

Darwin Initiative Annual Report

Darwin Project Information

Project Ref Number	15/035
Project Title	<i>Ex situ</i> conservation of the rare and threatened plants of Mauritius
Country(ies)	Mauritius
UK Contract Holder Institution	Royal Botanic Gardens, Kew
UK Partner Institution(s)	n/a
Host country Partner Institution(s)	Ministry of Agro-Industry & Fisheries, Mauritius Sugar Industry Research Institute, National Threatened Plants Technical Committee
Darwin Grant Value	£60,029
Start/End dates of Project	1 Jul 2006 to 30 Jun 2009
Reporting period (1 Apr 200x to 31 Mar 200y) and annual report number (1,2,3..)	1 Apr 2007 to 31 Mar 2008, annual report number 2
Project Leader Name	Steve Alton
Project website	n/a
Author(s), date	Steve Alton, 27 Apr 2008

1. Project Background

The project seeks to aid the Government and people of Mauritius in achieving Target 8 of the Global Strategy for Plant Conservation - '*60% of threatened plant species in accessible ex situ collections, preferably in the country of origin*' – through the creation of a wild species Seed Bank. The Seed Bank is located at an existing Government nursery at Robinson Road, Curepipe, taking advantage of a previously vacant building. The facility houses drying and cold storage facilities, enabling the long-term conservation of seeds of Mauritian native plant species. Duplicate collections will be held at the Millennium Seed Bank in the UK, and herbarium specimens associated with the collections at the Mauritian Sugar Industry Research Institute herbarium.

2. Project Partnerships

Project partnerships: The partnership originally involved only a single member of staff from the UK lead institution (the Project Leader). As a result of the project this has expanded, with visits from two additional members of staff from the Seed Conservation Department at Kew, and a further visit by a horticulturalist from Kew's Moist Tropics team. During the coming year two Kew Diploma students will also visit to assist with fieldwork. This developing relationship represents a two-way flow of material and expertise between the partner countries; as well as seeds being sent to Kew, both seeds and living plants have been repatriated to Mauritius. This is seen as being the model for the future development of the collaboration, with the relevant departments within Kew working together to service the project.

The primary aim of the project is to enable the partner institutions to meet CBD commitments, specifically the *ex situ* target (Target 8) of the Global Strategy for Plant Conservation. This will be achieved through the construction of a long-term seed storage facility, with a lifespan far beyond that of the current project, but also through training and capacity building to allow the on-going maintenance and sustainable utilisation of the conserved seed collections. The facility has the capacity to hold significantly more than the 300 threatened species targeted by this project, and the germination protocols developed by the project will feed into reintroduction and reinforcement programmes.

Other Collaborations: The project benefits from the involvement of the National Threatened Plants Technical Committee, which brings together members of a range of organisations involved in plant conservation in Mauritius, particularly the Mauritian Wildlife Foundation, an NGO, and the University of Mauritius.

Mr. M. Puttoo, the CBD focal point for Mauritius, is a member of staff within the partner institution, the National Parks and Conservation Service.

3. Project progress

3.1 Progress in carrying out project activities

Output 1. Access and Benefit Sharing Agreement (ABSA) developed

Activity 1.1 Although significantly delayed, the Memorandum of Collaboration, which covers access & benefit sharing and material transfer, was eventually signed by both parties.

Output 2. Securely banked seed collections of rare and threatened species Seed collections of 300 species cleaned, processed and divided between partner countries

Activity 2.1. The delay in recruitment of the two project staff members led to a late start, but a lot of effort has been put into catching up, and we are now close to halfway to achieving the 300 species target (139 species at the time of writing).

Output 3. Herbarium specimens held in duplicate herbaria At least 2 herbarium specimens made for each seed collection, one for each country

Activity 3.1 As with 2.1, roughly half the target has been achieved, with two herbarium voucher specimens collected for each species, except in the case of very rare species, where detailed photographs were taken instead. One of each pair of vouchers is held at the MSIRI Herbarium.

Output 4. Germination protocols developed for seed collections All seed collections tested at MSBP and germination results recorded

Activity 4.1 As seed collections arrive at the Millennium Seed Bank, Kew, they are cleaned and accessioned then enter the germination testing system. Test results are recorded as a matter of course and are repatriated to Mauritius as soon as they are available.

