

Darwin Initiative Annual Report

Darwin Project Information

Project Ref Number	15/007
Project Title	Focus for Fiji: Insect Inventories for Biodiversity Assessment
Country(ies)	Fiji
UK Contract Holder Institution	University of Sussex
UK Partner Institution(s)	National Museums & Galleries of Wales
Host country Partner Institution(s)	University of the South Pacific
Darwin Grant Value	£203,780
Start/End dates of Project	1 October 2006 – 30 September 2009
Reporting period	1 October 2006 – 31 March 2007. Annual Report Number 1
Project Leader Name	Dr Alan J A Stewart
Project website	N/A
Author(s), date	Alan Stewart, 15 May 2007

1. Project Background

Due to their remote location and unique geological history, the Fiji Islands contain a high proportion of endemic species, especially amongst invertebrates. Knowledge of the insect fauna is extremely patchy, mainly due to an almost complete lack of within-country expertise in entomology, resulting in poor integration of insects into national conservation strategies. In conjunction with the University of the South Pacific, this project aims to build capacity for insect diversity survey work by establishing and training an 11-strong team of senior curators, technicians and parataxonomists. This team will conduct ten biodiversity surveys across the Fiji Islands, establish a national insect collection and engage in raising general awareness of environmental and biodiversity issues. Team members will receive training from visiting UK experts running intensive courses in Fiji and through visits to key institutions in the UK.

Acronyms used in report:

USP	University of the South Pacific, Suva
IAS	Institute of Applied Sciences (based at the University of the South Pacific)
WCS	Wildlife Conservation Society, Suva
NSF	National Science Foundation (USA)

2. Project Partnerships

Partnership between UK lead institution (University of Sussex) and host country partner (University of the South Pacific):

This collaboration has worked very well over these first few months of the project. Alan Stewart as the UK partner has concentrated on project management and developing links with his other Darwin projects in Papua New Guinea (EIDP 09/10-030 and 14/054) that have used similar insect survey techniques and protocols. Prof Linton Winder (USP) is responsible for local management of the project on a daily basis, as well as academic supervision of Hilda Waqa (see below). Although Stewart and Winder knew each other well before the project started, collaboration between the institutions was greatly facilitated by the Project Leader's visit to Fiji in March 2007 (delayed from November 2006), as it enabled him to meet all the participants in the project, meet members of collaborating institutions, assess the facilities already available to the project and help plan project activities accordingly. The project has also benefited from close collaboration with Mr Marika Tuiwawa, Curator of the South Pacific Regional Herbarium, at the Institute of Applied Sciences on the USP campus.

Collaborations with other similar projects:

Fiji (and Suva in particular) is the focus of considerable activity in biodiversity conservation. USP in particular provides a nexus for a great many projects and international collaborations focused on the south Pacific region. This Darwin project is fortunate in being able to tap into this extensive network of contacts, through our partners at USP. Good working relationships have been developed with the Fiji programme of WCS, BioNet, The Ministry of Agriculture's Korinivia Research Station, the Forestry Department at Colo-i-Suva and the Fiji Museum in Suva, all of which are based either on the USP campus or in/near Suva.

Taxonomists in the Pacific Biological Survey (PBS) of the Bishop Museum in Hawaii initiated a survey of terrestrial arthropod diversity in Fiji in 2004 which is ongoing. The primary objectives* have been to: (i) provide inventories for selected arthropod groups through detailed intensive field surveys, (ii) provide training for local Fijians in survey techniques and identification, and (iii) publish faunal checklists and bibliographies. The project has been funded for the last three years through the USA National Science Foundation (NSF). The Darwin project is developing contact with this project through Dr Mike Wilson, who has worked in Hawaii with Dr Neal Evenhuis (head of the PBS) and has recently submitted his checklist for the Fijian Hemiptera: Auchenorrhyncha fauna for publication in the *Fiji Arthropods* series, based on literature records, examination of specimens in various world museums and his own field collecting whilst running his DI training course (see below).

