



Submit by 13 January 2006

DARWIN INITIATIVE APPLICATION FOR GRANT ROUND 14 COMPETITION:STAGE 2

Please read the Guidance Notes before completing this form. Applications will be considered on the basis of information submitted on this form and you should give a full answer to each question. Please do not cross-refer to information in separate documents except where invited on this form. The space provided indicates the level of detail required. Please do not reduce the font size below 11pt or alter the paragraph spacing. Keep within word limits.

1. Name and address of organisation

Name: Royal Botanic Gardens, Kew	Address: Wakehurst Place, Ardingly, West Sussex RH17 6TN
---	--

2. Project title (not exceeding 10 words)

Ex situ conservation of the rare and threatened plants of Mauritius

3. Project dates, duration and total Darwin Initiative Grant requested

Proposed start date: July 2006		Duration of project: 3 years		End date: June 2009	
Darwin funding requested	Total £ 60029	2006/07 £ 16987	2007/08 £ 20291	2008/09 £ 17726	2009/2010 £ 5025

4. Define the purpose of the project in line with the logical framework

The main purpose is to enable Mauritius to meet Target 8 of the Global Strategy for Plant Conservation (CBD) - '60% of threatened plant species in accessible ex situ collections, preferably in the country of origin'. The project is in three parts:

- To seed-bank 300 native species over three years in a national *ex situ* seed storage facility in Mauritius.
This collection will be duplicated at the Millennium Seed Bank (MSB), UK. Seed collection will focus on i) highly threatened plant species and ii) other native plant species.
- To study germination constraints of the rarest species at the MSB, to aid their recovery programmes.
The project will develop germination protocols for rare and problematic species, and repatriate any individuals successfully germinated and established in the UK. These will help improve ongoing species recovery and restoration programmes.
- To increase the number of people trained in plant conservation techniques in Mauritius in order to achieve CBD targets.
The project will build in-country capacity by employing two Mauritians for three years. The two officers will receive training in basic herbarium techniques, will work closely with stakeholders during seed collection, and will receive training at the MSB. MSB staff will also provide training in seed conservation techniques for 20 conservation practitioners in Mauritius.

5. Principals in project. Please provide a one page CV for each of these named individuals

Details	Project Leader	Other UK personnel (working more than 50% of their time on project)	Main project partner or co-ordinator in host country
Surname	Alton		Mungroo
Forename (s)	Stephen David		Yusoof
Post held	Seed Donations Officer		Director
Institution	Royal Botanic Gardens, Kew		Ministry of Agro-Industry & Fisheries
Department	Millennium Seed Bank Project		National Parks and Conservation Service

6. Has your organisation received funding under the Darwin Initiative before? If so, give details

The Royal Botanic Gardens, Kew has received seventeen grants from the Darwin Initiative since 1992.

7. IF YOU ANSWERED NO TO QUESTION 6 describe briefly the aims, activities and achievements of your organisation. (Large institutions please note that this should describe your unit or department)

Aims (50 words)

Activities (50 words)

Achievements (50 words)

8. Please list the UK (where there are partners in addition to the applicant organisation) and host country partners that will be involved in their project and explain their roles and responsibilities in the project. Describe the extent of their involvement at all stages, including project development. What steps have been taken to ensure the benefits of the project will continue despite any staff changes in these organisations? Please provide written evidence of partnerships.

Ministry of Agro-Industry & Fisheries (National Parks and Conservation Service). This service is the main government organization responsible for the conservation of terrestrial native biodiversity in Mauritius. The project officer and assistant will be employed through the Ministry which will provide transport, support staff and co-funding for facilities for Mauritius' seed bank. It is the legal partner in this project.

Mauritius Sugar Industry Research Institute (Mauritius Herbarium). The Institute houses the Mauritius Herbarium. The Herbarium has the main regional collection for the Mascarenes and is a partner in the publication of the Mascarene flora that is near completion. Voucher specimens will be stored in improved facilities at the Herbarium and duplicated in the UK. The Herbarium will provide training in voucher specimen collection and mounting to the project staff.

