Darwin Initiative Main/Post/D+ Project
Half Year Report
(due 31st October 2017)

Project reference	Project 23-004 ref 3339
Project title	*Ex-situ* conservation of threatened plants from the Ivoloina-Ifontsy valleys, Madagascar
Country(ies)/territory(ies)	Madagascar
Lead organisation	Madagascar Fauna and Flora Group (MFG)
Partner(s)	Missouri Botanical Garden and Royal Botanic Gardens, Kew
Project leader	Karen Freeman
Report date and number (e.g., HYR3)	HYR2
Project website/blog/social media etc.	Twitter @c_birkinshaw; @MadaFaunaFlora; Facebook: @MadagascarFaunaGroup

1. Outline progress over the last 6 months (April – Sept) against the agreed baseline timetable for the project (if your project has started less than 6 months ago, please report on the period since start up to end September).

Output 2. Training and capacity building provided to enable six young Malagasy men/women the skills necessary to propagate and nurture native Malagasy plants

2.3. Project Leader and Manager of Conservation Horticulture organise 3-month formal training course and then the Manager of Conservation Horticulture coaches the trainees for the remainder of the project (Q1-Q12)

During Q5-Q6 the six trainee conservation horticulturalists have been coached by the experienced horticulturalist Alex Mamisoa in all aspects of the operation of a native tree nursery. All the trainees are enthusiastic about their work, knowledgeable about horticulture, skilled in the full range of horticultural operations, and are now capable of working proactively and with minimal direction. During the reporting period they planted out the first batch of seedlings into their final growing positions in the Parc Ivoloina. This key activity required teaching new techniques including the use of green manures to improve the soil, preparation of the planting hole, provision of seedlings with simple shade structures, and labelling of seedlings.

Output 3. Vouchered and genetically diverse seed samples collected for at least 500 endemic Malagasy species from remaining native forest fragments within Ivoloina-Ifontsy River Valley

3.1. Two teams of field botanists organise expeditions to unprotected forest fragments in the Ivoloina-Ifontsy valleys and there collect vouchered seed samples of Malagasy plants (Q2-Q8)

During the reporting period the field botanists completed five field trips and collected 247 vouchered seed samples. Thus, in total, the project to date has collected 571 vouchered seed samples. The rate of collection of seed samples was somewhat lower than the previous 6-month period because it included the Malagasy winter when fewer species of native tree bear fruit. To date, in total, the project team have collected seed samples from 76 plant families, 178 genera, and >177 species (the vouchers for 42% of the samples have not yet been identified to the level of species).

During the last field trip the field botanists were surprised to discover five adjacent forest fragments (total area 90 hectares) that were being conserved due to the efforts of an elderly

local man. He recounted that when he was young he lived in the nearby village of Ampasina and at that time the forest was all around so that they could even hear the calls of the lemur *Indri indri* from the village. However, he left to work in the capital and did not return until many years later. On his return he was shocked to see all the forest gone except for these small fragments. He has now dedicated himself to their conservation – even protecting them against exploitation by members of his family. He was delighted with our interest in this forest and pleased that the forest, through the compensation we provided to local people working as guides, cooks and seed collectors, could contribute to local livelihoods.

3.2. Seed samples of species considered orthodox sent to the SNGF Seed Bank and the Millennium Seed Bank (Q2-Q8)

During Q5-Q6 we dispatched 88 seed samples to the SNGF for inclusion in their seed bank and for dispatch to the Millennium Seed Bank.

3.3. Seed samples of species considered recalcitrant sent to Parc Ivoloina for propagation (Q2-Q8)

During Q5-Q6 233 seed samples were sown at Parc Ivoloina. Thus, to date, a total of 462 seed samples have been sown since the start of the project. Due to the large quantities of seeds samples accessioned it was necessary to install a second nursery that became fully operational in September 2017.

3.4. Voucher herbarium specimens processed so that replicates are both deposited at Madagascar's national herbarium and exported to international herbaria for expert identification (Q2-Q8)

Following best practice, all of the seed samples collected were accompanied by a voucher herbarium specimen that will enable scientific identification. Each specimen was collected in replicates of five. The specimens collected to date have been sorted, wrapped and are ready to be deposited in the national herbarium at the Parc Botanique et Zoologique de Tsimbazaza and for export to foreign herbaria for expert identification.

3.5. Collection information from voucher herbarium specimens data-based (Q2-Q8)

The collection information from all the voucher specimens has all been captured in the freely available on-line botanical database TROPICOS (http://www.tropicos.org/Project/Madagascar).

Output 4. At least 500 vouchered, genetically-diverse, endemic Malagasy flowering plant species conserved ex-situ

4.1. Manager of Conservation Horticulture at Parc Ivoloina enters collection information for each seed accession into Living Plant Monitoring System and then updates history of each accession within the System throughout project and beyond (Q2-Q12)

During the reporting period we communicated with Rebecca Sucher (Senior Manager of Living Collections at Missouri Botanical Garden) about the best approach for integrating the collection and propagation information for each accession into the Garden's Living Plant Monitoring System. She advised us to first compile the information as an excel spreadsheet and then her team will work with this to see how this information can be best transferred into their system for long term archiving.

4.2. Accessions Manager at the SNGF seed bank and the Millennium Seed-bank enters collection information into their respective accessions systems (Q2-Q12)

Collection information on all seed samples dispatched to SNGF have been integrated into their database.

