Department for Environment Food & Rural Affairs

1.1

Darwin Initiative Main Project Annual Report

Important note: *To be completed with reference to the Reporting Guidance Notes for Project Leaders: it is expected that this report will be no more than 10 pages in length, excluding annexes*

Submission Deadline: 30 April

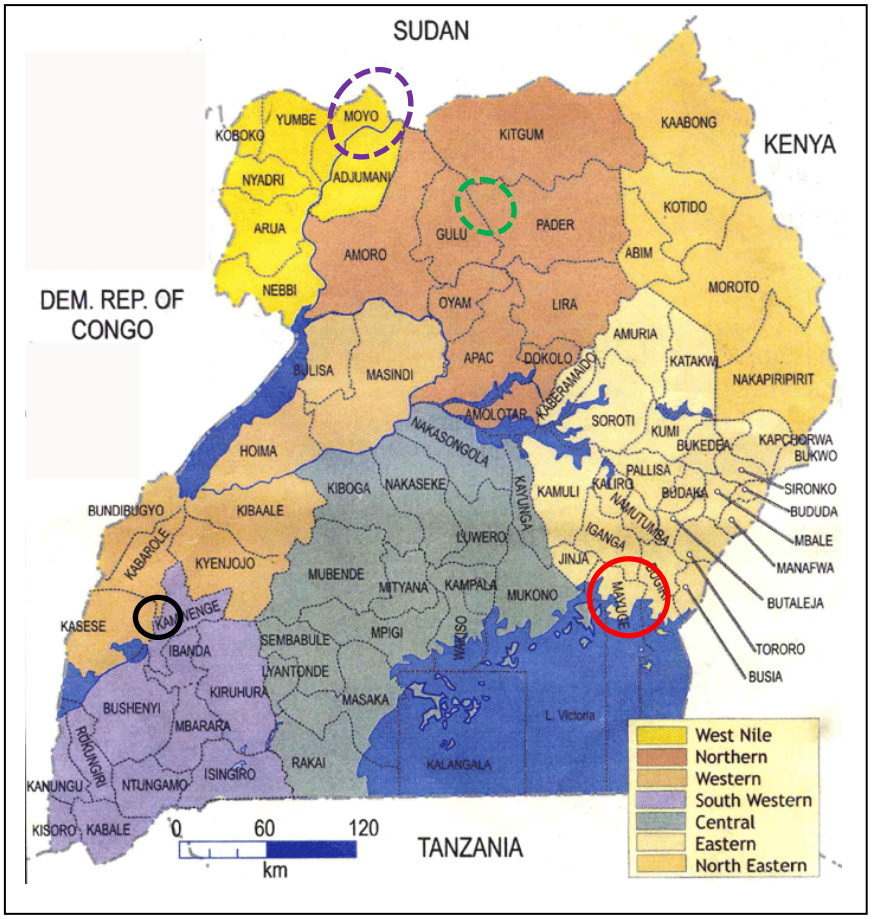
Darwin Project Information

Project Reference	21-003
Project Title	Protecting Ugandan endemic cycads from biodiversity loss and trafficking
Host Country/ies	Uganda, RSA, Thailand, China, Philippines
Contract Holder Institution	Royal Botanic Gardens, Kew, UK
Partner institutions	JERA (Uganda), SANBI (RSA), Nong Nooch Tropical Botanical Garden (Thailand), Fairylake BG (China), De La Salle Univ. (Philippines).
Darwin Grant Value	£192,676
Funder (DFID/Defra)	Defra
Start/end dates of project	1 April 2014 / 31 March 2017
Reporting period (e.g., Apr 2015 – Mar 2016) and number (e.g., Annual Report 1, 2, 3)	Annual Report 2 1 April 2015 - 31 March 2016
Project Leader name	Prof Hugh W. Pritchard
Project website/blog/Twitter	
Report author(s) and date	Hugh W. Pritchard, Charlotte Seal (Kew) with inputs from all partners compiled in Annex 4 Onwards – supplementary material, and submitted as a PDF

