

Darwin Initiative for the Survival of Species

Half Year Report (due 31 October each year)

Project Ref. No.	14/054
Project Title	Training the next generation of Papua New Guinean conservation biologists
Country(ies)	Papua New Guinea
UK Organisation	University of Sussex and Natural History Museum
Collaborator(s)	Prof. V. Novotny, Dr. A. Mack, Dr. A. Vogler
Report date	31 October
Report No. (HYR 1/2/3/4)	2
Project website	http://darwin-initiative-png.org/

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).

Training of the PNG local Project Co-ordinators:

Darren Bito

Mr Bito is the Project Co-ordinator and Research Supervisor based at BRC. Alongside his supervision duties and training Honours students, he continued in his research on herbivore communities colonizing alien plant species in PNG, being trained and assisted by V. Novotny. In particular, he received tutorials on writing research papers and produced a draft manuscript on his research, to be submitted shortly. His previous manuscript was accepted by the *Journal of Biogeography*, representing one of very few papers written solely by PNG researchers in international journals of this rank. He also presented these results as an oral presentation at the New Guinea Biological Conference in Port Moresby: *Geographic variability of moth communities on an alien tree, Spathodea campanulata in New Guinea and Bismarck Archipelago*. Also, Darren received instruction on writing research and fellowship applications, as he has been applying for PhD studentships at Griffith University in Brisbane, Australia.

Katayo Sagata

Mr Sagata was the Project Co-ordinator based at WCS. However, he has been awarded a New Zealand AID scholarship and has now left PNG to attend Victoria University in Wellington for his Masters Degree. Ms. Miram Supuma will be taking over Katayo's duties as Darwin student supervisor and Project Co-ordinator. Before leaving, Katayo trained Bangan John, a PNG graduate, to work temporarily with Darwin collaborator Dr Michael Balke on his water beetle project.

UK Project Co-ordinator

The last annual report outlined the circumstances behind the termination of the contract between the University of Sussex and the previous UK Project Co-ordinator (Dr Neil Springate) at the end of February 2006. A considerable amount of the Project Leader's time has had to be spent on the repercussions from this episode, including an appeal hearing and an employment tribunal hearing (both of which found in favour of the university's decision to terminate his contract). Fortunately, the project has now been able to move on and consider a replacement for this post, with six months left to run. All project partners were agreed that the best future strategy would be to appoint a replacement to start in January 2007, to coincide with the arrival of the next cohort of students. We have appointed Dr Frank Clarke (a wildlife ecologist and environmental consultant with many years experience in tropical forest systems and specialist interests in vertebrates, sustainable management, biodiversity monitoring, environmental education and training), who will be travelling to PNG shortly to take up his position. We

have also come to an arrangement with WCS to engage Dr Clarke part-time on the Darwin project (at 50% of his time) for a period of 12 months; WCS will engage him for the other half of his time on other projects. This arrangement will allow the Project Co-ordinator to operate over a longer time period and therefore be of much greater value to the trainees.

PNG Honours student training programme

The following students are undertaking research for their Honours Degrees (University of Papua New Guinea, Port Moresby), based at either WCS or BRC. The following accounts summarise their progress within the reporting period. In all cases, the students finished their field work in the previous reporting period and have been working during this reporting period on essays, literature searches and data analyses. All of the students successfully gave oral presentations of their work at the Eighth Annual New Guinea Biological Conference in Port Moresby in September 2006.

Kanawi Chamilou

Mr. Chamilou's thesis is entitled *Successional trends in the structure and composition of a lowland tropical forest in Papua New Guinea* and is being supervised by Professor Vojtech Novotny (BRC). He collected data on the leaf area of all plants with stem diameter (DBH) > 5cm from two 1,000 m² plots, one from primary and another from secondary lowland rainforest. He is now evaluating the three-dimensional spatial distribution of leaf area and herbivore damage in these plots. The study has progressed as planned and the project is on course for completion.