* Evenhuis, N.L. & Bickel, D.J. (eds.) (2005) The NSF-Fiji Terrestrial Arthropod Survey: Overview. *Fiji Arthropods I. Bishop Museum Occasional Papers* 82: 3-25.

3. Project progress

It should be noted that this project started on 1st October 2006; hence, this report refers to the first six months of the project.

3.1 Progress in carrying out project activities

i) Establishment & development of the survey team

Three senior curators have been identified for the project: Ms Hilda Waqa (Fiji), Mr Sunil Prasad (Fiji) and Mr Presly Dovo (Vanuatu). Ms. Waqa is currently pursuing a PhD in entomology at USP while Mr. Prasad is employed as a research assistant for the project. Mr. Dovo will be joining USP next academic year to pursue post-graduate studies in entomology and will work with the project team.

The plan is to recruit the technicians and parataxonomists to work with the project over the next few months. Two people have been identified who have worked on entomological surveys in Fiji and will be well suited for the job.



LEFT: View of Monasavu region, central Viti Levu, including small settlement on river flood plain, with extensive tracts of pristine rainforest above, rising to high altitude tropical cloud forest. RIGHT: Prof Linton Winder (Project partner, USP) and Ms Hilda Waqa (Senior Curator, Darwin team) at highest altitude site within the Monasavu region. Photos: AJA Stewart.

ii) Establishing facilities at USP

The DI team is established in the South Pacific Regional Herbarium at the Institute of Applied Sciences on the USP campus. Some time has been spent purchasing computing equipment, microscope facilities, entomological equipment and cabinets to house the new insect collection.

iii) Visit by Project Leader to USP

Dr Alan Stewart (Project Leader) visited Fiji from 18th – 24th March 2007. A visit had been planned earlier (November/December 2006) but had to be postponed due to a military coup. The purpose was to (i) meet the DI team and assess their training requirements and aspirations, (ii) establish links with other personnel at USP involved in the project, (iii) visit local NGOs and government departments based in/near Suva to establish the potential for collaboration, (iv) visit selected field sites on Viti Levu that will be used for survey work. It was also possible to attend a short seminar hosted by the British High Commission in Suva, at which Dr Paul Gardingen gave a review of the various past and current Darwin projects based in Fiji and presented current ideas about the future of such projects. Although not involving a specific training element as such, the visit was an essential exercise in getting the project off to a good start.

iv) Field surveys

Collection techniques will include light traps, pitfall traps, malaise traps and use of beating trays. The following taxa have been targeted for particular attention: Coleoptera (beetles), Hemiptera (bugs), Formicidae (ants), Lepidoptera (butterflies & moths), Odonata (dragonflies & damselflies) & Phasmida (stick insects). These taxa will be extracted from trap catches and general field samples and will be identified as far as current taxonomic knowledge allows. Identification will be to species level wherever possible (i.e. where appropriate taxonomic literature exists). In other cases, material will be sorted into 'morphospecies', with representative specimens of each one sent to taxonomic experts for verification as unique taxa and possible identification.

A pilot field sampling survey, involving a team of four people, is planned for July 2007 in Savura/ Nakobalevu and Colo-i-suva. The techniques listed above will be trialed to establish the typical numbers of targeted taxa collected and to test the sampling design. Four plots will be permanently marked at each site representing areas of different topography within intact forests. Light traps will be run for four consecutive nights in good weather and malaise traps will be run for a fortnight within each plot. Tree and shrub richness and abundance within each survey plot will also be recorded to account for any patterns relating to habitat diversity.

A programme of field surveys has been planned for the next seven months of the project. Sites have been chosen to cover a range of island sizes and degrees of remoteness within the Fiji Islands archipelago (see table and map below).

