

Darwin Initiative Annual Report

Darwin Project Information

Project Ref Number	EIDPO13
Project Title	Integrating Evolutionary History and Phylogenetic Measures of Biodiversity into Conservation Planning
Country(ies)	South Africa
UK Contract Holder Institution	Royal Botanic Gardens, Kew (RBG Kew)
UK Partner Institution(s)	
Host country Partner Institution(s)	South African National Biodiversity Institute (SANBI) University of Cape Town (UCT) University of Johannesburg (UJ)
Darwin Grant Value	£98,297
Start/End dates of Project	1 August 2006 – 31 July 2008
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	1 Aug 2006 – 31 Mar 2007 (Report 1)
Project Leader Name	Dr Vincent Savolainen
Project website	http://www.sanbi.org/research/dnabank.htm (original project website)
Author(s), date	Dr Vincent Savolainen, April 2007

1. Project Background

The present Post-project (hereafter the 'project') follows on a previous successful Darwin project. The original project purpose was to build the research and conservation potential of plant scientists and conservationists in South Africa by setting up a DNA bank of archived plant genetic resources, under a legal framework in line with South Africa's approach to the CBD. This Post-project seeks to build upon the successful data production and networking of the original project by focusing on four scientific aspects deserving further attention:

(i) link conservation planning with the phylogenetic data that were produced during the original project, by coordinating follow-up scientific research;

(ii) calculate extinction risks for taxa within South Africa's three biodiversity hotspots, building on the complete red list for the South African flora (to be published imminently by IUCN);

(iii) continue to transfer knowledge regarding the use of phylogenetic data to in-country scientists, students and conservationists, by providing training and research opportunities;

(iv) provide baseline data for the development of future conservation actions within current partnerships and to develop new partnerships (e.g. see below and with other Darwin projects in South Africa), and extend the use of DNA resources to DNA barcoding for conservation (e.g. at the Kruger National Park; KNP).

2. Project Partnerships

As already attested by the fact that this is a successful post-project, project partners have continued to enjoy excellent working relationships, with lots of traffic between the UK and South Africa. The project partners have also worked and exchanged ideas with another Darwin project (14-001: Conservation and Monitoring of Meso-American Orchids, also lead by Dr Savolainen), but this will become even more prominent when we organise a meeting with several additional South African Darwin projects in January 2008.

3. Project progress

The purpose of the project is (i) co-ordinate research; (ii) calculate extinctions risks; (iii) transfer knowledge to in-country scientists, students and conservationists with regard to the use of phylogenetic data and DNA barcodes; (iv) integrate the human dimension; (v) publish concerted conservation actions.

The outputs listed in the logframe (see Annex) are:

1. DNA Barcoding

2. Training

3. Dissemination

4. Conservation assessments

5. South African Conservation Scientists network enhanced.

In this first report, we cover progress of eight months of activities.

We have researched DNA barcoding at UJ, provided a training course at UCT, well-attended by South African scientists and students, initiated the calculation of extinction risks in plant lineages, published one key paper on preserving the evolutionary potential of the Cape flora (in Nature on 15 February 2007, and which received considerable publicity), and organised several networking activities.

We have however encountered some major difficulties since the inception of the project. Firstly, Dr Jonathan Davies, whom we hoped would have taken the duties of extinction risk analyst at SANBI, has instead taken a post-doctoral position at the National Center for Ecological Analysis and Synthesis (University of California, USA). He has however still been working for the project and has calculated extinction risks as originally planned. Secondly, Dr Mathieu Rouget, who was the coordinator of the project in the host-country, has resigned his job to take

a research position at the University of Cambridge in the UK. This situation has led to several delays in the hiring of staff and students, although Dr John Donaldson, Head of the Research Center at SANBI Kirstenbosch, has discussed with project leader Dr Vincent Savolainen several solutions to this problem. These were also discussed with the Darwin Secretariat. Prof Terry Hedderson at the University of Cape Town will take Mathieu Rouget's role and we are in the process of hiring Mr Jonathan van Alphen Stahl (a South African biologist) as a replacement for Dr Davies.

