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Darwin Initiative Annual Report

1. Darwin Project Information

Project Ref. Number	14-003
Project Title	Sustainable insect collecting and farming in Papua New Guinea
Country(ies)	Papua New Guinea
UK Contractor	University of Cambridge
Partner Organisation(s)	(1) Department of Biology, University of Papua New Guinea (2) Department of Environment & Conservation, PNG Government (3) Insect Farming and Trading Agency, Bulolo (4) Wau Ecology Institute, Wau
Darwin Grant Value	£177,310
Start/End dates	01 July 2005 – 30 June 2009
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	01 July 2005 – 31 March 2006
Project website	http://www.geog.cam.ac.uk/people/bayliss-smith/
Author(s), date	University of Cambridge

1. Project Background

The island of New Guinea contains thousands of insect species many of which are eagerly sought by international collectors. In Papua New Guinea 55% of the known butterfly species are endemics including the world's largest butterfly, *Ornithoptera alexandrae*. To meet market demand within CITES constraints, insect farming and trading has been carried out in PNG for the past 28 years, but apart from some superficial studies in the 1990s, no research has been done on the institutional structure, ecological impact or socio-economic effects of this trade.

Since 1978 (but to a lesser extent in recent years) the selling of insects produced by farming and collecting has made some direct contribution towards sustainable livelihoods for rural Papua New Guineans. A project was proposed under the Darwin Initiative that would improve the ease, the efficiency and the sustainability of this trade. Enhanced livelihoods should in turn provide more incentives for conservation, and a discouragement to the illegal trade.

The four-year Darwin Initiative project has three main objectives –

- Research into insect collecting/farming to establish the scale of exploitation by species and by province, and the scale and distribution of livelihood benefits;
- Capacity building for the two principal NGOs that are middlemen in this trade, Insect Farming and Trading Agency (IFTA) and Wau Ecology Institute (WEI);
- A workshop among all partners, including officials from the Department of Environment and Conservation (DEC) and biologists from UPNG, to discuss new policies and practices for the sustainable use of PNG's insect populations. This will allow all project partners to contribute to the development, agreement and adoption of a National Strategy for Sustainable Use of Insects.

It is our hope that by achieving these objectives then PNG's insect biodiversity will be better protected through improved policies and practices for the sustainable use of insects through commercial exports. The project began July 2005, and its field phase will be lasting for three years, with a fourth and final year devoted to completing the research component.

2. Project Purpose and Outputs

To achieve the three objectives of research, capacity building and National Strategy for Sustainable Use of Insects, in 2004 collaborative work was proposed, and was agreed in principle, with four different partners:

1. **Insect Farming and Trading Agency (IFTA), Bulolo** -- IFTA management assisted in the design of the project during the pre-project funding visit. In Lae, the University of Technology board (which owns IFTA) also welcomed the project, and provided full written support.
2. **Wau Ecology Institute (WEI), Wau** – WEI management also indicated full willingness to participate in the project during the pre-project funding visit. Mr Michael Hudson

(Wau entomologist) was particularly supportive, in view of the problems that Wau had faced under its previous manager (Dr Harry Sakulas) and the near-collapse of most of its research and income-generating activities.

The roles that IFTA and WEI agreed to were as follows– (i) to collaborate in a research programme to review the PNG insect trade past and present, using purchasing records and interviews; (ii) building upon this review, to develop appropriate training programmes; (iii) to participate in a workshop to discuss new policies and practices for sustainable programmes; (iv) to contribute to the development, agreement and adoption of a National Strategy for Sustainable Use of Insects.

3. **Department of Environment and Conservation (DEC), Port Moresby -**

DEC's Assistant Secretary, Mr. Barnabas Wilmott, initially acknowledged DEC's need for a website, and welcomed collaboration with the project during the pre-project funding visit.