Survey	Island	Site	Proposed dates
1	Viti Levu	Savura/ Nakobalevu	2 nd -6 th July, 07
2		Colo-i-Suva	9 th -13 th July, 07
3		Waisoi	23 rd -27 th July, 07
4		Monasavu	8 th -12 th Oct, 07
5		Abaca	22 nd -26 th Oct, 07
6	Vanua Levu	Kubulau	5 th -9 th Nov, 07
7		Macuata	12 th -16 th Nov, 07
8		Mt. Delaikoro	19 th -23 rd Nov, 07
9	Taveuni	Devo Peak	26 th -30 th Nov, 07
10	Kadavu	Solodamu	10 th -14 th Dec, 07
11	Lau	Vanua Balavu	24 th -28 th Dec, 07
12	Gau	Mt. Delaco	7 th -11 th Jan, 08
13	Yasawa	Tamusua	21-25 th Jan, 08
14	Ovalau		11 th -15 th Jan, 08



Map of Fiji Islands, showing positions of proposed survey sites (●)

v) Establishment of a Fiji National Insect Collection at USP

The Pacific Regional Herbarium based at USP is possibly the most secure and best equipped specimen storage facility in the region. It has a minimal entomological collection. Although this facility was designed for housing botanical specimens from the region and is already nearing capacity, discussions have been taking place to expand the collection slowly to include entomology. The Darwin team is working closely to advise on how best to implement this expansion, including helping to identify the equipment and other facilities needed for this (microscopes, storage cabinets, etc.).

Part of the planning for establishing the national insect collection has been to visit other institutions with entomological interests within Fiji, to assess the extent and state of preservation of their collections, to assess their capacity for retaining and enhancing such collections (in terms of staffing, expertise, equipment and scope for expansion) and to gauge where assistance from the Darwin team could be usefully deployed. Particularly valuable collections are held at Koronivia Research Station (the government agricultural research station) and the Department of Forestry at Colo-i-Suva. Parts of these collections date back to the early 1900s and include many holotypes. However, lack of expertise and proper care has allowed rapid degradation of the specimens. The Darwin team has provided both of these collections with technician support to ensure that proper protocols are followed to prevent further deterioration and it is hoped that this will enable the collections to be salvaged and maintained in future.



LEFT: Ministry of Forestry's entomology building at Colo-i-Suva. RIGHT: Inside the entomology laboratory, housing important collections of Fijian insects. Photos: AJA Stewart.

vi) Taxonomy training workshops

One training workshop has taken place:

Taxonomy of Hemiptera; Auchenorrhyncha, 22nd March – 5th April 2007, led by Dr Mike Wilson, National Museums & Galleries of Wales, Cardiff.

This two-week workshop focused on the collection, curation and identification of the Auchenorrhyncha (leafhoppers, planthoppers, froghoppers, treehoppers and cicadas). This group of herbivorous insects comprise an important but often neglected component of the diversity of most terrestrial habitats. Whilst some 296 species are known from the Fiji islands, much of this knowledge is based on rather old collections from only a selection of islands. Consequently, many new species undoubtedly remain to be discovered and the biogeographical distribution of taxa across the islands is very poorly known. Dr Wilson has reviewed the available literature and has compiled a provisional checklist of the species for the Fiji Islands that will shortly be published in the *Fiji Arthropods* series that is the primary publication outlet for the NSF project that is being co-ordinated by the Bishop Museum in Hawaii. This exercise has highlighted some fascinating biogeographical patterns in the distribution of particular families across the Fiji Islands, including the absence of particular groups from certain areas. At present, it is not known if these patterns are real or merely the result of historically uneven sampling/collecting effort. However, the Darwin surveys will help to resolve these questions.