3.1 Progress in carrying out project activities

A pre-project meeting was organised in July 2006 at the South African Society of Systematic Biology (SASSB) conference organised in the KNP by project partner Dr Michelle van der Bank (UJ). Project leader Dr Vincent Savolainen went to visit Dr Mathieu Rouget, host country coordinator at SANBI Pretoria, in July 2006. Drs Rouget and Savolainen discussed the launching of the project, but a few months later Dr Rouget resigned his job at SANBI. During SASSB in the KNP, Drs Savolainen and van der Bank also discussed plans for the DNA barcoding of the flora of the KNP and several talks were presented at the Conference (see Dissemination below), including one from another Darwin project on DNA barcoding the orchids of Costa Rica. MSc opportunities were also publicised during a presentation by Dr Savolainen. The project was then launched in August 2006 and we report progress under four sub-headings: 1. DNA Barcoding; 2. Training course and workshops; 3. Conservation analyses, dissemination and publications; 4. DNA bank and follow-up activities.

One MSc student has also started at UCT under the supervision of Prof Terry Hedderson: Alastair Potts; Provisional thesis: Phylogeography and conservation in the little Karoo, South Africa. A Memorandum of Understanding has been signed between UCT and RBG Kew.

Two Honours students have started at UJ: Phip Moolman & Genevieve Thompson, and a Memorandum of Understanding has been signed between UJ and RBG Kew.

DNA barcoding

The DNA barcoding of the flora of the KNP is well underway, with the majority of the funding being provided through UJ and the South African National Research Foundation to Dr Michelle van der Bank. Dr Savolainen is associated with the project and this Darwin project provides a platform for the exchange of information, especially with regard to which DNA region will eventually be used as a barcode. Following protocols established by the Plant Working Group of the Consortium for the Barcode of Life (CBOL) (www.kew.org/barcoding) and staff employed at RBG Kew, several genomic regions have been tested on the flora of the KNP. Under the supervision of Dr van der Bank, Mr Olivier Maurin (formerly at RBG Kew) and Dr Renaud Lahaye have taken positions at UJ to work on the barcoding of the KNP. So far six barcodes have been produced for 100 taxa and the *matK* region seems to be the most suitable. Dr van der Bank visited RBG Kew in November 2006 and discussed these results with Dr Savolainen and Ms Robyn Cowan, Principal Investigator of the CBOL project that aims at discovering a universal DNA barcode for all land plants. A popular article was written in the Kruger Park Times and a report was sent to the Conservation authorities of the KNP. All results have been presented by Drs van der Bank, Lahaye and Savolainen and Mr Maurin at the KNP Science Network Meeting on 15-20 April 2007.

Training course and workshops

Under the hospice of this Darwin project, Prof Terry Hedderson hosted a course at UCT on the use of phylogenetic diversity in conservation, a topic that is at the heart of our research activities. The course was taught in January 2007 by Dr Richard Grenyer (phyloinformatician at Kew), Dr Felix Forest (research associate at Kew, formerly postdoctoral fellow at SANBI/UCT

during the original Darwin project), and Dr Dan Faith (instigator of the use of phylogenetic information in conservation; senior researcher at the Australian Museum in Sydney). The course was attended by an audience of South African students and scientists (18 people from UCT, U Stellenbosch and SANBI) and subsequent evaluations of the course were very positive (once averaged, all course activities were marked above 4 out of a maximum satisfaction of 5). In these evaluation forms we also asked whether the participants would now consider using phylogenetic diversity in conservation assessments, and all answered yes. During this same period, Dr Savolainen and Mr Martyn Powell from RBG Kew visited Prof Terry Hedderson and Dr Tony Verboom (UCT), Dr Anton Pauw and Dr Leanne Dreyer (University of Stellenbosch) and Dr Michelle van der Bank at UJ. Drs Savolainen and van der Bank, as well as Mr Powell, went to the KNP for a workshop on DNA barcoding and collected new samples for the project. Drs Savolainen, Verboom and Dreyer also met to organise the publication of a special theme issue of *Molecular Phylogenetics and Evolution* on the phylogenetics of the Cape biota (due to be published in 2008). These meetings benefited from additional funding from the Royal Society (UK) and Drs van der Bank & Savolainen also took this opportunity to apply for a Joint Research Project to the Royal Society/South African National Research Foundation.