National Threatened Plants Technical Committee. This committee consists of governmental, non-governmental and parastatal stakeholders, and coordinates native plant conservation.

Members will receive training in seed conservation techniques through a workshop to be held in Mauritius.

The **Millennium Seed Bank Project** is an initiative of the Royal Botanic Gardens, Kew. The project works collaboratively with 45 partner organisations in 18 countries to further the *ex situ* conservation of wild plants through seed banking. It brings to the project expertise in capacity building, training, seed storage and germination techniques all developed over the past 30 years.

The idea of this project was triggered by a visit in 2004 to the facilities at the MSB by a member of the Mauritian Wildlife Foundation (local NGO & member of the Committee). This was followed by a four-day visit to Mauritius by Mr Steve Alton from the MSB (August 2005) to discuss the feasibility of a collaboration. Following this visit, Stage 1 of the Darwin Initiative application was written by a working group comprising members from each of the above organisations.

The institutions involved in this project are well established, and constitute the key players in plant conservation in Mauritius. Thus, it is envisaged that staff changes will have little impact on the project's success. These institutions are also entrusted with implementation of the CBD (NPCS) and its thematic programmes (Global Taxonomy Initiative (GTI) – Mauritius Herbarium).

9. What other consultation or co-operation will take place or has taken place already with other stakeholders such as local communities? Please include details of any contact with the government not already provided.

As detailed above, all the project partners have well established roles in conservation in Mauritius, and all were involved in the development of the project.

PROJECT DETAILS

10. Is this a new initiative or a development of existing work (funded through any source)? Are you aware of any other individuals/organisations carrying out similar work, or of any completed or existing Darwin Initiative projects relevant to your work? If so, please give details explaining similarities and differences and showing how results of your work will be additional to any similar work and what attempts have/will be made to co-operate with and learn lessons from such work for mutual benefits.

This project is a new initiative for Mauritius, but similar successful projects have been carried out in collaboration with the MSB in other countries around the world. In addition, RBG Kew has a proven track record working in *ex situ* and *in situ* conservation in Mauritius. Kew has also been the recipient of a number of Darwin Initiative grants over the years that have supported its work in wild plant conservation.

Mauritius has some *ex situ* facilities, and many years of experience with propagation of the native flora. However, many of the highly threatened species are difficult to propagate, and intensive research is needed to help in successful species recovery programmes. Thus, this project will build upon and expand existing capacity in plant conservation.

11. How will the project assist the host country in its implementation of the Convention on Biological Diversity? Please make reference to the relevant article(s) of the CBD thematic programmes and/or cross-cutting themes (see Annex C for list and worked example) and rank the relevance of the project to these by indicating percentages. Is any liaison proposed with the CBD national focal point in the host country? Further information about the CBD can be found on the Darwin website or CBD website.

The project will support the implementation of Articles 7 (Identification and Monitoring) (5%), 8 (*in situ* conservation) (15%), 9 (*ex situ* conservation) (60%), 12 (Research and training) (10%), 17 (Exchange of information) (10%), 18 (Technical and Scientific cooperation) (10%), with emphasis on the Global Taxonomy Initiative (10%), Forest biodiversity (15%) and Global Strategy for Plant Conservation (40%).

The National Focal Point for the CBD is the Ministry of Environment & National Development Unit. However, implementation of the Convention is entrusted to NPCCS, and one work programme is carried out by the Mauritius Herbarium (GTI). These organisations are in regular contact with each other through technical, strategic and management committees covering all aspects of conservation and sustainable development.

12. How does this project meet a clearly identifiable biodiversity need or priority defined by the host country? Please indicate how this work will fit in with National Biodiversity Strategies or Environmental Action Plans, if applicable.

