. These routes are laid out in different vegetation types & the honey bee colonies will be located & also will be marked using a GPS. These surveys have been conducted with the help of a local tracker.

We have found that these routes did not work for locating other honey bee species but were useful for locating nests of *Apis dorsata*. To locate other honey bee nests, an alternative has been devised which consists of setting out 0.5-1.0 ha plots at each site to locate other honey bee species nests.

Methodology 2: Monitoring of honey bee nests

To create regular/permanent monitoring plots.

1. Keystone's earlier database on honey bees is being used for baseline information on the honey zones present in the NBR. In new areas of study like sites in Chamaraj Nagar sketch maps are being drawn with local people to identify the honey zones in the forested areas near the village.
2. Monitoring plots are being established in each of the study sites:
 - The study plots are 1ha. in size.
 - Four sub plots are laid on four sides of the 1 ha. plot. The sub plots are 0.5ha. each (100x50m)
 - Bee colonies present in these sub plots are located and marked.
 - The bee nests are tagged and then subject to monthly monitoring.
 - The total areas covered by the plot & sub plots are:
 - Plot = 100x100m/1ha./10000sq.m/2.47acre
 - Sub plots =50x100m/0.5ha./5000sq.m/1.23acre X 4 sub plots = 2.0 ha/20000sq.m/4.91acre.

Time Frame

This monitoring is being done every month until December 2007 when it will be reviewed.

Livelihoods – approach and methods

Topics

- History of the area-the people and biodiversity
- Social structure-ethnicity, socio-economic status,
- Occupation/things people do to make a living
- Relationship with the forests (including dependence, wildlife/NTFP)
- Landuse/animal husbandry
- Culture and religion
- Policy
- Institutions-government/NGO
- Infrastructure and natural resource distribution (geography of the area)
- Family well-being
- Risks and uncertainties

Methods

Informal interview/chatting

Checklist to help remember

Sketch maps/diagrams prepared with the help of local people

Activities

The following four broad topics have been chosen to be studied over the six months starting from January to June 2007.

- History of the area-the people and biodiversity
- Social structure-ethnicity, socio-economic status,
- Occupation/things people do to make a living
- Relationship with the forests (including dependence, wildlife/NTFP)

Each house on the social map to has a number. In case of change in occupants of house the previous house number with a subcode is to be used for the new family. Since the Cholanaickens live in caves and their social system is different from the rest of the groups mentioned, the families would be numbered not the houses.

Month (2007)	Work done
January	History of settlements/area-first draft completed and typed
February – May	Numbering houses & finding out who is living in the house
April	Listing of things people do to make a living
June	Started documenting people's relationship with the forests

Livelihood Methodology Modification

Previously, it was decided to cover the entire household/population as respondents but this resulted in a very large number of respondents. It has now been agreed to sample

the villages with households of 100 or more. These villages are Tuneri, Geddesal and Pulinjur. The sampling is purposive to ensure a cross section of the population.

Since most of the topics were broad: history of settlement, relationship with the forests, things people do to make a living, the information being generated was quite general. The existing information has been coded and tabulated to identify gaps, similarities and differences. Moreover subtopics are being generated to ensure uniform and comparable data.

To dovetail the livelihood research with other research areas, particular stress is being laid on biodiversity history on which detailed information is being sought. For e.g. the details in the form of stories of particular incidents - perhaps on finding a particularly valuable plant or insect or product or of discovering it had disappeared -- or even stories of incidents involving officials or other ethnic groups related to access or control of resources.