DNA bank: follow-up activities

Although this was scheduled as part of this project initially, additional activities have taken place at SANBI Kirstenbosch. Indeed, Ms Lache Roussouw, DNA bank manager under the original Darwin project resigned her job to start an MSc degree. Ms Keshni Gopal was hired as her replacement and started in February 2007. To help with the transition, RBG Kew's DNA bank manager Edith Kapinos went to SANBI Kirstenbosch for three weeks in March 2007. She trained Ms Gopal in DNA extraction and helped duplicate 630 DNA samples. These DNA samples will finish their extraction protocols at Kew and will be duplicated back to Kirstenbosch in accordance with the MoU between RBG Kew and SANBI. These DNAs will be used to expand the phylogenetic conservation analyses from the Cape to the entire country.

Conservation analyses See 3.2.

3.2 Progress towards Project Outputs, Purpose, Outcomes and Impact on biodiversity, sustainable use or equitable sharing of biodiversity benefits

Most of this initial phase of the project was dedicated to performing conservation analyses, and these were finally (after 3 rounds of reviews) published by the journal *Nature* on 15 February 2007. This work involved a whole team of researchers in the UK and in South Africa, as shown by the impressive list of co-authors. Although some of this work was initiated during the original project, the editors and reviewers of *Nature* asked us to undertake many new analyses, and we have enclosed as annex the paper and its supplementary material. The final product is of high quality and has generated considerable interest amongst conservationists around the globe, *Nature* having even commissioned a News & Views for this article (*The Diversity of Biodiversity* by Arne Mooers, enclosed as annex). We enclose below the abstract of this paper. This publication also generated important media coverage, which is detailed under section 8 below.

PRESERVING THE EVOLUTIONARY POTENTIAL OF FLORAS IN BIODIVERSITY HOTSPOTS - One of the biggest challenges for conservation biology is to provide conservation planners with ways to prioritise effort. Much attention has been focused on biodiversity hotspots¹. However, the conservation of evolutionary process is now also acknowledged as a priority in the face of global change². Phylogenetic diversity (PD) is a biodiversity index that measures the length of evolutionary pathways that connect a given set of taxa^{3,4}. PD therefore identifies sets of taxa that maximise the accumulation of 'feature diversity'. Recent studies, however, concluded that taxon richness is a good surrogate for PD⁵⁻⁹. Here we show taxon richness to be decoupled from PD, using a biome-wide phylogenetic analysis of the flora of an undisputed biodiversity hotspot – the Cape of South Africa. We demonstrate that this

decoupling has real-world importance for conservation planning. Finally, using a database of medicinal and economic plant use¹⁰, we demonstrate that PD protection is the best strategy for preserving feature diversity in the Cape. As science better elucidates the tree of life, we will be able to use PD to identify those key regions that maximise future options, both for the continuing evolution of life on earth and for the benefit of society.

Dr Jonathan Davies, who unfortunately did not take a position of extinction risk analyst at SANBI, however did the analyses at the University of California. He and Dr Savolainen submitted the results of this work as an abstract to the 21st Annual Meeting of the Society of Conservation Biology to be held in South Africa in July 2007. This abstract is enclosed below:

THE PHYLOGENETIC AND GEOGRAPHIC DISTRIBUTION OF EXTINCTION RISK IN THE FLOWERING PLANTS OF THE CAPE - Biodiversity hotspots are considered to be of critical conservation importance. However, hotspots of species richness do not necessarily coincide with hotspots of extinction risk. To ensure that the maximum benefits are gained from conservation efforts it is crucial that we understand the processes not only determining patterns of species richness but also species extinctions. Here we examine the distribution of threat using IUCN Red List criteria and geographic data for the Cape flora. We show that the fynbos biome in the western Cape is a hotspot for potential extinctions, but mean threat is less than that found in the northeastern Cape (Figure 1). If we were only interested in protecting the greatest number of threatened species, conservation efforts should focus on the former region. However, regions where an unusually high proportion of species are threatened may also be important. Such areas may represent highly perturbed areas, or they might favour extinction-prone species. Using a comprehensive phylogenetic tree of Cape genera we explore whether extinction hotspots in the Cape are a product of the biological attributes characterising the species that are contained within them, or some factor related to their geography and/or climate.