2. Project Rationale

Cycads are the most threatened family of higher plants (40% species) in the world as a result of illegal trade in wild-collected material (>$100 k global trade in *Encephalartos* sp. seed in 1983-99), over-exploitation locally, habitat degradation and climate change impacts on these dioecious species (for which the risk of pollinator or male / female cone production asynchrony is greatest). Threats to the three Ugandan endemic cycads are particularly high due to lack of national specialist capacity in conservation skills. Safeguarding cycads requires integration of sustainable management with conservation, wild cycad protection, local use and preventing illegal trade. Biodiversity and autecology data (seed/pollen biology yield, growth requirements, pollination) are essential to design evidence-based conservation programmes, including the production of non-detriment findings. The IUCN CSG 'Status Survey and Conservation Action Plan – 2004[1] stresses the urgent need for an integration of in situ and ex situ conservation approaches and for country capacity building and knowledge transfers between regions. A sustainable conservation solution will not be achieved without the involvement of local communities; specifically through better participatory planning, knowledge management and capacity building (Strategic Goal E of the Aichi Biodiversity Targets).

The majority of cycad studies in this project will be in the Maguye and Kamwenge Districts of Uganda. Progress has been made on the autecology of two species in these regions (*Encephalartos whitelockii* in Kamwenge and *E. equatorialis* in Maguye). Our ambition is to work on one other species, both of which are located in northern Uganda. In Year 1, only a reconnaissance mission was undertaken to the north. A similar trip in Year 2 was not fully realised either due to severe security risks on the northern border. This has put the *Encephalartos septentrionalis* plant population in Moyo District out of reach of the project. Towards the end of Year 2, it became clear that visiting the slightly further south population of *Encephalartos macrostrobilus*, in Madi district, may be possible; and further reconnaissance of this area will take place early in Year 3 with the hope that a Non-detriment Finding (NDF) can be quantified for this species, to complement the NDF on *E. whitelockii* and *E. equatorialis* completed in Year 2.



Maguye District for *Encephalartos equatorialis* plant population

Kamwenge District for *Encephalartos whitelockii* plant population

Moyo District for *Encephalartos septentrionalis* plant population.

Madi district for *Encephalartos macrostrobilus* plant population.

3. Project Partnerships

Demand and project planning:

The IUCN CSG 'Status Survey and Conservation Action Plan (2004) stresses the urgent need for an integration of in situ and ex situ conservation approaches and for country capacity building and knowledge transfers between regions. A sustainable conservation solution will not be achieved without the involvement of local communities; specifically through better participatory planning, knowledge management and capacity building (Strategic Goal E of the Aichi Biodiversity Targets). **No greater demand for action is known than in Uganda, where the threats to three endemic cycads are exceptionally high due to lack of national specialist capacity in conservation skills.** In the region SANBI (South Africa) is the lead organisation promoting the conservation of cycads, with its cycad work led by Dr John Donaldson, who is an internationally recognised expert. SANBI recommended to Kew engagement with JERA (Uganda) because of their mission to build capacity of local communities for sustainable utilization of plant resources. JERA also has experience of liaising with the national CBD authority (NEMA) and National CITES authority regarding permission for field work. Through discussion with many members of the IUCN Cycad Specialist Group, two gardens with large cycad collections (Nongnooch, Thailand and Fairylake, China) offered to help build capacity by in Uganda by hosting scientists for training. The final partner in the project, De La Salle University (Philippines), has ambitions to develop a botanic garden, including cycads, for educational purposes. The main contact there, Mirabel Agoo, is already an active researcher on cycad biology. Finally, WCMC were approached to contribute to the work programme by providing specialist knowledge on trade in endangered species.