The workshop focused on getting the participants accustomed to using the proper characters for identification and also performing genitalia preparation (a new technique for the participants). Training in curation involved correct pinning techniques, proper labeling of the specimen and storage. During the course of the training workshop, Dr Wilson was able to add a new family to those recorded from Fiji (Dictyopharidae) based on a specimen caught at Sigatoka sand dunes which may be a new species to science (currently being confirmed by taxonomists in Russia). He also found a species of *Kallitaxila* (Tropiduchidae) new to Fiji, one that is rapidly colonising islands in the Pacific. Many of the other specimens caught during training are likely to be the first records of the species since they were first described from Fiji over 50 years ago! This gives some indication of the state of knowledge of the fauna and how little recent attention it has received.

Participants in the workshop:

Hilda Waqa MSc – Senior Curator, Darwin project team and PhD student at USP

Sunil Prasad MSc – Senior Curator, Darwin project team, USP

Mere Yabaki - Masters student and technician in the Division of Biology, USP

Akanisi Caginitoba - Entomologist / Parataxonomist at WCS

Alipate Raikabula – Parataxonomist at WCS

Anare Caucau – Technician, entomology laboratory, Koronivia Research Station

vii) In-service training

The Darwin team facilitated one week of basic training in entomology at USP in April, 2007 for Mr. Presly Dovo (Darwin parataxonomist based in the Forestry Service in Vanuatu). He received training in basic entomology sampling techniques, sorting and identification. The intention is that, after training, Mr Dovo will be able to carry out entomology inventory work in Vanuatu.

viii) Establishment of specimen and field survey database

Discussions have been taking place on what database software to adopt for storage of information from the surveys. Whilst other biological recording software solutions are being considered, the DI survey data will be stored in a specially adapted version of the bespoke software written for the National Herbarium. This has the advantage of enabling access to local technical expertise and adopting a system that is already known to meet local needs.

ix) Writing a guide to the butterflies of the Fiji Islands.

Senior curators in the Darwin team, Sunil Prasad and Hilda Waqa, have written Fiji's first butterfly guide book (*Butterflies of the Fiji Islands*). The guide will be in colour with illustrations and photographs of some 42 species and morphs, names and synonyms, localities within Fiji (including maps) and worldwide distributions, and descriptive accounts for each species. It has been designed and written for sale to the general public and is the first output by the Darwin project in an awareness-raising program for environmental issues and biodiversity in general and for Fijian invertebrates in particular.

x) Collaboration with the Fiji Museum, Suva

The Fiji Museum in Suva has a 'Natural Biodiversity' gallery, for which it is planning a permanent butterfly exhibit and associated specimen collection. Members of the Darwin team are collaborating with this effort in the following ways:

- I. Providing advice and technical support on curation and exhibition presentation of butterflies
- II. Joint publication of the *Butterfly Guide to the Fiji Islands* (see above), with all profits going to the museum
- III. Preliminary collection trip to Nausori highland and Abaca to collect specimens.

Nausori highlands is a pristine grassland plateau ridge in the interior of north-western Viti Levu. It is well known for various butterfly species and endemic plants. An initial butterfly survey was arranged to acquire specimens for the USP and Fiji Museum collections. In total, seven species of butterflies were collected, amongst which was the rare Fijian Swallowtail butterfly *Papilio schmeltzi*.



TOP LEFT: Koroyanitu National park TOP RIGHT; Nausori highlands with Sleeping Giant Mountain in the background, BELOW LEFT: Catching a butterfly at the Nausori Highlands, BELOW RIGHT: *Precis vallida* specimen found in Sigatoka. Photos: S. Prasad.

10 Formulating a proposal to the National Scientific Committee to list the Giant Longhorn beetles in the national Endangered and Protected Species (EPS) list

The Fijian Giant Longhorned beetles (Genus *Xixuthrus*), the world's second longest beetles (approx. 16 cm.) are endemic to the Fiji Islands. Three species are apparently restricted to the three largest islands (*X. ganglbaueri* and *X. heros* are known only from Viti Levu, while *X. terribilis* is known from Taveuni and Vanua Levu). In spite of their rarity, they are not protected either locally or internationally. Although the current major threat to the species is habitat loss, specimen trade is an impending threat.