45% of the flora of Mauritius is endemic, and a further 21% is only found in the Mascarene Archipelago (found on Mauritius, and Rodrigues and/or Reunion). Of the 605 surviving higher plant species native to Mauritius, 78% are threatened, including 100 species known from less than 50 adults in the wild.

With less than 2% of native forest cover left, Mauritius has one of the most threatened island floras in the world and it is a national and international priority to prevent species extinction, a concern reflected in the NBSAP (2005 draft) and NEAP (1999). This project will assure the long term conservation of many of these species, and will provide options for their reintroduction and use in the future.

More specifically, a key target under the terrestrial biodiversity programme of the NBSAP (about to be endorsed) is that '60% of threatened plants (including all threatened species) are in *ex situ* collections'.

The strategic goal of the terrestrial biodiversity programme under the NEAP (1999) is to 'ensure that native Mauritian biodiversity survives, flourishes and retains its genetic diversity and potential for evolutionary development'.

13. If relevant, please explain how the work will contribute to sustainable livelihoods in the host country.

N/A

14. What will be the impact of the work, and how will this be achieved? Please include details of how the results of the project will be disseminated and put into effect to achieve this impact.

The project will help to conserve 60% of the flora of Mauritius within 3 years. The collections and protocols generated by this project will provide a cost-effective and sustainable tool for long-term conservation and sustainable development programmes. The development of a National seed-banking facility, the training of Mauritian nationals and the improved facilities at the Mauritius Herbarium, will all help ensure that Mauritius meets its targets for *ex situ* conservation under the CBD.

Indicators of success:

- List of collections (seed and herbarium), germination protocols and research reports published by both partner countries;
- National seed-bank facility in operation, run by trained staff and young plants of rare species propagated in UK and Mauritius;
- Increase in capacity in plant conservation through job creation for two staff and training of 20 conservation practitioners in seed conservation techniques.

15. How will the work leave a lasting legacy in the host country or region?

The project will develop a national native seed bank facility in Mauritius that can be expanded to include Rodrigues and the outer islands (Agalega and St Brandon). The facility can be used as a model for other small islands in the West Indian Ocean wishing to develop this type of *ex situ*

facility.

The project will also increase the capacity in *ex situ* techniques and taxonomy, develop protocols for germination and seed storage and increase the population size of critically endangered species for *in situ* conservation.

16. Please give details of a clear exit strategy and state what steps have been taken to identify and address potential problems in achieving impact and legacy.

The project will be integrated into the core work of the NPCS and other stakeholders to ensure its sustainability. Funding for its continuation will be sought from local conservation funds. To ensure fair use of genetic material, a Material Transfer Agreement will be signed between the Royal Botanic Gardens, Kew and the Government of Mauritius before commencement of the project.

Potential problems:

In case the new laboratory for a seed storage facility in Mauritius is not ready in time, space will be made in the present facilities.

Whenever plant material is limited, micro-management, grafting and air layering will be used to help increase the yield of seeds, or further research will be carried out to understand the reason for seed limitation.

Seed storage behaviour may prevent inclusion of species into the seed bank. Other *ex situ* techniques will be identified for these species.

Mauritius is in the cyclone region, and a serious cyclone can result in a power cut lasting several weeks. A back-up generator and contingency funds have been requested in the project to ensure that the seeds stored in the national facility are not ruined by such an event. In contrast, many native plants flower and fruit following a cyclone. This could be beneficial to the project.

Some rare plants are found on private land, and cooperation with the land owners is needed to collect the material. Meetings will be organised with the land owners to explain the importance of a project of this type, thus helping to improve cooperation.

17. How will the project be advertised as a Darwin project and in what ways will the Darwin name and logo be used?

The project will be advertised as a Darwin project through:

- 1) Media coverage;
- 2) Advertisement (stickers on new equipment, sign boards etc) at the new seed bank and herbarium facilities;
- 3) Protocols, phenology information etc made freely available electronically, with Darwin acknowledged.
- 4) Scientific papers, posters, pamphlets.