Particular achievements lessons, strengths or challenges and responses

JERA (Uganda) – As noted at the end of Year 1, the relationship with JERA was new and took time to take off. In Year 2 JERA have been excellent hosts for Kew team member Moctar Sacande's 2-day visit to Uganda in August 2015 (NB. this was a short visit without long-haul travel, as Sacande was on other project business in Kenya). The expectation was that Pritchard too would visit within the year, but the planned early 2016 visit was delayed due to the holding of national elections in February, and the month before and after were a little tense, with some demonstrations. Pritchard thus visited in April (10-16th) 2016, at the start of Year 3, which meant that both progress in Year 2 was reviewed and plans for Year 3 discussed and agreed. There was an additional benefit from arranging the visit then, as uPhakamani Xaba (SANBI) was able to join us in Kampala and make his inputs in person. As noted at the end of Year 1, communications with JERA had been difficult. In Year 2 the ambition for regular Skype-type meetings did not materialise due to unreliable internet connections (and line quality). However, email communication increased massively with JERA (and the other partners), with Pritchard connecting with the partners on 55 days (26% of working year days).

SANBI (South Africa) – Kew's relationship with SANBI on biodiversity research and conservation is longstanding, and communications have been excellent through research assistant uPhakamani Xaba. Mr Xaba organised two weeks of training for two JERA staff in June 2015 with back up from many SANBI staff: Ms. Maud Sebelebele (Cycad Nursery Specialist) & Ms.Thembeka Malwane (Cycad Laboratory Specialist), Ms. Michelle Pfab (Cycad Protection Specialist), Dr. Terence Suinyuy (Cycad Researcher), Dr. Dasel Okumicheal (Cycad Researcher), Dr. De wet Bosenberg (Cycad Specialist). Training included: pollen and seed handling, in vitro techniques, and an introduction to DNA microdot technology, etc. (**see Part 4 of the Annual Report Evidence submitted under Annex 4**). SANBI is a strong contributor to this cycad project.

Nongnooch (Thailand) – The strong support from Nongnooch has continued in Y2. Anders Lindstrom has continued to record phenology data in cultivation, which will be a valuable component in the 'cultivation manual.' Lindstrom hosted Pritchard in March 2016 to discuss project progress and to agree a format for the 'cultivation compendium' (see Annual Report Evidence submitted under Annex 4). Lindstrom has written 8 species leaflets and will complete

another c. 20 in Year 3. (Another 10 will be written by SANBI, so that the manual will cover 40 *Encephalartos* species in detail. Lindstrom also facilitated the meeting between Pritchard and the CITES office in Bangkok to review cycad trade into the country.

Fairylake (China) – A request for funds to support the training of staff from China at Nongnooch, as opposed to the planned work on the cultivation manual, was turned down by the Project Leader. Consequently, there has been no real interaction during Year 2. However, Fairy Lake staff will be invited to contribute to and share their experience at the final workshop (March 2017) and to input to the Cycad Biology Review (**draft is presented in Annex 4**).

De La Salle University (Philippines) - Dr Agoo spent one month (July) in 2015 receiving training at Kew, in all aspects of seed biology. Dr Agoo's visit was funded by her university as gift-in-kind to the project. Dr Agoo has agreed to write the introduction to the 'Cultivation manual,' and has invited JERA, SANBI and Kew staff to visit the Philippines in September 2016. This is the scheduled knowledge transfer from Africa to the Philippines planned for Year 3.

WCMC –WCMC agreed to provide an 10 year African perspective on cycad trade, not just in relation to Uganda, which was much welcomed. WCMC have agreed to attend the final workshop in Kampala.

Concern was raised by the evaluator in an earlier report about Pritchard not attending the International Cycad Conference in Colombia (2015) because of a potential negative impact on the project. However, the partners from Thailand, Philippines, South Africa and the UK co-authored three presentations at the conference that promoted the project; and Thailand, the Philippines and South Africa had a meeting to share knowledge on seed and pollen protocols. uPhakamani Xaba is invited in Year 3 to contribute to a cultivation workshop that will be held at Nongnooch, at which the project cultivation information will be used. Pritchard has raised the prospect with Lindstrom (Nongnooch, Thailand) that the project could sponsor the workshop (with prominence for the DI logo) by helping with Xaba's travel costs. Overall then, solid research and technology relationships are being built, to the benefit of cycads.