An early success of the Darwin project has been to get the three species of *Xixuthrus* included in Schedule 2 of the Fiji Endangered and Protected Species (EPS) list. The recommendation of the Darwin team is to get the species also listed in the IUCN Red Data Book; however, this is not currently possible due to lack of sufficient data on distribution and general information about the life history and habitat requirements of the species. It is hoped that the Darwin project will improve knowledge of these species and will also help to raise awareness of their threatened status.



LEFT: Set specimen of *Xixuthrus ganglbaueri* (FJ\$1 coin for scale) from Forestry Department collection. RIGHT: Sunil Prasad (Darwin senior curator) holding live specimen of female *Xixuthrus ganglbaueri* at Ministry of Forestry's entomology laboratory at Colo-i-Suva, 21st March 2007. Photos: AJA Stewart.

3.2 Progress towards Project Outputs

After a somewhat slow start, we are confident that rapid progress can now be made towards achieving the project outputs. Progress towards each output is summarised below. We have no concern that these will not be achieved by the end of the project. The output indicators are still appropriate and there have been no changes in the assumptions behind these.

3.3 Standard Output Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total
20	Equipment: 2 laptops, 2 printers, 2 microscopes, 1 digital camera, insect storage facility	2+2+2+1+1
15A	Fiji national & local press release announcing start of Darwin project	1
15C, 15D	UK national & local press release announcing start of Darwin project	1
19A, 19C	Fiji national & local radio interviews	0
13A	Fiji National Insect Collection established at USP	1
8	2 UK experts provide 2-week intensive workshops in Fiji	1
12A	1 specimen and field survey database established	1
6A, 6B	3 Fijian nationals receive 2 months training each in UK	0

5	11 Fijian nationals receive 6 months in-service training	2
New - Project specific measures	N/A	

Table 2 Publications

Type *	Detail	Publishers	Available from	Cost £
(eg journals, manual, CDs)	(title, author, year)	(name, city)	(eg contact address, website)	(if applicable)
Book	Butterflies of the Fiji Islands. S.R. Prasad & H. Waqa (2007)	Fiji Museum	Fiji Museum, Suva	tbc

3.4 Progress towards the project purpose and outcomes

Progress towards achieving the project outputs got off to a somewhat slow start in the first few months of the project, mainly due to interruption by the military coup in Suva which took place in December 2006. This incident meant that certain activities had to be suspended briefly and communication with partners was badly disrupted. This delayed the start of both the training programme and the field surveys.

Output 1: Training staff

We have made a start on the training programme with Dr Wilson's training session on Hemiptera in March 2007. This partly overlapped with Dr Stewart's initial visit to assess needs and potential which also took place in March 2007. Both visits allowed useful exchange of ideas and views on the conduct of the project and the primary training requirements.

Output 2: Insect surveys

Unfortunately, no surveys took place in this initial reporting period (although they have since). A full programme of 14 surveys has now been planned over the first seven months of the next reporting period (see above).

Output 3: Insect collection

The new insect collection will initially be housed in the USP herbarium. Cabinets and other curation equipment have been purchased, together with a new microscope and digital camera. Dr Wilson's training included instruction on curation techniques and advice on how best to build the insect collection in a sustainable manner.

Output 4: Database of survey information

Some research has been done on how best to organize the information derived from the field surveys; this includes an exploration of how best to catalogue and retrieve information on the preserved specimens. No final decision has yet been taken on a long-term solution, but current possibilities include: adoption and modification of the Access database developed by the USP herbarium; developing a bespoke application for the project; adopting one of several currently available software packages used for biological recording (such as Recorder 6, MapMate) or cataloging of museum collections (e.g. Platypus).

Output 5: Outreach activities

This has focused on finalizing the production of *Butterflies of the Fiji Islands* that will be formally launched later in the year. This targets the 'general member of the public' market, in the hope of stimulating interest and concern for the future of Fiji butterflies. More extensive outreach activities will be associated with future surveys, where environmental education and conservation awareness activities will be carried out in local village communities as part of the process of gaining permission to work and collect specimens on what is often private land.