Leontine Baje

Ms. Baje's thesis, *Host specificity and species richness of sap-sucking insects (Auchenorrhyncha, Hemiptera) in a lowland rainforest in Papua New Guinea* is being supervised jointly by Professor Vojtech Novotny (BRC) and Dr Alan Stewart (US). Leontine's project was delayed briefly when her child was born in September, but she is still on track to complete her studies in the allocated time. Her field work involved collecting quantitative samples of sap-sucking Typhlocybina leafhoppers from 75 rainforest tree species. This material is now being sorted and identified to species or morpho-species level.

Kore Tau

Ms. Tau's thesis is entitled: *Flying fox abundance, reproduction and roost selection in caves and stone holes in the Crater Mountain Wildlife Management Area, Papua New Guinea*. These large bats are heavily hunted for meat by people in PNG and because they roost in caves are particularly vulnerable to over exploitation. Kore's field data are extremely useful, providing the first information on population estimates and reproductive frequency for montane flying foxes in PNG. She has collected valuable information on site parameters that will help conservationists identify which caves are most suitable for roosting bats of several species. She has also positively confirmed the occupancy of an extremely rare species of flying fox, Bulmer's Fruit Bat, *Aproteles bulmerae*, until recently considered extinct, in two caves in the Crater Mountain area. Kore is also documenting hunting of these populations which are very vulnerable to extinction.

Enock Kaledimimo

Mr. Kaledimimo's thesis is entitled: *Density, diversity and reproductive status of small mammals in the Crater Mountain Wildlife Management Area, Papua New Guinea*. PNG has a diverse fauna of small mammals that play important ecological roles as seed predators and dispersers. Additionally, many are important in the diets of rural people who depend on wild game for their dietary protein. Yet there has never been a study of population demography of any small mammal in PNG. There are no estimates of population density, home range, longevity or even breeding age or time of year. Enock used state-of-the-art mark and recapture methods on a 6 ha grid over a full year to study the terrestrial small mammals of Crater Mountain. His study is the first of its kind on the island of New Guinea and is destined to become a standard for future research and management. Enock has been awarded a prestigious Christensen Conservation Leaders Graduate Fellowship for Masters Degree study in the United States, beginning in July 2007.

Eunice Dus

Ms. Dus's thesis is entitled: *Mangrove productivity at Motopure Island, Papua New Guinea*. Mangroves

are highly productive ecosystems and are very vulnerable to multiple threats including logging, clearing, pollution and global climate change. They are important as nurseries for many economically important fisheries. They also act as better carbon sinks than many other ecosystems because some of the carbon they capture from the atmosphere ends up on the ocean floor where it decomposes very slowly. Eunice has applied for a scholarship for Masters study in 2007.

General training programme

With the support of Darwin Initiative funds, the training program at both WCS and BRC completed a number of activities that target the larger audience of trainees at both institutions. These activities include:

- Four Honours students attended a course on conservation biology organised by WCS
- Instruction on water beetle collection techniques by Dr Michael Balke at BRC. This visit also served to plan and organise a more formal training course on the subject in 2007.
- Three-week field course in Tropical Ecology organised by The University of South Bohemia (Czech Republic) and taught by Profs. J. Leps and V. Novotny. This course brought ten European students (mostly MSc level) to PNG and was based partly at BRC and partly at the remote field site at Wannang. Darren Bito participated in part of the course (but could not complete the course due to illness).
- One-week training course at BRC on plant taxonomy, ecology and herbarium techniques by Dr. G. Weiblen (University of Minnesota, USA); attended by Darren Bito.
- April 2006: four-day course at WCS on taxonomy, species concepts, how to make and curate collections and how these issues affect conservation for 33 participants from NGOs and PNG government departments.
- July 2006: three-day course at WCS for eleven participants on how to use GPS and what its limitations are, how to enter this data into ArcView Software and calculate home ranges, and how to create and use Access databases.
- August 2006: four-day course at WCS on population dynamics models for fourteen participants from NGOs and PNG government departments. The course focused on no-take zones, source-sink models, reproductive outputs and sustainable yields for hunting, and demonstrated the use of Distance and Access Software.
- One-day course at WCS on literature database searches and the use of EndNote bibliographical software for fourteen participants.
- Weekly scientific paper discussions at WCS with a different peer-reviewed paper each week relevant to conservation in Papua New Guinea.
- Weekly skills testing at WCS using sample tests of the Graduate Record Exam (GRE). This exam is the standard used by U.S. Universities for admission to postgraduate degree programs.
- Further development of an Endnote biological reference library linked to an electronic library of published papers on biodiversity, systematics, conservation and ecology. Approximately 1,000 new pdf files were databased and added to the library at BRC, bringing the total of available papers to 3,500. At WCS, the total number of citations was increased to 17,000 and full papers to 2550. This resource is freely available to all trainees in the program for use in their research. It is particularly useful in a country such as PNG where high speed internet connections and modern libraries do not exist.