In our initial discussions, the roles for DEC that we originally suggested were apparently received warmly. These were (i) to collaborate in a research programme, by providing data on the numbers of CITES species being exported; (ii) to assist and advise during the establishment of the DEC website; (iii) participate in a workshop to discuss new policies and practices for sustainable programmes, including future data requirements in order to meet CITES obligations; (iv) to contribute to the development, adoption and agreement of a National Strategy for Sustainable Use of Insects. However written confirmation of these roles was not received before the Stage 2 application was submitted, or indeed afterwards.

4. **Department of Biology, University of PNG (DBUPNG), Port Moresby – Prof. Lance Hill** promised research assistance and official affiliation, to enable the project to gain essential research/residence permits. Following discussions (i) we agreed to help develop two research projects on impacts of insect collecting/farming, supervised by a PNG biologist, and suitable for two PNG Honours students supported by the project; (ii) DBUPNG agreed to participate in a workshop, discussions to include priorities for ecological research; (iii) they also agreed to contribute to the development of a National Strategy for Sustainable Use of Insects.

5. A fifth stakeholder in the project (although not formally specified or included in the application) are the **local individuals and communities** that have gained financial benefits from insect collecting, farming and selling over the years. Already during the pre-project funding trip some interviews had been conducted with insect farmers and collectors in the Wau/Bulolo area. It was our hope to extend the consultation process with such people during the lifespan of the project, and that assessment of the scale and sustainability of benefits will be an important component of the project's field research

The various activities proposed with the four institutional collaborators were summarised in a logical framework (Annex 1). Research and capacity building were the two main project activities for the period under review in this report (Project Year 1), and in the Half-Year Report (October 2005) we reported delays in the start-up of the projects, setbacks with some major collaborators, and the possibility that project objectives might need to be revised. That possibility still exists as the Progress report below indicates, but so far we do not intend to set lesser targets than those approved in the project application, even if so far some objectives remain unrealised.

4. **Progress**

Initial problems

The project was approved by Darwin Initiative in April 2005 and we began negotiations at once to obtain Research Visas for Rob Small (Research Assistant) and Tim Bayliss-Smith (Principal Investigator). However, because of delays we could not launch the project with the planned field visit to Papua New Guinea (PNG) by Small in July. After emailing, faxing, and writing letters to our various partners, all of whom had signalled agreement in June 2004 during our Pre-Project Funded visit, it became clear that a Research Visa with written agreement from all partners was going to be problematic:

- Department of Environment (DEC), PNG Government, failed to respond to initial messages, and eventually requested that we re-negotiate terms of reference.
- There were delays in response from Department of Biology, University of PNG, for understandable academic reasons (riots on campus, absence of key persons, etc.).
- Changes had taken place in the management of Insect Farming and Trading Agency (IFTA) in Lae, a key partner. Mr Jeffrey Juju had replaced Mr Esekia Warvi as Executive Manager of UNITECH Development & Consultancy Ltd., which de facto 'owns' IFTA. On 2nd June 2005 Juju emailed his willingness to help with the visa. Unfortunately at IFTA itself a new acting manager, Dr Harry Sakulas, had been appointed in place of Mr David Whittaker (V.S.O.) with whom we had negotiated collaboration in June 2004, and he signalled his intention to be uncooperative with our research objectives.
- Wau Ecology Institute (WEI), a struggling NGO previously mismanaged by Sakulas and now being rescued by Mr Michael Hudson, de facto Director, was also doubtful. Hudson signalled his unease (he used stronger language) about any project that involved his institute cooperating with Dr Sakulas.

In the light of these developments, the situation for a research permit being possible looked unpromising. Ms Jean Kekedo, the PNG High Commissioner in London, advised that in the circumstances she would not object to Rob Small visiting PNG on a tourist visa to try to sort out these problems.

Rob Small's visit took place from 30 August to 2 October 2005. On 28 September he gave a successful seminar at UPNG which was attended by over 40 people, including staff and several students two of whom we wished to recruit for Honours year scholarships funded by the project. Following this seminar the Department of Biology (notably Prof. Lance Hill and Dr Jane Mogina) became actively supportive. In early October Small returned to UK to attend Ph.D student induction procedures in Cambridge and to await a Research Permit, which was granted on 24 October. He flew back to PNG in early November, and Bayliss-Smith joined him for a two-week visit in December.