3.5 Progress towards impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

Although early in the timeline of the project, a measurable impact on biodiversity has already been achieved through the addition of the longhorn beetle genus *Xixuthrus* to Schedule 2 of the Fiji Endangered and Protected Species (EPS) list, affording it some degree of protection. This is the first step in getting the genus accepted for IUCN Red Data Book status.

4. Monitoring, evaluation and lessons

Successful completion of activities listed above can be used to monitor progress on the project. Ultimately, success will be judged against meeting the specified outcomes, but the wider objective (project purpose) will be judged against our success in building local capacity in insect identification, survey and monitoring.

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

Not applicable

6. Other comments on progress not covered elsewhere

None

7. Sustainability

The profile of the project is being actively promoted by USP through its web pages (see March 2006 web page, appended to this report) and through publication of the *Butterflies of the Fiji Islands* book. It is too early to judge levels of local interest in the project, but we are confident that the project will help to enhance already existing interest in a very under-studied fauna.

8. Dissemination

At present, dissemination activities are limited but will increase as the project develops.

9.

10. OPTIONAL: Outstanding achievements of your project during the reporting period (300-400 words maximum). This section may be used for publicity purposes

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

Even through the project has only been active for six months, it has already achieved two notable successes, both of which will help greatly to enhance awareness and concern for insect diversity in Fiji. Firstly, the DI team have finalised a short book on the butterfly fauna (*Butterflies of the Fiji Islands*), which will be sold in collaboration with the Fiji Museum in Suva. Secondly, the project team has successfully lobbied to get the endemic *Xixuthrus* genus of longhorn beetles added to Schedule 2 of the Fiji Endangered and Protected Species (EPS) list, in recognition of the extreme rarity and vulnerability of all three species in this genus within Fiji.

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2006/07

Project summary	Measurable Indicators	Progress and Achievements April 2006 - March 2007	Actions required/planned for next period
<p>Goal: <i>To draw on expertise relevant to biodiversity from within the United Kingdom to work with local partners in countries rich in biodiversity but constrained in resources to achieve</i></p> <p><i>The conservation of biological diversity,</i></p> <p><i>The sustainable use of its components, and</i></p> <p><i>The fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</i></p>			<p><i>(do not fill not applicable)</i></p>
<p>Purpose</p> <p>Within-country expertise in entomology to be developed, to enhance biodiversity conservation activity and allow stakeholders to meet their responsibilities under the Fiji Biodiversity Strategy and Action Plan.</p>	<p>Skills tests at start and end of project, plus at intervals during project to assess training needs.</p> <p>Extent & quality of data; incorporation of data into local conservation plans.</p> <p>Establishment of in-country insect collection; number of specimens fully processed.</p> <p>Awareness of insect conservation in schools and wider community; level of media coverage (radio, newspapers).</p>	<p>Skills of two Senior Curators assessed by Project Leader during visit to Fiji, March 2007</p> <p>Data yet to be collected</p> <p>Insect collection established at USP; curation protocols developed</p> <p>Popular guide to butterflies of Fiji written; sale and publicity will be through Fiji Museum, Suva</p>	<p>Regular assessments of skills development in team</p> <p>14 insect surveys planned for next year</p> <p>Rapid expansion of insect collection, based on specimens from surveys</p> <p>Outreach and environmental education activities in villages; dissemination of project outputs through local & national media</p>
<p>Output 1. 11 trained staff (3 senior curators, 3 support technicians; 5</p>	<p>Assessment reports on trained personnel from project partners.</p>	<p>2 Senior Curators (Hilda Waqa, Sunil Prasad) engaged to lead the Darwin project team. The projected 11-strong team will develop gradually through</p>	