Output 5. Storage protocols developed for all orthodox species Research carried out on species with storage problems

Activity 5.1 The project has been lucky in that very few species with storage problems have been collected so far. Those that do show evidence of unusual behaviour are being studied at the MSB.

Output 6. Creation of National seed bank facility in Mauritius Establishment of native species seed bank

Activity 6.1 As has been mentioned already, recruitment was delayed by the late signing of the MoC. Additionally, the successful candidate for the second post (Seed Bank Assistant) later pulled out and the post had to be re-filled. However, both members of staff are now in post and have been trained.

Activity 6.2 The facilities at the Native Plant Propagation Centre, Robinson Road Nursery, Curepipe, were completed at the end of 2006 and equipment was shipped out from the UK during the period Jan-Feb 2007.

Output 7. Increased capacity in *ex situ* conservation for Mauritius
20 Mauritian Stakeholders successfully trained

Activity 7.1 Keith Manager carried out training for 4 members of staff from Government departments during his visit in January 2007. A further 11 trainees were trained by Stephanie Miles in April 2007, and the Darwin-funded Seed Bank Technician, Pushpa Seepaul, visited the MSB for training from 22 July – 14 August. Subsequently, Pushpa has cascaded her training down to Ms. Nabiihah Roomaldawo, the Darwin-funded Seed Bank Assistant, and Mr. Ranjit Seecharan, the government-funded Nurseryman who assists with the project. More recently, four Assistant Park Rangers and a Technical Assistant from National Parks have also received training from Pushpa. It is intended that this will form part of a monthly training programme for Government staff.

3.2 Progress towards Project Outputs

The collection of seeds and herbarium specimens has inevitably been delayed by the late recruitment, but extensive training is taking place at the time of writing, and the pool of trained staff from a range of partner organisations should allow the shortfall in species numbers to be made up within the lifetime of the project. With a year and 2 months at the time of writing and half of the species target remaining to be collected, there is no room for complacency. Indeed, considerable effort is being put into improving targeting and efficiency of collecting. The Threatened Plants Technical Committee now meets to oversee the work of the project staff and to provide help and guidance, and members of that committee accompany staff on field trips to assist with identification. Data sheets for recording flowering and fruiting have been disseminated to Park Rangers at 3 National Parks to help project staff plan their collecting programme.

3.3 Standard Output Measures

Table 1 Project Standard Output Measures

Code No.	Description	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	TOTAL
Established codes						
6A	Number of people to receive training from Kew gardens	4	20			20
6B	Number of weeks for course	1				1
8	Number of weeks spent in Mauritius by UK staff	2				2
14A	Number of seminars in Mauritius	0	2			2
14B	Number of local meetings		2			1
15A	Number of national press releases in Mauritius (if permission granted)	0	1			2
18A	Number of TV features in Mauritius	1	2			2
19A	Number of radio interviews					2
21	Number of new facilities established	1				1

New Project specific measures	-						
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In Table 2, provide full details of all publications and material produced over the last year that can be publicly accessed, eg title, name of publisher, contact details, cost. Mark (*) all publications and other material that you have included with this report.

Table 2 Publications

Type * (eg journals, manual, CDs)	Detail (title, author, year)	Publishers (name, city)	Available from (eg contact address, website)	Cost £
n/a				

3.4 Progress towards the project purpose and outcomes

Seed collecting is now well under way, with around half of the 300 species target currently in secure *ex situ* conservation. This represents 39% of the country's threatened plant species and as such makes a direct and significant contribution to Target 8 of the Global Strategy for Plant Conservation: '*60% of threatened plant species in accessible ex situ collections, preferably in the country of origin*'. The main assumption – that adequate seed will be available to achieve this – still holds true, and as with any project involving biological systems, this is unpredictable and at the mercy of factors such as climate. It would be wrong, however, to place too much emphasis on numbers of seed collections as a measure of success; the capacity building aspects of the project will allow seed conservation to continue in the future, as well as raising awareness of the need for this work, resulting in a lasting legacy.