After Bayliss-Smith's December visit Rob Small stayed working in PNG for the remainder of the period of this report, based in Madang but visiting Lae, Bulolo, and Port Moresby. At the end of April 2006 he returned to the UK for a six-week break for purposes of local leave, library work, and Cambridge research training.

Modifications to the programme

By December the project could get started but with the following modifications to the original project proposal:

- It was the National Research Institute in Port Moresby that sponsored our application to PNG Foreign Affairs for research permits etc. Since DEC had signalled that it would take them six months (!) to process our application if they needed to be involved, the application to Foreign Affairs was for a project on 'Socio-Economics of Insect Trading', cutting out the ambiguous reference to 'Sustainable Insect Collecting' in the original

title. Had there been any suspicion that collecting insects was part of our project, then DEC would have had to be involved, and the project's timetable would therefore have collapsed, so we felt this sleight of hand was desirable. In fact, except from the point of view of the research permit/visa application, there seems no reason for us to actually re-title the project.

- Following the successful NRI-sponsored research permit application, Madang and Morobe provinces signalled their willingness by granting us permission to carry out research.
- As envisaged in the original application but following some delays, a project headquarters in Madang (a bungalow in a secure shared compound) was acquired for rent, and a second-hand vehicle in good condition was purchased. Both house and vehicle have proved to be sound acquisitions
- Despite initial scepticism, DEC gradually became more willing to collaborate and, we hope, they may still benefit from the project. Their lack of capacity to monitor the scale of insect exports and therefore their inability to demonstrate to CITES the sustainability of the trade, means that there has emerged a recognition of mutual interests. For the past 18 months DEC have been unable to enter into their data base records of insect exports, as the computer with they previously used has broken down and has been illegally removed from the office (but the hard drive has been recovered). They are therefore unable to up-date their data-base, nor can they comply with CITES requirements, so that PNG is in danger of having their legal trade in insects suspended. They therefore desperately need 'capacity building'. However, their staff levels have been cut, morale seems low, and rumours of illegal practices continue. Moreover DEC are currently unable to afford to maintain a website, something which the project was supposed to provide for them but which looks at present to be an inappropriate technology.
- Collaboration with IFTA in Bulolo has got under way, despite initial lack of cooperation with Dr Sakulas (new IFTA manager) in Lae. IFTA is only one of Sakulas's managerial responsibilities, and he visits the Bulolo office rarely. Bulolo is where the insect trading records are kept to which we need access, and the IFTA staff in Bulolo are keen to collaborate, fearful that their jobs may disappear if IFTA collapses. Training courses organised by the project have taken place (see below). After the period of this report Dr Sakulas attended a meeting on 20 April that was attended by Mr Jeffrey Juju, Mrs Cathy Aisi and Rob Small, and his attitude is now more positive. Moreover the UNITECH management in Lae are not even talking about revoking the agreement that we reached with them last year, recognising that a viable IFTA could provide an income stream for UNITECH, which is otherwise financially challenged as is the whole university system in Lae. On this basis we have been able to proceed.
- Despite initial scepticism, working relations were also re-established with Wau (WEI) following the December visit of Bayliss-Smith and Small. Training courses have taken place (see below). Michael Hudson (WEI entomologist) attended another meeting on 20 April, and promised full access to Wau archival data. However, physical access to Wau has become extremely problematic, following the destruction of the only road there from Bulolo by river floods and landslips in February 2006. The 40-minute drive to Wau from Bulolo now takes 4 hours using back roads originally constructed for Forestry Department use, and this back route requires dry weather for it to be a feasible and safe option.
- The law and order situation in PNG remains difficult. IFTA staff members are currently unable to purchase insects by visiting their usual village-based collectors, because the roads are so bad and because IFTA itself now lacks a vehicle and has no manager on the spot. The Chief of Police in Bulolo has begun to visit known collectors, in his police vehicle, armed and in uniform, and has been demanding for a nominal price (2 kina) specimens of *Callodena* beetles that he can sell illegally to a Japanese trader in Lae. Michael Hudson, a DEC-permitted trader working for WEI, buys good *Callodena*