parataxonomists).	personnel from project partners.	the project, rather than establishing entire team from the start.
Activity 1.1 UK training of 3 Fijian nationals as senior curators.		This visit is planned for 15 August to 1 October 2007. The two Senior Curators will receive approx. 2 weeks training at each of: National Museum & Galleries of Wales, Cardiff with Dr Mike Wilson; Hope Entomology Collections, University of Oxford, with Mr Darren Mann; Biology & Environmental Science Department, University of Sussex, with Dr Alan Stewart.
Activity 1.2 In-country training by 2 UK experts for 11 Fijians.		2-week training course on taxonomy and identification of Hemiptera (bugs) at USP by Dr Mike Wilson, March 2007. 2-week training course on taxonomy and identification of Coleoptera (beetles) at USP by Mr Darren Mann, planned for July 2007, timed to coincide with first major field survey (Monasavu) to enable demonstration of field collection techniques.
Output 2. Insect survey information for 14 locations in Fiji.	Surveys completed; specimens deposited in collections; database on insect distributions	In contrast to original plan (as per application form), 14 short intensive surveys will be conducted within the first 18 months of the project. At the end of this, results will be reviewed and decisions made about the best future strategy; e.g. whether to increase the number of sites within islands already surveyed, the geographical coverage (number of islands), the time period covered or the sampling intensity at existing survey sites.
Activity 2.1. Insect surveys of 14 Fiji Islands sites, conducted by Fijian staff.		Programme of 14 short intensive surveys across Fiji Islands starts July 2007.
Activity 2.2. Sorting, curation and cataloguing of specimens. Assistance given by UK experts on in-country basis.		Specimens will be deposited in newly established national collection; voucher material will be sent for verification of identifications to appropriate taxonomic experts with knowledge of Fijian fauna; UK experts to provide direct assistance when in Fiji with checking identifications and access to personal worldwide networks of taxonomist contacts.
Output 3. In-country insect collection.	Extent and quality of collection.	New national insect collection has been established. Initially based within the USP Herbarium, the intention is for it ultimately to be housed within a

collection.		purpose-built national museum of Fijian natural history on the USP campus.
Output 4. Database of insects within collection.	Proportion of insect collection identified to specified taxonomic levels.	Database software options are currently being evaluated to establish whether to: adapt existing system used by USP Herbarium; adopt one of several commercially available packages within the biological recording field; design a bespoke database for the specific purpose of the project. Training in whichever system is adopted will be required.
Output 5. Outreach activities to schools, communities etc.	Number of schools, communities etc visited; demand for extra information.	These activities are planned for Years 2 and 3, once a certain number of insect surveys have been completed

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>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</p> <ul style="list-style-type: none"> • 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 			
<p>Purpose</p> <p>Within-country expertise in entomology to be developed, to enhance biodiversity conservation activity and allow stakeholders to meet their responsibilities under the Fiji Biodiversity Strategy and Action Plan.</p> <p>N.B. Change to single purpose as requested in response letter to Stage 1 application.</p>	<p>Skills tests at start and end of project, plus at intervals during project to assess training needs.</p>	<p>Fijian nationals trained as senior curators (3), support technicians (3) and parataxonomists (5).</p>	<p>Suitably motivated people available; UK experts available to run intensive training courses.</p>
	<p>Extent & quality of data; incorporation of data into local conservation plans.</p>	<p>Survey reports; site assessments; statements on species of conservation concern.</p>	<p>Access permitted to sites; adequate spatial and temporal coverage of surveys.</p>
	<p>Establishment of in-country insect collection; number of specimens fully processed.</p>	<p>Database of specimens held at USP; metadata made available through web page.</p>	<p>UK support for identification is available.</p>
	<p>Awareness of insect conservation in schools and wider community; level of media coverage (radio, newspapers).</p>	<p>Environmental lectures and workshops for schools, communities; educational leaflets; media coverage.</p>	<p>Knowledgeable staff can be trained for outreach work; schools, communities etc are receptive to environmental issues.</p>
<p>Outputs</p> <p>1. 11 trained staff (3 senior curators, 3 support technicians; 5 parataxonomists).</p>	<p>Assessment reports on trained personnel from project partners.</p>	<p>11 Fiji nationals trained as entomologists.</p>	<p>Dedicated people exist in Fiji to fill such posts; UK experts available to do training.</p>
<p>2. Insect survey information for 10 locations in Fiji.</p>	<p>Surveys completed; specimens deposited in collections; database on insect distributions</p>	<p>Survey reports; publications in appropriate journals</p>	<p>Intensity of sampling program sufficient; access to islands gained</p>
<p>3. In-country insect collection.</p>	<p>Extent and quality of collection.</p>	<p>Substantial insect collection held in a safe location.</p>	<p>Time available to collect, sort and curate collection.</p>