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

The project will have a direct and measurable impact on biodiversity, taking germplasm of endangered plant species and placing it in secure storage, both in the country of origin and in the UK. Additionally, the germination protocols developed as part of the curation process will feed into propagation work, enabling reintroduction and reinforcement programmes in the wild. The Seed Bank is located next to a plant propagation facility, and already seeds are being transferred for growing on. Furthermore, the training given as part of the project will increase the number of people in country with the skills to continue this work beyond the lifespan of this project.

4. Monitoring, evaluation and lessons

As has been mentioned earlier, seed collecting is by its very nature unpredictable, being subject to factors such as climate and predation. In addition, a great many of the target species are currently represented by very few individuals in the wild, making the collecting of a useful seed sample even harder. As such, numbers of collections received, whilst a useful indicator of progress, should not be seen as an absolute measure of success. Other indicators of the project's progress – number of staff trained, media coverage, etc – will continue to be monitored and should give a picture of the wider impact.

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

N/a

6. Other comments on progress not covered elsewhere

One particular risk faced by the project is loss of trained staff. There has already been a delay contributed to by a candidate deciding not to accept the post of Seed Bank Assistant; any further losses of staff would result in similar or greater delays as replacements are recruited and trained. This also applies beyond the end of the project; the continued success of the Seed Bank in Mauritius will depend of continuity of staff, and it will be important to address the problem of funding for the two posts beyond the end of the project period.

7. Sustainability

The project has already been covered widely by the media in Mauritius, particularly radio and newspapers, and visits by Kew staff have helped to raise the media profile. In the last reporting period the project was covered twice by television crews – once by the Mauritian Broadcasting Corporation (broadcast on 10th February 2008 on MBC main news at 19:30), and once by a journalist from Reuters for potential worldwide syndication. A high public profile will be particularly important towards the end of the project, when funds will need to be sought to continue the work, and the senior staff within the National Parks and Conservation Service are aware of this. It is intended that the MBC will cover the project from time to time as the project nears completion.

8. Dissemination

Dissemination so far has been through the popular media and aimed at a non-technical public audience. Towards the end of the project, when funds will be sought to extend the project, a more specialist audience will be targeted, particularly Government officials. The project has already been promoted at a senior level during visits by Kew staff. Schools and Universities are becoming increasingly interested in the project, and a group of BSc Biology students from the University of Mauritius visited the seed bank on 26th February 2008. This use of the facility will be promoted. There is now also a Project website as part of the Millennium Seed Bank web pages: <http://www.kew.org/msbp/where/Mauritius.htm>

9. Project Expenditure

Please expand and complete Table 3.

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			

Highlight any agreed changes to the budget and explain any variation in expenditure where this is +/- 10% of the budget.

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

Seeds of *Urena lobata* subsp. *lobata* var. *umbonata*, endemic to the Mascarenes and previously thought to be extinct in Mauritius, were collected on a recent trip. The plant was only rediscovered in the last two years, and there are now 2 documented sites. The Seed Bank now holds around 20% of the native flora of Mauritius.

Annex 1 Report of progress and achievements against Logical Framework for Financial Year: 2007/08

Project summary	Measurable Indicators	Progress and Achievements April 2007 - March 2008	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>The creation of the native species Seed Bank represents a significant contribution towards the conservation of biodiversity in Mauritius. The associated training will enable the sustainable utilisation of the collection held in the Bank.</p>	<p><i>(do not fill not applicable)</i></p>
<p>Purpose Implementation of Target 8 of the Global Strategy for Plant Conservation (CBD) in Mauritius - '60% of threatened plant species in accessible ex situ collections, preferably in the country of origin, by 2010...'</p>	<p>Accurately identified samples of seed from 300 native plant species held in long-term secure storage in Mauritius and in UK</p>	<p>(report on progress towards achieving the project purpose, ie the sum of the outputs and assumptions)</p>	<p>(Highlight key actions planning for next period)</p>
<p>Output 1. Access and Benefit Sharing Agreement (ABSA) developed</p>	<p>ABSA document signed by both parties</p>	-	
<p>Activity 1.1 MTA signed by both signatories</p>		Completed	
<p>Output 2. Securely banked seed collections of rare and threatened species</p>	<p>Seed collections of 300 species cleaned, processed and divided between partner countries</p>	-	
<p>Activity 2.1. Collect seeds and herbarium specimens (300 species, up to 5</p>		138 species (at time of writing) collected and currently being processed in	