specimens for 150-200 kina each, and he manages each year to sell three or four of the highest-quality specimens to collectors in the USA for about US\$1,000 each. Windfall profits of this kind are what keeps the legal NGOs viable. *Callodena* is a rare, endemic click-beetle coloured bright red, yellow and blue, and the large prices realised by the sale of such insects indicates the scale of the challenge facing this project, operating in a country where government departments are remote and failing, where the legal insect-trading NGOs are struggling, and where the illegal trade is an ever-present temptation to actors at all levels.

Achievements to end of March 2006

Despite the delays, the needs for re-negotiations, and the logistic challenges outlined above, many of the project activities that were planned for this year have nonetheless taken place, mainly on the initiative of Rob Small. We can summarise achievements to date under the headings Research and Capacity Building.

RESEARCH

Archival research

Access to the IFTA records needed by this project was initially jeopardised by the obstructive attitude of the manager in Lae, but staff in Bulolo were helpful and Rob Small was able to photograph about 20 years of manuscript records, which in periods of free time he has been entering into Excel for analysis, using the project office in Madang. In addition we were able to gain the services of Catherine Aisi, a long-term IFTA employee, in order to continue the task of transcribing relevant insect trading data from the IFTA archive. The intention is to sample the record, covering the years 1993 and 2003 plus, if possible, a year in between, probably 1998. The year 1993 alone occupies 20,000 lines of Excel, with eleven out of twelve months completed. This long-term record will provide for DEC a valuable practical resource showing the number of specimens of each insect species exported by IFTA, as well as contributing to the project's wider research agenda.

Village-based socio-economic research

Data from interviews with insect farmers, collectors and others in local communities will form an important aspect of our assessment of the historical, present and future potential impact of the insect trade on local livelihoods, and attitudes to insect habitat loss. This work has begun, but not on the scale that was originally envisaged. Drier weather in January enabled Rob Small to gain access to villages inland of Madang, where access had been impossible when Small and Bayliss-Smith attempted to drive there in December. Hais Wassel, a local leader and long-term insect farmer and tourist operator, was interviewed on various occasions, and has provided information on other insect traders in the area. However the villages in the Aseki area beyond Wau, which have been an important source area for insects sold to WEI and, in the past, IFTA, have remained inaccessible because of bad or non-existent roads. Planned visits have been postponed to the next dry season.

A new location for Queen Alexandra Birdwing butterfly?

In late 2005 there were unconfirmed reports of a new location for the Queen Alexandra birdwing butterfly, which is listed on CITES I and is threatened in its main locations by deforestation and the spread of oil-palm plantations. The new location is Tufi in Oro Province, and Rob Small was able to visit the site in February. The purpose of the trip was to assess the suitability of Tufi as a field site for UPNG honours student Florence Jicki, and to establish if it would be an appropriate location for field extension work to be conducted by Wau Ecology Institute. After several days in Tufi station and visits to surrounding villages it became apparent that in fact QAB

was not present. The common birdwing species, *Ornithoptera priamus*, had been misidentified by locals as being the Queen Alexandra birdwing. Tufi however does appear to be a suitable area for insect farming and collecting to be carried especially with the presence of *Papilio thule*, a species of butterfly that is currently not sold to WEI or IFTA.

CAPACITY BUILDING

IT training with IFTA and WEI

Due to the short-term availability of a Canadian volunteer with the IT volunteer group NetCorps, Mr Craig Collins, the IT training programme was brought forward to the first week of February. Rob Small and Craig Collins travelled to Wau and discussed with Michael Hudson IT training needs. It was ascertained that the most pressing need was for website design skills. Collins and Small worked with Hudson on the development of a website for the Wau Ecology Institute Butterfly Ranch. Michael received training in the following software – Adobe Photoshop CS and Macromedia Dreamweaver. Although Collins was only available for a week all training will be ongoing and will be conducted by Small. During this period further areas for IT training and implementation were identified – the need for an inventory for stock control and auditing purposes.