4. Project Progress

4.1 Progress in carrying out project activities

In brief,

- The Project Leader signed a short letter of intent to comply with **WCMC** requirements for data / information provision.
- Access to the **University of Makerere** has proved to be impossible in Year 2, perhaps because of the wrong contact. However, we have identified some research active staff with ongoing projects in seed biology and these will be invited to contribute to the final workshop in Kampala (March 2017).
- An alternative to Makerere in transferring knowledge about cycads was identified: **the National Tree Seed Centre**, which is part of the National Forest Authority. Pritchard visiting in April 2016 for discussions, to give a seminar and to review their nursery operation. A request was received for taxonomic skills to identify the cycads in their nursery, which the project will provide. Pritchard raised the prospect that some of the cycad seedlings from NTSC could be provided to the communities in the Maguye District. This is because the *Encephalartos equatorialis* plants in that region are not setting fertile seed (See Output 1 and Annex 4 for details), and the provision of seedling would strengthen the nursery work in the community. We will also explore in Year 3 the possibility that NTSC could buy surplus seedlings of *E. whitelockii* form the communities in Kamwenge District.

Output 1 - Increased biodiversity knowledge for non-detriment findings on Ugandan endemic and endangered cycads

- **(Activity 1.1)** The work with the community in Kamwenge District is progressing well, for access to their land and the autecology study for *E. whitelockii*. The first non-detriment finding (NDF) for the species has been completed in Year 2. It is preferable to widen the NDF assessment to the dam land. However, a new management board refused permission in Year 2 for fieldwork. As requested, a letter has been written by JERA to clarify the status and ambition of the project. We hope field work on that site can be returned to in Year 3.
- **(Activity 1.2)** Field studies progressed on community lands in Kamwenge District (*E. whitelockii*) and on community ***and*** company land in the Maguye District (*E. equatorialis*). Indeed the company has offered the use of its land for a community cycad nursery. For both these species, NDF has been generated indicating that they are at high risk (see analysis in Annex 4). Work on a third *Encephalartos* species from the north was not progressed in Year 2 for reasons of (in)security close to the border with South Sudan, However, another reconnaissance trip is planned early in Year 3 to Madi District to see if autecology and NDF studies can be undertaken without risk to JERA staff. We hope so.
- **(Activity 1.3)** The elasticity analysis is scheduled for Year 3. More likely only a simpler population analysis will be possible, as we will not have three full years of data (in fact, a longer term data set is really required, e.g. 5 – 10 years). This downgrading in complexity of analysis may have implications for the choice of journal in which the work will appear (**Activity 1.5**).
- **(Activity 1.4)** Complementary phenology data for *ex situ* collections is being collected at Nongnooch (Thailand) and 8 examples are given for *E. whitelockii* in Annex 4 (phenology and cultivation). SANBI is recording similar data and the combined *in situ* and *ex situ* information will be included in the e-compendium on cultivation and biology of *Encephalartos* cycads.
- **(Activities 1.5).** As planned an 8000 word review of cycad reproductive biology (seed, pollen, cell) has been drafted (**see Annex 4**). It may be suitable for publication in the Botanical Review.
- **(Activity 1.6)** Decisions have been taken on the basic design of the e-compendium (cultivation and biology manual). About two-thirds of *Encephalartos* species will be covered in detail (40 / 67) and the other species clustered into cultivation types. Each main species will occupy two pages, following an attractive design used for a Kew

book on medicinal species of China (see Annex 4). Nongnooch (8 complete) and SANBI are currently drafting pages on c. 15 species; these will be finished early in Year 3. Then the same institutes will draft the balance throughout the year. Anders Lindstrom (Thailand) will lead on this task and Dr Agoo (Philippines) will write the introductory text.