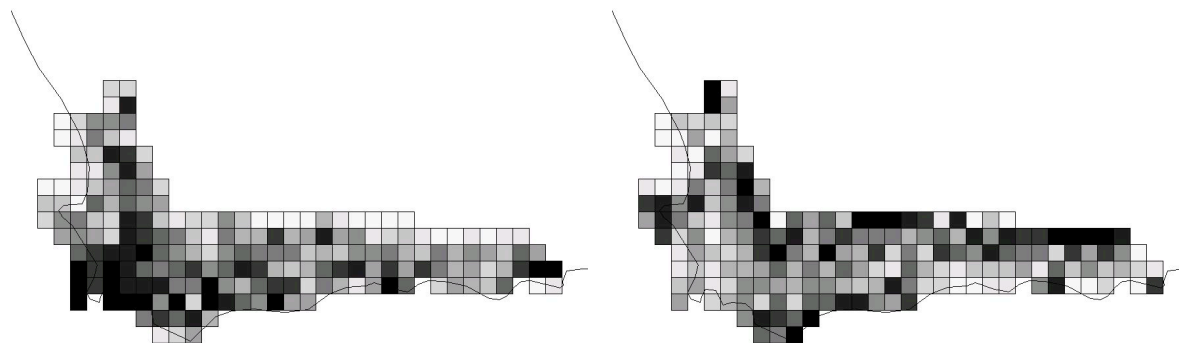


Figure 1. Distribution of threatened genera within the Cape of South Africa (0.25° degree squares). Left: Summed generic threat. Right: Mean generic threat.

3.3 Standard Output Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total	TOTAL
2	2 MSc	1 MSc has started at UCT	1
4A/B	3 undergrads for 10 months per year	2 Hons have started at UJ	2

	(Hons)		
4C/D	20 students for 1-wk course at UCT	<i>18 attendees for a course at UCT</i>	18
5	1 Extinction Analyst for 18 months at SANBI	<i>Not yet, Mr van Alphen Stahl will start at UCT I the Summer</i>	
6A/B	1 Darwin Initiative Project Officer (10 months)	<i>Not yet, will start in September</i>	
7	1 training material produced (course UCT)	<i>Handouts produced and distributed at the course in UCT</i>	1
8	8 wks spent by UK staff in RSA	<i>3 (Kapinos) Savolainen & Powell (4)</i>	7
9	3 sp/management plans (Cape, Gouritz, KNP)	<i>1 (Cape published in Nature, preliminary KNP report sent to KNP authorities)</i>	1
11A/B	4 peer-reviewed papers	<i>1 published (Forest & al), 2 submitted (Proches & al., Boatwright & al.)</i>	3
12A	1 DNA Barcoding computer databases	<i>1 DNA barcode database in place at UJ</i>	1
12B	1 DNA bank computer databases enhanced	<i>1 DNA bank computer database enhanced at SANBI Kirstenbosch</i>	1
13A	1 sp ref collection (500 barcodes + 200 rbcl)	<i>In preparation</i>	1
13B	2 sp reference collection (Compton Herb, KNP)	<i>In preparation</i>	1
14A	2 workshops (Darwin projects + Final Wshp)	<i>Not yet</i>	
14B	1 conferences attended (Evolution meeting)	<i>1 (SASSB VI)</i>	1

15A/B	1 press release in host	<i>Kruger Park Times + press release by SANBI with Kew</i>	2
15C	1 press release in UK	<i>1 (jointly with SANBI) received important media coverage</i>	1
16	2 newsletters (SANBI & Kew Scientist)	<i>Kew Scientist Oct 06</i>	1
17B	1 network enhanced (PD/Barcoding)	<i>In preparation</i>	1
20	1 laptop (£800)	<i>1 (not yet handed over to UCT)</i>	1
23	£196,483 (see 25c & 26)	<i>Application to the Royal Society pending</i>	

Table 2 Publications

Type *	Detail	Publishers	Available from	Cost £
(eg journals, manual, CDs)	(title, author, year)	(name, city)	(eg contact address, website)	(if applicable)
Nature	<p><i>Preserving the evolutionary potential of floras in biodiversity hotspots</i></p> <p><i>Félix Forest</i> * ^{1,2,3}, <i>Richard Grenyer</i> * ³, <i>Mathieu Rouget</i>⁴, <i>T. Jonathan Davies</i>⁵, <i>Richard M. Cowling</i>⁶, <i>Daniel P. Faith</i>⁷, <i>Andrew Balmford</i>⁸, <i>John C. Manning</i>¹, <i>Şerban Procheş</i>⁹, <i>Michelle van der Bank</i>¹⁰, <i>Gail Reeves</i>¹, <i>Terry A.</i></p>	<p><i>Nature</i> 445: 757-760. NPG</p>	www.nature.com	20

	J. Hedderson ² and Vincent Savolainen ³ 2007			

4. Monitoring, evaluation and lessons

The project has been evaluated using the Logframe approach as detailed in the application, however given the resignation of three key personnel, and the fact that the project has only be running for 8 months, we await the following mid-year report to expand on lessons learnt.