18. Will the project include training and development? Please indicate who the trainees will be and criteria for selection and that the level and content of training will be. How many will be involved, and from which countries? How will you measure the effectiveness of the training and will those trained then be able to train others? Where appropriate give the length and dates (if known) of any training course. How will trainee outcomes be monitored after the end of the training?

Training and development of Mauritian nationals in seed conservation techniques is a key element of this project, which will help to ensure its sustainability and relevance to the region as a whole. The project will build in-country capacity by employing two Mauritians for three years. The two officers will receive training in basic herbarium techniques, and will work closely with local stakeholders during seed collection. They will also receive formal training in seed conservation techniques at the MSB. MSB staff will also provide seed conservation training for 20 stakeholders

actively involved in plant conservation in Mauritius.

The two Mauritians on the project will become the focal point for any seed-storage in Mauritius and will train other people as necessary.

Conservation practitioners from Government and NGOs attending the MSB course in Mauritius will receive a certificate if their understanding is sufficient at the end of the course.

Monitoring of trainee involvement in the project will be carried out through quarterly reports to the National Threatened Plants Technical Committee, and through course evaluation forms.

LOGICAL FRAMEWORK

19. Please enter the details of your project onto the matrix using the note at Annex B of the Guidance Note. This should not have substantially changed from the Logical Framework submitted with your Stage 1 application. Please highlight any changes.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
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 <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 			
Purpose Implementation of Target 8 of the Global Strategy for Plant Conservation (CBD) in Mauritius - <i>'60% of threatened plant species in accessible ex situ collections, preferably in the country of origin, by 2010...'</i> :	<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
Outputs <ul style="list-style-type: none"> • Access and Benefit Sharing Agreement (ABSA) developed • Securely banked seed collections of rare and threatened species • Herbarium specimens held in duplicate herbaria • Germination protocols developed for seed 	<ul style="list-style-type: none"> • ABSA document signed by both parties • Seed collections of 300 species cleaned, processed and divided between partner countries • At least 2 herbarium specimens made for each seed collection, one for each country • All seed collections tested at MSBP and 	<ul style="list-style-type: none"> • Signed copies held by both parties • List of collections held • List of herbarium specimens held • Germination protocols held by 	<ul style="list-style-type: none"> • Seed availability not limited for some rare species, and seed storage behaviour not a problem for others • Samples available from all species • Enough seeds available for testing.

collections	germination results recorded	both partners. • Young plants of rare species propagated in UK and Mauritius	
<ul style="list-style-type: none"> • Storage protocols developed for all orthodox species • Creation of National seed bank facility in Mauritius • Increased capacity in ex situ conservation for Mauritius 	<ul style="list-style-type: none"> • Research carried out on species with storage problems • Establishment of native species seed bank • 20 Mauritian Stakeholders successfully trained 	<ul style="list-style-type: none"> • Copies of research reports held by both partner countries • Facility in operation • Number of people receiving training 	
Activities <ul style="list-style-type: none"> • MTA signed by both signatories • Recruit seed technician and assistant • Train 2 key Mauritian staff at MSB in seed collecting and processing (UK) • Set up laboratory facilities at the Native Plant Propagation Centre, Robinson Road Nursery, Curepipe (Mauritius) • Train 20 Mauritian stakeholders in seed collecting and basic processing (Mauritius) • Collect seeds and herbarium specimens (300 species, up to 5 replicate populations) • Produce germination protocols for ca. 100 problem species 		Activity Milestones <ul style="list-style-type: none"> • Achieved by June 2006 • Appointed by August 2006 • Training in August 2006 • Started in July 2006 • Course held Nov 2006 • Annual stock take (July 07,08), final report (Aug 09) • Annual report (July 07,08), final report (Aug 09) 	Assumptions As above