In addition to the work done with WEI, Small and Collins also spent two days with the staff of the Insect Farming and Trading Agency in Bulolo. All but two staff members had no IT knowledge and Collins conducted tutorials on basic IT skills to those who were IT illiterate. Training materials and software have been left with the staff so that they can revisit and improve upon their IT skills. Subsequent trainings for IT will be conducted by Small on a regular basis. The two staff members that had basic IT skills were tutored on extended use of the internet such as performing internet searches and attaching files to e-mails. The IFTA also requires an updated website which was first designed five years ago. A staff member has been identified for this role and will receive further tutelage on web design from Small. Currently the PC at IFTA is not powerful enough to run the appropriate web design software and will need upgrading before this work can begin.

DEC Seminar

Right up until early 2006 the project was suffering from a lack of firm engagement by the PNG Government's Department of Environment and Conservation. After consultation with Vojtech Novotny and Lance Hill it was therefore decided by Small and Bayliss-Smith that it would be highly desirable to present to DEC a seminar explaining the purpose of the project at their offices in Port Moresby. This would allow a greater number of DEC staff members to gain understanding of the project's aims and goals. It was also decided that the seminar would provide a good opportunity for all of the project's partner organizations to meet.

In mid December a date in the second week of February was tentatively agreed. Due to our contact within the department being on leave for an eight-week period the seminar's date was only formally agreed five days before it took place. Nevertheless attendance was quite substantial and wide-ranging. The seminar was attended by staff from DEC wildlife enforcement division including Barnabas Wilmot (Assistant Secretary) and his assistant Barbara Roy. Also in attendance were Catherine Aisi (IFTA), Michael Hudson (WEI), Dr Jane Mogina (UPNG), Prof. Lance Hill (UPNG), David Gordon McLeod (British High Commissioner), John Sengo (Conservation Melanesia) and Lester Seri (Conservation Melanesia).

Rob Small presented his current research work, gave a background on the history of insect farming in Papua New Guinea. The two UPNG students which the project is providing Honours scholarships for each gave a short presentation on their intended research work.

Discussions after the presentations were wide ranging and touched upon problems concerned with the illegal trade in insects, possibilities of the live export of butterfly pupa and the building of partnerships between IFTA and WEI with other local NGOs in order to assist in the training of insect farmers throughout PNG. After the seminar a separate meeting was held with Michael Hudson, Cathy Aisi, Barnabas Wilmot and Rob Small. This was in order to discuss changes in legislation that DEC are in the process of implementing for the export of insects from Papua New Guinea. Mr. Wilmot also highlighted points that he thought that the project would be able to assist with such as the creation of a set of guidelines for butterfly ranchers and middlemen organizations and a review and update of all CITES listed insect species.

Overall we believe that the seminar was a great success. It was the first time that representatives from the projects partner organizations had met at the same time. The meeting has enabled further development of the relationship between the project and DEC. It turned out to coincide well with DEC's planned change in legislation for exporting as IFTA and WEI have now both been informed ahead of time about proposed changes. In the past such changes have been made and implemented without any prior consultation.

To summarise, the seminar achieved the following outcomes –

- DEC show signs of opening up to the idea of live pupa export.
- DEC require assistance in the writing of guidelines for insect ranching operations.
- DEC require assistance in the updating of species management plans for all CITES listed species.
- IFTA and WEI are better informed of the changes in legislation being proposed by DEC.

It should be noted that the DEC is in the process of a staff shuffle and individuals with whom the project is beginning to develop a working relationship with, such as Barnabas Wilmot, may be moved to different sections within the department or even lose their jobs. The result of the reshuffle is expected by the end of April.