Output 2 - Improved monitoring of cycad trade in and out of Uganda

- (**Activity 2.1**) The delayed training of the Ugandan scientists in DNA technology from Year 1 happened in June 2015 (Q1 of Y2). More than this, the training to JERA staff (2) at SANBI covered a broad range of topics (DNA microdots, in vitro technology, pollen and seed biology, cultivation [see Annex 4 for report]). This has somewhat recovered the situation from Year 1 when JERA staff neither visited Fairy Lake (China) – for reasons relating to visa problems and an apparent lack of enthusiasm for a visit by the hosts – nor training in the UK (**Activity 4.1**). Overall, the external visits to Thailand in Y1 and South Africa in Y2 amount to 10 person weeks, just a little short of the planned 12 PW weeks spread across Thailand, China and the UK.
- (**Activities 2.2**) JERA, SANBI and Kew have agreed a strategy for the use of DNA microdots, identifying those plants most at risk. (If funds permit) These are the whole population (29 sub-populations) of *E. equatorialis* in Maguye District, including company land; and the community area of Kamwenge for *E. whitelockii,* which is much more open to poaching than the dam site (fenced).
- **(Activity 2.3)** The plants had not been chipped / dotted by the end of Y2, but the micro-dot technology is being ordered in Q1 of Y2.
- **(Activities 2.4)** A summary of the 2014-15 project report was sent to c. 60 CITES and CBD staff in all partner countries (See Annex 4 for list), with the two education leaflets (see Annex 4).
- **(Activity 2.5)** The afternoon of the first day of the final workshop (6-10 March 2017) is set aside for the training of Ugandan enforcement officers. In a meeting in March 2016 in Bangkok, Pritchard asked the Head of the CITES office in Thailand (Ms Duang duen Sripotar) to lead that session. A formal letter of invitation will be sent to her Ministry.
- (**Activity 2.6**) WCMC prepared a full report (Overview of trade in *Encephalartos* species in Africa, with particular focus on Uganda). Over the period 2005-2014, direct trade in *Encephalartos* species from Uganda comprised small numbers of live *E. equatorialis, E. macrostrobilus, E. septentrionalis* and *E. whitelockii* exported to Qatar in 2011 and 2013. Qatar reported that all trade was in artificially propagated plants for either botanic gardens or for breeding purposes, whilst Uganda reported all trade as wild-sourced for scientific purposes. Uganda has submitted annual reports for all years 2005-2012 but not yet reported for 2013 or 2014. All reports from Qatar were received 2005-2014. Pritchard was also provided with import data for Thailand by the Head of the CITES Office, showing that all material import was sourced in South Africa, and that this trade increased exponentially between 2012-14. **For both reports see Annex 4**.

Output 3 - Reduced demand for wild sourced cycads

- (**Activity 3.1**) The market survey was not carried out in Y1 and in Y2 it was decided to widen the survey to five (rather than four) local market towns (Ibanda, Kamwenge, Fortportal, Kasese and Mbarara). Knowledge about cycads was positive / significant in Kamwenge, followed by Fortportal and Ibanda district (**See report in Annex 4**). There was also knowledge in the area of illegal trade in *E. equatorialis* and the team found evidence of adult plant poaching at the *E. equatorialis* site (**see report in Annex 4**).
- (**Activity 3.2**) Nursery work is ongoing in the villages of Ntarama and Karuhuguma, close to the *E. whitelockii* plant populations. About 2000 seedlings are being grown and this can be increased to account for no real nursery activity yet close to *E. equatorialis* population, for the very good reason that fieldwork has shown a lack of fertile seed production. Because of this problem, pollen was collected in Y2 and it will be used to try

to pollinate female cones of *E. equatorialis* at the end of Y2 / early Y3. As cones take about 8 months to develop, even if fertilisation is successful, the community will not have seeds until towards the end of the project. So, we plan to deliver seedlings to the community from the nursery in Mpanga (the other communities) or from the National Tree Seed Centre, so that this community can get some experience of growing cycads.

- (**Activity 3.3**) The nursery holding of seeds / seedling is c. 2000 and the seed collected towards the end of Y1 and in Y2 has germinated to a high level.
- (**Activities 3.4,3.5**) These activities are just scheduled to start. Some replanting of *E. whitelockii* in the Kamwenga District region as part of another project (SOS; now finished) has received some publicity. And we are trying to establish whether any of the seedling material used was from the DI project nursery. Pritchard is waiting for a reply from the project leader.