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

N/A

6. Other comments on progress not covered elsewhere

7. Sustainability

Our network has been formidably enhanced by the project activities and the South African scientists will continue this science-based conservation work after the end of the project.

Our new workplan is as follows:

April 2007: Dr Savolainen (RBG Kew) will visit UCT & SANB; Attendance and oral presentation on DNA barcoding by Drs Savolainen & van der Bank at the KNP Science Network Meeting; MSc work starts at UCT; International press release (Kew Scientist).

June 2007: Attendance and oral presentation on the use of phylogenetic diversity in conservation in South Africa by Drs Savolainen & van der Bank at the Evolution meeting in New Zealand (this is an invited talk to a session dedicated to phylogenetic diversity); Data analyst hired at UCT/SANBI.

July 2007: Attendance and presentation by Drs Jonathan Davies & Savolainen at the 21st Annual Meeting of the Society of Conservation Biology in South Africa; discussion of the DNA barcoding of the flora of the KNP with the conservation authorities of the park.

August 2007: Conservation article submitted to the popular press by Drs Manning & Forest; DNA barcodes produced for the flora of the KNP (250).

September 2007: Darwin Initiative officer starts duties for post-project.

January 2008: Research visit of Dr Forest to SANBI (conservation analyses of the succulent Karoo); Attendance and presentation by most project partners to the Cape biota meeting (satellite of SASSB VII in the Drakensberg, South Africa). Drs Savolainen, Verboom (UCT) and Dreyer (Stellenbosch) start editing papers for the themed issue of Mol. Phyl. Evol. dedicated to the Cape; Workshop with other Darwin projects; New students start at UJ; Extinction hotspots and extinction risks for plant lineages identified.

March: Submission of one paper on extinction risks.

8. Dissemination

The project has a very high profile within South Africa and internationally. A joint press release between RBG Kew, UK Defra/Darwin Initiative and SANBI publicised our work, and was cross-referenced with a press release by Nature about our paper. Several articles have reported on our results, interviewing several of us about the project, e.g.:

- Conservation Magazine online (14 February 2007) *Vive la différence!*
- ScienceNOW (14 February 2007) *Saving species with potential*
- BBC News online (14 February 2007)
- Nature 345: 717-718 (14 February 2007) *News & Views: The diversity of biodiversity*
- Faculty of 1000

9. Project Expenditure

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

Item	Budget (please indicate which document you refer to if other than your project schedule)	Expenditure	Balance
Rent, rates, heating, overheads etc			
Office costs (eg postage, telephone, stationery)			
Travel and subsistence			
Printing			
Conferences, seminars, etc			
Capital items/equipment			
Others			
Salaries (specify)			
TOTAL			

(a) T&S and Conference should be lumped

(b) Carried forward to 2008/2009

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

- Scientists based at the Royal Botanic Gardens, Kew, and in South Africa, together with colleagues around the globe, have published a ground-breaking paper in the leading journal Nature. The team worked closely to tackle one of the main problems facing conservationists - finding the best way to preserve biodiversity. The paper, entitled 'preserving the evolutionary potential of floras in biodiversity hotspots' challenges traditional conservation methods by investigating an undisputed biodiversity hotspot – the Cape of South Africa. Building on a

collaborative Darwin Initiative-funded project between RBG Kew, the South African National Biodiversity Institute and the University of Cape Town, the scientists spent three years collecting data to build a comprehensive map and evolutionary tree that included the entirety of the Cape flora. This is the largest evolutionary tree yet built for an entire flora and covers over 9,000 plant species – many of which are endangered and only found in the Cape. They discovered that, although the western part of the Cape has an impressive number of plant species, all of these are very closely related. The eastern part of the Cape, on the other hand, has fewer, but more divergent species. Plant conservation efforts have previously focused on areas where there are a high number of different species, known as high species richness. However this paper stresses that biodiversity is defined by not just the number of species but also the difference between them. In particular, the genetic variation between species and the evolutionary novelty they provide is now recognised as an increasingly important element of biodiversity. Traditional methods of measuring biodiversity would concentrate efforts on the western part of the Cape, however these discoveries indicate that specific conservation efforts should also be directed towards the eastern part of the Cape. The authors suggest that using this evolutionary method may better preserve plants for their medicinal and economic uses. The paper also highlights the conflict between national and international conservation responsibilities and the need for an integrated, global effort to preserve the future of the Earth's biodiversity.