4.3. Manager of Conservation Horticulture at Parc Ivoloina and six nurserymen/women propagate seeds and nurture seedlings, and label all accessions with unique codes linked to LPMS (Q2-Q10)

To date 339 seed samples have been propagated in the Parc Ivoloina nursery. These samples include 52 different plant families and 165 different genera.

4.4. Manager of Conservation Horticulture identifies appropriate planting locations for the seedlings within Park Ivoloina and directs planting out and labelling (Q5-Q10)

In August 2017 the first batch of seedlings were planted out into their final growing locations in Parc Ivoloina. Following best practice, seedlings are only planted when they attain 35 cm in height. Preparation of the planting site was somewhat arduous because it necessitated the removal of thick mats of the invasive, smothering fern *Dicranopteris linearis*. The first batch of 905 seedlings included 16 species. Seedlings planted in sunny locations were each provided with simple shade structures. To date, seedling mortality has been negligible (<1%). Each seedling planted was "permanently" labelled with an aluminium tag bearing the number of its voucher herbarium specimen and a unique number linked to the individual plant.

4.5. Newly planted plants weeded until fully established (Q5-Q12)

To date, no weeding of seedlings has been necessary.

4.8. Organising visits of all "Saturday School" children to visit the project, coverage on radio show, MFG newsletters, website, Twitter and Facebook accounts (Q1-Q12)

During the reporting period, the nursery hosted two visits by university students (15 in total) and one visit by 21 high school students.

The nursery has come to be regarded as a model nursery for the propagation of native trees and in June the Darwin Initiative team was pleased to provide 20 days of work experience for 4 nurserymen/women from the north of Madagascar. Furthermore, one of the trainee horticulturalists (David) provided a demonstration on making compost to a workshop in Dynamic Agroforestry that was organised by the Malagasy NGO Tsimoka at the Ankafobe Reserve on the Malagasy Highlands.

The Darwin Initiative Project is being featured in the upcoming issue of MFG's local newsletter, the Bitsik'a Ivoloina. In July 2017 the Darwin Initiative nursery was officially inaugurated by the British Consul for Madagascar, Mr Michel Gonthier and local officials. The event was a great success despite torrential rain throughout and was featured in several leading local television channels and newspapers.

A draft of a Project webpage has been developed but its formatting and activation was hampered because MFG's communications director who manages the MFG website (Tim Tetzlaff at Naples Zoo, Florida) was occupied with mitigating the significant impact of Cyclone Irma on the zoo.

2a. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

1. Field trips are expensive but the cost-efficiency (in terms of cost per vouchered seed sample) can be maximised if the time spent at a collecting site is large compared to the time taken to travel to and from this location. Thus, during the latter part of the reporting period we began to organise longer fieldtrips. However, an unexpected consequence of these longer periods in the field was that the seed samples suffered greater post-collection predation due to seed diseases and predators present in moderate amounts in the seed sample at the time of collection being able to multiply to attack more seeds during the longer period from the time of collection to the time of sowing. The solution to this problem is to organise seed dispatch from the field every 5 days during the longer trips and this is planned for future trips.

2. One weakness of our approach to seed collection is that sometimes the field botanists discover very interesting plants, including probable new species, but at the time of their visit these plants lack mature seeds. In an effort to include these plants in our collections we are adopting three methods: 1) targeted field trips at times of the year when these plants are likely

to be fruiting; 2) tasking members of the local community to monitor these plants and collect mature seeds as they become available; 3) taking cuttings of the plant.

3. We did not allocate enough money in our original budget for land preparation to remove invasive plant species before planting seedlings out and we predict that we will also need to hire some extra labourers to help with watering plants (operating costs) in the upcoming busy period when seed maturation is at its peak in Madagascar (November-February). We did not budget enough for permanent labels for each individual plant (cost type "other"). Costs have been lower than we originally anticipated for travel and subsistence so our prediction is that we can still do all the work as outlined in the proposal for the same overall budget total and in the same timeframe but we anticipate that we will need to submit a rebudget request to transfer some of the "travel and subsistence" budget line allocation to "operating" and "other" costs.

2b. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?

Discussed with LTS:	No
Formal change request submitted:	No
Received confirmation of change acceptance	No

3a. Do you currently expect to have any significant (e.g., more than £5,000) underspend in your budget for this year?

Yes ☐ **No** ☒ Estimated underspend: £0

3b. If yes, then you need to consider your project budget needs carefully. Please remember that any funds agreed for this financial year are only available to the project in this financial year.

If you anticipate a significant underspend because of justifiable changes within the project, please submit a rebudget Change Request as soon as possible. There is no guarantee that Defra will agree a rebudget so please ensure you have enough time to make appropriate changes if necessary.

4. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?

None

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document. Additionally, if you were funded under R23 and asked to provide further information by your first half year report, please attach your response as a separate document.

Please note: Any <u>planned</u> modifications to your project schedule/workplan can be discussed in this report but should also be raised with LTS International through a Change Request.

Please send your **completed report by email** to Eilidh Young at Darwin-Projects@ltsi.co.uk . The report should be between 2-3 pages maximum. **<u>Please state your project reference number in the header of your email message e.g. Subject: 22-035 Darwin Half Year Report</u>**