Output 4 - Strengthened capacity of Ugandan scientist and horticultural staffs in cycad cultivation and knowledge transfer

- **(Activity 4.1)** See comments above under Activity 2.1.
- **(Activity 4.2)** JERA staff on the project (Dennis Kamoga and Simon Luwemba) have been supported occasionally in Y2 by part-time staff (James), and this will continue in Y3, plus the involvement of another another assistant. The link with the university ran rather cold. Pritchard offered to give a lecture there during his visit in April 2016. Whilst this was agreed, the arrangements were not concluded, much to the embarrassment of the Head of NTSC. Pritchard lectured at NTSC and discussions about collaboration were much more fruitful. In Y3 Pritchard will make contact with other staff at the university to try to overcome the impasse.
- **(Activity 4.3)** Planning is well under way. See schedule in Annex 4.
- **(Activity 4.4)** Planning is well under way and training will take place in September 2016, with Dennis Kamoga (JERA) and uPhakamani Xaba (SANBI) visiting the Philippines. Pritchard intends to go also.
- **(Activity 4.5)** JERA staff and SANBI staff met twice in Y2. See Annex 4 for reports of reciprocal visits (June and November 2015).
- **(Activity 4.6)** Two educational posters (information leaflets) have been produced, explaining: 1) cycad reproduction; and 2) cycad distribution and conservation needs; covering four species in Uganda. Feedback from the Cycad Specialist Group has been very positive; and the posters have been sent to 60 CITES and CBD staff in five partner countries. They are now being translated into Riukiga for the people of Kamwenge District and into Lusoga for the people of Kayuga District. NB the suggestion in the application that Swahili be used was inaccurate and would only be helpful in another part of the country. (**see Annex 4 for the posters and the feedback**).
- **(Activity 4.7)** Three presentations were made at the 10th International Cycad Conference in Colombia (Aug 2015) by project partners, promoting project work. Pritchard presented the project (briefly) to Defra Minister George Eustice during his visit to Kew on 16 March 2016, and gave him a copy of CITES and CYCADS. Pritchard promoted the project in talks to students at the Univ Sussex (April 2015) and at Universidad Nacional Mayor de San Marcos, Lima, Perú (June 2015).

Output 5 - Community cycad projects established in Uganda

- (**Activity 5.1)** Education posters (2) were delivered to schools and are being translated into two local languages (see Activity 4.6)
- **(Activity 5.2, 5.3**) Concluded in Y1
- (**Activity 5.4**) Further training was provided in Y2 to the communities in Kamwenga District (see Annex 4). The project has not achieved 40 people trained yet, hence the plan to get seedlings to the communities of Maguye District.

- (**Activity 5.5**) In addition to the various comments above relating to the education leaflets and their translation, the project team has decided that the best way to reach all children at Rwenshama School is to print 'cycad' covers for exercise books. JERA is progressing this.

4.2 Progress towards project outputs

Output 1:	Increased biodiversity knowledge and NDF			Comments (if necessary)
	Baseline	Change recorded by 2016	Source of evidence	
Indicator 1.1	6 fieldtrips over 3 years	2 made in each of Y1 and 2	Annex 4, p3-51	
Indicator 1.2	Population trends for 3 species	NDF for 2 species so far	Annex 4, p31-34	
Indicator 1.3	Data on 20 other closely related species	Being collected and collated. Nongnooch example shown	Annex 4, p30 , 35-45	
Output 2:	Improved monitor / assess trade			
Indicator 2.1	50% wild populations microchipped	Not achieved yet but micro dots will be applied to most of individuals in one species and some individuals of another.	-	
Indicator 2.2	Data sent to CITES/CDB	Project summary send to 60 staff	Annex 4, p121-132	
Indicator 2.3	Enforcement officer training	Due Y3	-	
Indicator 2.4	Evidence base on trade in >3 species	Report delivered by WCMC at end of Y2 ready for dispatch	Annex 4, p52-60	
Output 3:	Reduced demand for wild source			
Indicator 3.1	Produce 2500 seedlings across three species	2000 seedlings produced of one species. Second species producing infertile seeds	Annex 4, p68-70	
Indicator 3.2	Replanting to increase natural population sizes on three sites by 10%	Due Y3	-	May only be achieved for two species
Indicator 3.3	50% reduction in wild material demand due to nursery plant availability	Due Y3	-	May be difficult to prove
Indicator 3.4	Decline in international	Due Y3	-	