University of Papua New Guinea collaboration

The project has fully met its objectives with regard to collaboration with UPNG Department of Biology. We have established a good working relationship with Dr Jane Mogina, who assisted in the recruitment of two graduates from 2005 who wish to continue with a fourth Honours year of study. They are Mr Elliot Tovaboda and Miss Florence Jicki. Both attended the DEC seminar (see above) and embarked on a reading programme under Rob Small's direction. They both submitted their first essay in March (Elliot one week late), and discussions continue about the mini-research project they will carry out in an insect-collecting/ecology topic under the supervision of Dr Mogina and Rob Small.

DISSEMINATION

Local media

Press reports appeared in Papua New Guinea in December, following Bayliss-Smith's visit and with the assistance of Dulcie Somare, British High Commission, Port Moresby.

This was followed by a Radio New Zealand interview with Rob Small on 21st December, which was repeated on PNG radio stations.

Publications

An article by Rob Small has been submitted to the scientific journal *Oryx*, and is currently under review.

Summary

The following verbatim transcript of the original Logical Framework (columns 1 and 2) is followed by our summary (column 3) of the extent to which the project has managed to get back on track following the initial difficulties that we encountered in 2005, and the underlying reasons for the shortfall if any (column 4):

Project summary	Measurable indicators	<i>Comment on extent to which the objective has been realised</i>	<i>Comment on reasons for any shortfall</i>
<p>PURPOSE:</p> <p>PNG's insect biodiversity better protected through improved policies and practices for the sustainable use of insects through commercial exports.</p>	<p>BY END YEAR 1:</p> <p><u>1. Knowledge</u> New knowledge on insect trading by IFTA/WEI, and the exports approved by DEC.</p> <p><u>2. Future policies and practices</u> [none specified for Year 1]</p>	<p><u>Knowledge:</u></p> <p>1. <i>IFTA data have been obtained and are nearly all analysed, but reports not yet written.</i></p> <p>2. <i>Wau Ecology Inst. data not yet obtained but access agreed.</i></p> <p>3. <i>DEC data chaotic and possibly unobtainable.</i></p> <p><u>Future policies and practices:</u> <i>Some discussion have taken place already</i></p>	<p>1. <i>Unexpected delays in research permits to start work in PNG;</i></p> <p>2. <i>Physical access to Wau impossible following floods and landslips January-March 2006.</i></p> <p>3. <i>DEC's unco-operative attitude, constant staff restructuring and lack of resources has led to slow progress until the February meeting.</i></p>
<p>OUTPUTS</p> <p>1. Research into the sustainability of insect farming/trading and how to improve it..</p>	<p>BY END YR. 1</p> <p>1. Report on insects traded and exported based on data collected from IFTA, WEI and DEC</p>	<p><u>1. Research report:</u> <i>completion delayed. But a partial report in the form of a scientific paper has been submitted to journal Oryx.</i></p>	<p>1. <i>Delays for reasons discussed, but Small will complete a draft by end of may for his Cambridge 1st Year Report committee.</i></p>
<p>2. Enhanced engagement by the University of PNG in biodiversity/sustainable use issues.</p>	<p>[2. none specified]</p>	<p><u>2. UPNG engagement:</u> <i>first Honours essay submitted by each of the two recruited students, Elliot and Florence.</i> <i>[Second essay submitted in April, but Elliot's not yet up to standard]</i></p>	<p>2. <i>Targets for co-operation and capacity building successfully met.</i></p> <p><i>[warning letter to second student will be needed, to tell him of need for improved performance]</i></p>

3. Enhanced capacity of DEC	3. DEC's website up and running	3. <i>DEC website: our offer rejected by DEC as inappropriate to their current needs</i>	3. <i>Failure to foresee that the PNG Government is now unable to maintain the basic infrastructure of an efficient modern state.</i>
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5. Actions taken in response to previous reviews (if applicable)

No feedback was received on the Half Year Report, and no review of the project has so far taken place.