replicate populations)		Mauritius and UK. 2 herbarium specimens for each of these species collected, except for particular rarities, in which case photos were taken
Output 3. Herbarium specimens held in duplicate herbaria	At least 2 herbarium specimens made for each seed collection, one for each country	-
Activity 3.1 see 2.1		see 2.1
Output 4. Germination protocols developed for seed collections	All seed collections tested at MSBP and germination results recorded	-
Activity 4.1 Produce germination protocols for ca. 100 problem species		Germination protocols are being developed for all species collected, as part of the standard testing procedure.
Output 5. Storage protocols developed for all orthodox species	Research carried out on species with storage problems	-
Activity 5.1 Determine storage requirements of those species with storage problems		See Output 2
Output 6. Creation of National seed bank facility in Mauritius	Establishment of native species seed bank	Completed
Activity 6.1 Recruit seed technician and assistant		Completed
Activity 6.2 Set up laboratory facilities at the Native Plant Propagation Centre, Robinson Road Nursery, Curepipe (Mauritius)		Completed
Output 7. Increased capacity in <i>ex situ</i> conservation for Mauritius	20 Mauritian Stakeholders successfully trained	-
Activity 7.1 Train 2 key Mauritian staff at MSB in seed collecting and processing (UK)		4 staff members trained in country last reporting period. 1 project staff member trained in the UK and 11 members of staff trained in country. Training cascaded to a further 8 staff.

Annex 2 Project's full current logframe

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>Goal:</p> <p>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>Implementation of Target 8 of the Global Strategy for Plant Conservation (CBD) in Mauritius - '60% of threatened plant species in accessible ex situ collections, preferably in the country of origin, by 2010...':</p> <ul style="list-style-type: none"> • 	<ul style="list-style-type: none"> • Accurately identified samples of seed from 300 native plant species held in long-term secure storage in Mauritius and in UK 	<ul style="list-style-type: none"> • List of species held with germination test results 	<ul style="list-style-type: none"> • Availability of sufficient plant material
<p>Outputs</p> <p>Access and Benefit Sharing Agreement (ABSA) developed</p>	<p>ABSA document signed by both parties</p>	<p>Signed copies held by both parties</p>	
<p>Securely banked seed collections of</p>	<ul style="list-style-type: none"> • Seed collections of 300 species cleaned, 	<p>List of collections held</p>	<p>Seed availability not limited for some rare</p>

rare and threatened species	processed and divided between partner countries		species, and seed storage behaviour not a problem for others
Herbarium specimens held in duplicate herbaria	At least 2 herbarium specimens made for each seed collection, one for each country	List of herbarium specimens held	Samples available from all species
Germination protocols developed for seed collections	All seed collections tested at MSBP and germination results recorded	Germination protocols held by both partners. Young plants of rare species propagated in UK and Mauritius	Enough seeds available for testing.
Storage protocols developed for all orthodox species	Research carried out on species with storage problems	Copies of research reports held by both partner countries	
Creation of National seed bank facility in Mauritius	Establishment of native species seed bank	Facility in operation	
Increased capacity in ex situ conservation for Mauritius	20 Mauritian Stakeholders successfully trained	Number of people receiving training	

Activities	Activity Milestones	Assumptions
<p>MTA signed by both signatories</p> <p>Recruit seed technician and assistant</p> <p>Train 2 key Mauritian staff at MSB in seed collecting and processing (UK)</p> <p>Set up laboratory facilities at the Native Plant Propagation Centre, Robinson Road Nursery, Curepipe (Mauritius)</p> <p>Train 20 Mauritian stakeholders in seed collecting and basic processing (Mauritius)</p> <p>Collect seeds and herbarium specimens (300 species, up to 5 replicate populations)</p> <p>Produce germination protocols for ca. 100 problem species</p>	<p>• Achieved by June 2006</p> <p>• Appointed by August 2006</p> <p>• Training in August 2006</p> <p>• Started in July 2006</p> <p>• Course held Nov 2006</p> <p>• Annual stock take (July 07,08), final report (Aug 09)</p> <p>• Annual report (July 07,08), final report (Aug 09)</p>	<p>As above</p>