20. Provide a project implementation timetable that shows the key milestones in project activities.

Project implementation timetable		
Date	Financial year	Key milestones
<ul style="list-style-type: none"> • June 2006 • Started in July 2006 • August 2006 • Sept 2006 • Oct 2006 • Nov 2006 • Nov 06 - Mar 07 • Nov 06 - Mar 07 	Apr-Mar 2006/7	<ul style="list-style-type: none"> • MTA signed by both signatories; • Laboratory facilities set up at the Native Plant Propagation Centre, Robinson Road Nursery, Curepipe (Mauritius); • Seed technician and assistant recruited; • 2 key Mauritian staff trained at MSB in seed collecting and processing (UK); • Baseline list of target species and their localities established; • Training of 20 Mauritian stakeholders in seed collection and basic processing (in Mauritius); • Collection and recording of seeds and herbarium specimens (50 species); • Collection of up to 5 replicate populations per species.

Comment [p1]: The < symbol is unlikely to inspire confidence. You could put in 'up to', but I think they are more likely to be impressed by real numbers.

• Nov 06 - Mar 07		• Production of storage protocols for 50 species
All Mar 2008	Apr-Mar 2007/8	<ul style="list-style-type: none"> • Collection and recording of seeds and herbarium specimens (125 species over the year, averaging 10 species per month); • Collection of up to 5 replicate populations per species; • Production of storage protocols for 125 species • Production of germination protocols for ca. 30 problem species.
All Mar 2009	Apr-Mar 2008/9	<ul style="list-style-type: none"> • Collection and recording of seed and herbarium specimens for 100 species; • Collection of up to 5 replicate populations per species; • Production of storage protocols for 100 species • Production of germination protocols for ca. 60 problem species
Apr/May 2009	Apr-Mar 2009/10	<ul style="list-style-type: none"> • Collection and recording of seed and herbarium specimens of 25 remaining target species • Production of storage and germination protocols for 25 remaining species • Repatriation of individuals of critically rare species ready to be returned
June 2009		Production of final project report

21. Set out the project's measurable outputs using the separate list of output measures.

PROJECT OUTPUTS		
Year/Month	Standard output number (see standard output list)	Description (include numbers of people involved, publications produced, days/weeks etc.)
Nov 2006	6A	20 people to receive training from Kew gardens
Nov 2006	6B	Number of weeks for course
Sept 2006	8	Number of weeks spent in Mauritius by UK staff
	10	Germination and storage protocols
2009	11B	1 paper submitted
2006	12B	No. of databases enhanced & given to Mauritius (BRAHMS)
2006 & 2009	14A	2 seminars in Mauritius
2008	14B	1 local meeting
2006 & 2009	15A	2 national press releases in Mauritius (if permission granted)
	15C	Number of national press releases in UK
	16A	
	16B	
	16C	
2006 & 2009	18A	2 TV features in Mauritius
	18B	No. of TV features in UK
2006 & 2009	19A	2 radio interviews
2009	20	Est. value of physical output to be handed to M
2006	21	One new facility established
2009	23	Value of resources raised from other sources for the project

PROJECT BASED MONITORING AND EVALUATION

22. Describe, referring to the Indicators in the Logical Framework, how the progress of the project will be monitored and evaluated, including towards delivery of its outputs and in terms of achieving its overall purpose. This should be during the lifetime of the project and at its conclusion. Please include information on how host country partners will be included in the monitoring and evaluation.

Overall monitoring will be carried out by Kew, based on monthly reports submitted by the Mauritian project staff. These reports will include: a list of species from which seeds have been collected; a list of collections processed and ready for dispatch; a list of herbarium specimens collected; any other relevant information, such as training feedback, phenological records etc. The reports will be submitted first to the National Threatened Plants Technical Committee for approval, then forwarded to Kew.

MSB Kew will send to Mauritius monthly reports of germination results and the findings of any research carried out by MSB staff. Both reports will be used to aid in planning subsequent work, especially concerning material collection.

These reports will be compiled into 6-monthly reports by Kew. A final report will be produced at the end of the project, based on a synthesis of the preceding 6-monthly reports. This will be circulated to and approved by all stakeholders.