[I agree for ECTF and the Darwin Secretariat to publish the content of this section](#)

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 (i) co-ordinate research; (ii) calculate extinctions risks; (iii) transfer knowledge to in-country scientists, students and conservationists with regard to the use of phylogenetic data and DNA barcodes; (iv) integrate the human dimension; (v) publish concerted conservation actions</p>	<ol style="list-style-type: none"> 1. Research and training activities in partnership with academic and governmental sectors increase 2. Awareness of biodiversity issues increase among students and young scientists 3. In country CBD strategy and monitoring of 2010 targets take into account post-project outputs & outcomes 	<p>Research and training activities highly successful and well-publicised, high registration rate by students and young scientists for our courses (short courses, MSc, Hons). CBD strategy in progress.</p>	<p>April 2007: Dr Savolainen (RBG Kew) will visit UCT & SANBI. Attendance and oral presentation on DNA barcoding by Drs Savolainen & van der Bank at the KNP Science Network Meeting. MSc work starts at UCT. International press release (Kew Scientist).</p> <p>June 2007: Attendance and oral presentation on the use of phylogenetic diversity in conservation in South Africa by Drs Savolainen & van der Bank at the Evolution meeting in New Zealand (this is an invited talk to a session dedicated to phylogenetic diversity).</p>

			<p>Data analyst hired at UCT/SANBI.</p> <p>July 2007: Attendance and presentation by Dr Jonathan Davies & Savolainen at the 21st Annual Meeting of the Society of Conservation Biology in South Africa; discussion of the DNA barcoding of the flora of the KNP with the conservation authorities of the park.</p> <p>August 2007: conservation article submitted to the popular press by Drs Manning & Forest. DNA barcodes produced for the flora of the KNP (250).</p> <p>September 2007: Darwin Initiative officer starts duties for post-project.</p> <p>January 2008: Research visit of Dr Forest to SANBI (conservation analyses of the succulent Karoo), Attendance and presentation by most project partners to the Cape biota meeting (satellite of SASSB VII in the Drakensberg, South Africa). Dr Savolainen, Verboom (UCT) and Leanne Dreyer (Stellenbosch) start edit papers for the theme issue of Mol. Phyl. Evol. dedicated to the Cape. Workshop with other Darwin projects. New</p>
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			students start at UJ. Extinction hotspots and extinction risks for plant lineages identified. March: submission of one paper on extinction risks.
Output 1. DNA Barcoding	500 DNA barcodes produced	6 x 100 barcodes produced	
Activity 1. DNA extractions and sequencing for DNA barcoding and for hotspots-wide surveys		DNA extractions done routinely at UJ, 600 DNAs duplicated at SANBI	
Output 2. Training	20 training-weeks, 2 MSc, 3 Hons, 2 postdocs (total 89 month-person)	18 trainees at PD course, 1 MSc and 2 Hons started their projects at UCT and UJ, respectively	
Activity 2. Course			
Output 3. Dissemination	5 papers submitted/2 newsletters circulated	1 paper published, 2 submitted, 1 newsletter circulated	
Activity 3.1 Data compilations; assessing extinction risks		Cape compilation finished, extinction risk analyses of the Cape done and will be presented at the Conservation Conference in Port Elizabeth in July 2007	
Output 4. Conservation assessments	3 assessments published	1 assessment published for the Cape	

Activity 4. PD analyses	PD analyses done for the Cape, will be presented at the Evolution meeting in June 2007
Output 5. South African Conservation Scientists network enhanced	>15 staff working together Chase, Powell, Savolainen, Kapinos, Maurin, Lahaye, van der Bank, Hedderson, Verboom, Tolley, Gopal, Smith, Forest, Manning, Proches, etc
Activity 5. Workshops	Workshops in July 2006, January 2007 and March/April 2007 at UJ, UCT and SANBI