Synergy with other Darwin projects

Kanawi Chamillou and Leontine Baje were assisted in the more practical aspects of their Honours research by BRC parataxonomists employed on Darwin post-project EIDP09/10-030 (*Consolidating local capacity for biodiversity surveys in Papua New Guinea*; Project Leader: Dr Alan Stewart). Similarly, the students have been able to educate the parataxonomists in the more theoretical aspects of biology.

BRC staff have been in regular contact with Mr. Rob Small, a doctoral researcher leading the field part of the Darwin project *Sustainable insect collecting and farming in Papua New Guinea* lead by Dr. Tim Bayliss-Smith (Cambridge University).

Collaboration with other projects

Darwin-funded research and training based at BRC will benefit considerably from synergy with the concurrent NSF-funded project on *Plant-insect food webs and tropical rain forest succession* (NSF-00515678). This project is studying the differences in host specificity and species richness of insects feeding on young and mature trees (as models of the effects of rainforest disturbance) in four 1ha plots (two each in pristine and cleared forest) in which all mature trees will be inventoried and all insects on the vegetation will be reared for species-level identification. This is a very substantial logistic undertaking that is providing ideal training opportunities for the Darwin-funded students. It also fits in well with the objective of the Darwin project to build student projects around the comparison of pristine and disturbed rainforest habitats.

Publications supported by Darwin Initiative funding (project personnel in bold):

Balke, M., Pons, J., Ribera, I., **Sagata, K.** and **Vogler, A. P.** Infrequent and unidirectional colonization of megadiverse *Papuadytes* diving beetles in New Caledonia and New Guinea. Submitted to *Molecular Phylogenetics and Evolution*.

Balke, M., L. Hendrich, **K. Sagata** & G. Wewalka. 2005. *Hydaticus dintelmanni* sp. N. from Papua New Guinea highlands (Coleoptera: Dytiscidae). *Linzer. Beitr.* 37(2): 1251-1255.

Bito, D. (in press) An alien in an archipelago: geographic variability in moth (Lepidoptera) communities colonizing *Spathodea campanulata* in the New Guinea and Bismarck Islands. *Journal of Biogeography*.

Gilman, E., H. Van Lavieren, J. Ellison, V. Jungblut, L. Wilson, F. Areki, G. Brighthouse, J. Bungitak, **E. Dus**, M. Henry, M. Kilman, E. Matthews, I. Sauni, N. Teariki-Ruatu, S. Tukia, and K. Yuknavage. 2006. Pacific Island mangroves in a changing climate and rising sea. UNEP Regional Seas Reports and Studies No. 179, United Nations Environment Programme, Regional Seas Programme, Nairobi, Kenya.

Shaverdo, H. V., **K. Sagata, M. Balke** 2005. Five new species of the genus *Papuadytes* Balke, 1998 from New Guinea (Coleoptera: Dytiscidae). *Aquatic Insects* 27(4): 269 – 280.

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.

See discussion above regarding UK Project Co-ordinator. No changes to the workplan are envisaged, but we have been allowed to carry forward funds to support the post.

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

The Secretariat has been kept informed throughout regarding developments with the UK Project Co-ordinator.

Discussed with the DI Secretariat: ~~no~~/yes, emails on 29 March & 5 April 2006

Changes to the project schedule/workplan: ~~no~~/yes, 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 by 31 October each year per email** to Stefanie Halfmann, Darwin Initiative M&E Programme, stefanie.halfmann@ed.ac.uk . The report should be between 1-2 pages maximum. **Please state your project reference number in the header of your email message.**