4. Database of insects within collection.	Proportion of insect collection identified to specified taxonomic levels.	Database of collection; identifications confirmed by experts.	Time available to conduct identification to appropriate taxonomic level.
5. Outreach activities to schools, communities etc.	Number of schools, communities etc visited; demand for extra information.	Reports provided by schools and participants.	Schools, communities etc willing to participate.
Activities 1. Training	Activity milestones Yr1: UK training of 3 Fijian nationals as senior curators. In-country training by 2 UK experts for 11 Fijians. Yr2: UK training of 3 Fijians as technicians. In-country training by 2 UK experts for 11 Fijians. Yr 3: In-country training by 2 UK experts for 11 Fijians.		Assumptions
2. Sampling/survey	Yrs 1, 2, 3: Insect surveys of 10 Fiji Islands, conducted by Fijian staff.		
3. Sorting and Identification	Yrs 1, 2, 3: Sorting, curation and cataloguing of specimens. Assistance given by UK experts on in-country basis.		
4. Outreach	Yrs 2 & 3: School, community visits to engender interest in entomology.		

Annex 3 onwards – supplementary material (optional)

Please see next page for copy of the University of the South Pacific web page, published 31 March 2006, announcing the award of the grant for the Darwin Initiative project.



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USP News

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USP wins two major Darwin Initiative Awards

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Canopy fogging to measure insect numbers in the South Pacific's unique forest habitats. This project - 'Focus for Fiji: Insect Inventories for Biodiversity Assessment' is one of the two which have been chosen for an international environment initiative award.

The University of the South Pacific has been awarded two major awards to help conserve the unique biodiversity of the South Pacific. The Darwin Initiative, funded by the United Kingdom Department

for Environment aims to assist countries which are rich in biodiversity to implement the Convention on Biological Diversity through funding collaborative projects. The Darwin Initiative has just funded 41 new projects around the world, two of which have been awarded to USP. Projects have a strong focus on capacity building, partnerships, community engagement, and livelihoods.

The first project, 'Focus for Fiji: Insect Inventories for Biodiversity Assessment' is a collaborative project between the University of Sussex, UK, the Division of Biology and the Institute of Applied Sciences at USP. The project will build significant capacity for insect biodiversity survey work in Fiji by establishing and training an expert entomology team. The team will then design and complete insect biodiversity surveys, prepare, preserve and identify specimens and raise awareness of environmental and biodiversity issues by running workshops for local farmers, villagers and school children.

The second project, 'Distance Learning for Biodiversity Conservation in Small Island Developing States' is a partnership between the International Centre for Protected Landscapes, UK and two USP sections, the Institute of Applied Sciences and Pacific Centre for the Environment and Sustainable Development (PACE-SD), and the Apia-based Pacific Regional Environment Program. The initiative will develop an existing face-to-face training course called the Pacific Island Community-based Conservation Course, developed with Darwin funding by the partners in 1999, for flexible learning delivery and develop more Pacific case studies for both. The course has been praised for its focus on both academic and professional skills and combination of classroom and field exercises. Almost 40 members of communities, government departments and nongovernmental organisations have been trained during these courses to date.

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