6. Partnerships

The relationships established and re-defined with partners within PNG have been fully described above. We remain committed to working partnerships with IFTA and WEI, and relations with both organisations are much more cordial than was the case in mid-2005. The Department of Environment & Conservation, PNG Government (DEC), remains a more intractable problem, as already discussed. Contacts with WWF in Papua New Guinea, especially Paul Chatterton (WWF Conservation Manager for PNG), indicate that our project is not alone in regarding DEC as a defunct department of government that is difficult to reform, and possibly quite close to institutional collapse within the framework of a failing state. In despair of reforming DEC or rebuilding its capacity (something attempted before by others, such as Ausaid), WWF is now trying to establish a streamlined committee of more senior bureaucrats and INGO advisers, that would, in effect, by-pass DEC in order to carry out the more urgent tasks necessary for biodiversity conservation in PNG to proceed. A meeting in early 2007, to which our project would be invited, will explore this possibility.

Working relations with Vojtech Novotny, himself widely experienced in management of Darwin Initiative projects in PNG, and with other NGOs and institutions in Madang, are very positive. Madang itself has proved to be good base for the project.

7. Impact and Sustainability

We have done what we can to establish a presence within PNG, but it too soon to measure much impact. A further round of media releases is planned to maintain some level of public awareness. Ground work towards the National Strategy for Sustainable Insect Exports has begun, but without DEC's involvement, or involvement with whatever institution might replace it, such a Strategy will be meaningless. It is certainly too soon to successor a satisfactory exit strategy for the project.

8. Outputs, Outcomes and Dissemination

The reasons for project delay and some re-definition of project focus are reviewed above. The following Table re-visits the original Implementation Timetable, and comments on reasons for any shortfall.

Project implementation timetable			
Date	Financial year	Key milestones	Has the milestone been reached? If not, or if reached later, summary of reasons why not.

	Apr-Mar 2005/6		
7/05		Establish base in Madang	<i>Yes, but in 10/05 not 07/05. Reason: delay in research permit and visa.</i>
8/05		Liaise with DEC and UPNG	<i>Yes, but (except by post and telephone) not until 09/05 because of visa etc. delays.</i>
9/05		Work with IFTA in Bulolo	<i>Yes, both staff training and data acquisition completed, but both somewhat delayed.</i>
10/05		Work with WEI in Wau	<i>Yes, but data acquisition delayed to 05/06 because road access impossible.</i>
11/05 to 12/05		Fieldwork to be conducted in insect farming/collecting communities (Madang and Morobe Provinces)	<i>Yes in Madang Province but not until 02-03/05, and Morobe Province delayed because of road destruction and wet season delays.</i>
1/06		Work with DEC in Port Moresby	<i>Seminar and meeting only, because of DEC's rejection of website offer and staff re-shuffle in early 06</i>
2/06		Finalise the UPNG student projects, and establish the students in the field in Wau/Bulolo area	<i>Yes, but fieldwork delayed to mid-06 pending their preparation of Honours thesis essays in Port Moresby (UPNG requirement)</i>
3/06 to 5/06		Preliminary data analysis and report writing	<i>Yes, ongoing.</i>
6/06		Contingencies and local leave	<i>Yes, UK leave began 28.04.06. Rob Small suffering from foot ulcer, cheek abscess, and adverse reaction to antibiotics, so early return to UK advisable.</i>

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

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	TOTAL
15A	National press release in PNG	1				
19A	Radio interview, New Zealand	1				
14B	Scientific journal paper (circulated)	1				
4A	Honours undergraduate	2	students			