Annex 2 Project's full current logframe

Project summary	Measurable indicators	Means of verification	Important assumptions
<p>Goal:</p> <p><i>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</i></p> <ul style="list-style-type: none"> • <i>the conservation of biological diversity,</i> • <i>the sustainable use of its components, and</i> • <i>the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources</i> 			
<p>Purpose</p> <p>(i) co-ordinate research; (ii) calculate extinctions risks; (iii) transfer knowledge to in-country scientists, students and conservationists with regard to the use of phylogenetic data and DNA barcodes; (iv) integrate the human dimension; (v) publish concerted conservation actions</p>	<p>1. Research and training activities in partnership with academic and governmental sectors increase</p> <p>2. Awareness of biodiversity issues increase among students and young scientists</p> <p>3. In country CBD strategy and monitoring</p>	<p>1. Joint supervision and research documents and correspondence between SANBI, UJ, UCT & Kew</p> <p>2. Records of requests to undertake Hons/MSc, participate in projects, and attend courses by students and young scientists</p> <p>3. Conservation &</p>	<p>Strategies developed throughout the post-project are of high quality and in demand by wider scientific and nature conservation authorities</p> <p>Joint programme of activities has proven useful and partnership continues</p> <p>SANBI's statutory mission continues to be</p>

	of 2010 targets take into account post-project outputs & outcomes	CBD documents updated	supported by Government
Outputs			
1.DNA Barcoding	1. 500 DNA barcodes produced	1. DNA sequences available in GenBank	There is a broad interest from staff and students for training and networking in biodiversity and conservation
2.Training	2. 20 training-weeks, 2 MSc, 3 Hons, 2 postdocs (total 89 month-person)	2. Attendees lists/diplomas	
3.Dissemination	3. 5 papers submitted/2 newsletters circulated	3. Manuscripts available, correspondence with editors/publishers	Material produced is of good quality & accepted for publication
4.Conservation assessments	4. 3 assessments published	4. Reports available	Collecting permits continue to be issued by KNP
5. South African Conservation Scientists network enhanced	5. >15 staff working together	5. Meeting reports available	

Activities	Activity Milestones (Summary of Project Implementation Timetable)
1.DNA extractions and sequencing for DNA barcoding and for hotspots-wide surveys	<p><u>Months 1-12:</u></p> <p>Data compilations (IUCN, phylogenies) and extinction risks analyses start (08/06); training course analyses at UCT (01/07); 2 MSc and 2 Hons research projects start (02/07); presentation of results at conference (06/07); one paper submitted (08/07);</p>
2.Data compilations; assessing extinction risks	<p><u>Months 13-24:</u></p>
3.PD analyses	<p>Darwin Initiative officer start (09/07); 250 DNA barcodes produced (11/07); 2 Hons completed (11/07); Workshop at SASSB VII ((01/08); 2 Hons start (02/08); Extinction risks analyses completed (02/08); 1 paper submitted and 1 press release (03/08); 250 additional DNA barcodes produced; 3 additional papers submitted (06/08); Workshop (07/08); Conservation assessments completed and reports produced (07/08).</p>
4.Workshops	
5.Course	

Annex 3 onwards – supplementary material (optional)

Copies of:

Forest F, Grenyer R., Rouget M., Davies T. J., Cowling R. M., Faith D. P., Balmford A., Manning J. C., Proches S., van der Bank M., Reeves G., Hedderson T. A. J., Savolainen V. 2007. Preserving the evolutionary potential of floras in biodiversity hotspots. **Nature** 445: 757-760.

Mooers A O. 2007. The diversity of Biodiversity. **Nature** 445: 717-718.

Kew Scientist Oct 2006

Kruger Park Times

Checklist for submission

	Check
Is the report less than 5MB? If so, please email to Darwin-Projects@ectf-ed.org.uk putting the project number in the Subject line.	
Is your report more than 5MB? If so, please advise Darwin-Projects@ectf-ed.org.uk that the report will be send by post on CD, putting the project number in the Subject line.	
Do you have hard copies of material you want to submit with the report? If so, please make this clear in the covering email and ensure all material is marked with the project number.	
Have you completed the Project Expenditure table?	
Do not include claim forms or communications for Defra with this report.	