Annex, copied from Stage 2 Application: LOGICAL FRAMEWORK

Project summary	Measurable indicators	Means of verification	Important assumptions
<p>Purpose</p> <p><i>PNG's insect biodiversity better protected through improved policies and practices for the sustainable use of insects through commercial exports</i></p>	<p>1. <u>Knowledge</u>. By end Yr 1: <i>new knowledge on insect trading by IFTA/WEI, and exports approved by DEC.</i> By end Yr 2: <i>new know-ledge on social and economic benefits.</i></p> <p>2. <u>Future policies and practices</u>. By mid-Yr2: <i>Discussion and agree-ment among major stakeholders concerning future policies and practices.</i></p>	<p>By end Yr. 1: <i>Project working papers</i></p> <p>By end of Yr. 2: <i>Project reports.</i></p> <p>By end of year 3: <i>Academic papers and draft of R.Small's Ph.D thesis</i></p> <p>By mid-Yr. 2: <i>Workshop proceedings.</i></p> <p>By end Yr.2: <i>'National Strategy for Sustainable Use of PNG's Insects' written, agreed and signed by stakeholders.</i></p>	<p>- <i>PNG remains a country with freedom of travel by air and road, so fieldwork can be done in safety.</i></p> <p>- <i>Our partner NGOs continue to be viable.</i></p> <p>- <i>UPNG assists with project affiliation, staff input, student selection and supervision.</i></p> <p>- <i>DEC remains willing to share data and co-operate.</i></p>
<p>Outputs</p> <p>1. <i>Research into the sustainability of insect farming/trading and how to improve it.</i></p> <p>2. <i>Enhanced engage-ment by University of PNG in biodiversity/ sustainable use issues.</i></p> <p>3. <i>Enhanced capacity of DEC.</i></p>	<p>1. By Year 3: <u>Research reports</u> on: (i) <i>Insects traded by IFTA and WEI.</i> (ii) <i>Insects exported with DEC permits.</i> (iii) <i>Income benefits within PNG.</i></p> <p>2. By Year 2: <u>Honours degrees</u> awarded to two PNG students.</p> <p>3. By end Yr. 1: <u>DEC website</u> up and running.</p>	<p><i>Reports, academic papers, files of correspondence, data bases.</i></p> <p><i>Honours theses</i></p> <p><i>Website on internet.</i></p>	<p>- <i>R. Small succeeds with his Ph.D registration at Cambridge University;</i></p> <p>- <i>NGOs and DEC remain co-operative research partners;</i></p> <p>- <i>DEC continues to be an independent and uncorrupt department of PNG government;</i></p> <p>- <i>Successful supervision arrangements organised for UPNG students.</i></p>

Activities	Activity milestones (summary of project implementation timetable)
Field research programme	<p><i>Mar.06 [Yr 1]: report on insects traded and exported based on data collected from IFTA, WEI and DEC; Feb.07 [Yr 2]: UPNG students theses; Aug.07 [Yr 3]: reports on other insect traders and community benefits; Oct.07 [Yr 3]: draft of 1st academic paper; Jun.08 [Yr 4] final report; Oct 08 [post-Yr 4]: Rob Small's Ph.D thesis submitted, drafts of 2nd and 3rd academic papers.</i></p>
Capacity building	<p><i>Jul.06 [Yr 2]: revision of IFTA/WEI Training Manual; Sep.-Oct.06 [Yr 2]: training courses with NGO partners (IFTA, WEI); Nov.-Dec. 06 [Yr 2]: training course and website construction with DEC; Mar. 07 [Yr 2]: follow-up sessions on the training of partner staff.</i></p>
Workshop and National Strategy agreement	<p><i>Jan.07 [Yr 2]: workshop among DEC, IFTA, WEI and UPNG stakeholders; Jan.07 [Yr 2]: discussion papers and consultation towards National Strategy for Sustainable Use of Insects; Feb.07 [Yr 2] signing of National Strategy agreement; Apr. 08 [Yr 4] review of implementation of National Strategy.</i></p>
Dissemination	<p><i>Sep.05 [Yr 1], Sep.06 [Yr 2], Sep.07 [Yr 3], Sep.08 [post-Yr.4] newsletters and press releases in PNG; Jan.06 [Yr 1] and Jan.08 [Yr 3]: progress reports to Annual Symposia of Cambridge Conservation Forum.</i></p>