	trade of wild sourced material			
Output 4:	Strengthened knowledge and capacity			
Indicator 4.1	Two staff trained	Successful spell in Y2 at SANBI	Annex 4, p71-76	
Indicator 4.2	Project workshop at end of Y3	Planning under way	Annex 4, p133-134	
Indicator 4.3	Cascade training to Philippine staff	Planning under way for Sept 2016	-	
Indicator 4.4	Communication to wider community	Two posters distributed to Cycad Specialist Group and 60 CITES and CBD staff.	Feedback from CSG members in Annex 4, p115-120	
Output 5:	Community projects and school education			
Indicator 5.1	Community involvement increased from 2 to 4.	2 communities engaged in Kamwenge District and 2 in Kayuga District where the population of *E. equatorialis* is spread out	Annex 4, p8, 13, 26 -27, 66-68, 112-114	
Indicator 5.2	People on nursery activity increased by 40	Increase about 10 in Kamwenge; no estimate yet for Kayuga District. No list of names yet provided	-	Likely to reach +40 people by end of Y3
Indicator 5.3	Education programme	2 posters printed and being translated into two local languages	Annex 4, p112-114	

4.3 Progress towards the project Outcome

Outcome: 1	Increase autecology knowledge for 3 species and NDF			Comments (if necessary)
	Baseline	Change by 2016	Source of evidence	
Indicator 1.1	Annual field studies	Ongoing	Annex 4, p3-51	Field studies progressed on 2 species; subject to security in the north, a third species in Y3
Indicator 1.2	Elasticity analysis	For Y3	-	Will be simpler population trend analysis

Indicator 1.3	Records on cultivated species	Ongoing for many species, e.g. *E. whitelockii*	Annex 4, p30, 35-45	
Outcome: 2	Improved assessment of trade			
Indicator 2.1	Annual trade figures	WCMC report delivered + Thailand data	Annex 4, p52-60, 61-64	
Indicator 2.2	Market survey	Completed in five towns	Annex 4, p65-67	
Indicator 2.3	Enforcement officer training	Y3 target	-	
Indicator 2.4	Annual project report	Sent for Y1	Annex 4, p121-132	Y2 summary will be produced and sent in May 2016
Indicator 2.5	Inventory of microchip plants	Decision taken on which plants; micro dots to be applied in Y3	-	
Outcome: 3	Reduced demand for wild material			
Indicator 3.1	Photos of replantings	Training provided; Y3 target	Annex 4, e.g. p78	
Indicator 3.2	Records of seedling sales	Y3 target	-	
Indicator 3.3	Decline in trade of wild sourced material	Baseline data in WCMC and Thailand reports	Annex 4, p52-60, 61-64	
Outcome: 4	Increased capacity at JERA and wider			
Indicator 4.1	Training outcomes	Training report for JERA at SANBI; SANBI at Kew; and De La Salle at Kew	Annex 4, p71-82	
Indicator 4.2	Open access papers	1 review on reproductive biology drafted	Annex 4, p85-111	
Indicator 4.3	e-compendium on cultivation	Started and design agreed	Annex 4, p35-51	
Indicator 4.4	Information leaflets for 3 species	Two posters covering four species (being translated into two local languages.	Annex 4, p113-120	Original idea to translate into Swahili not appropriate (now Riukiga and Lusoga)
Indicator 4.5	Conference, abstracts,	3 presentations at International Conference and abstracts published; Popular article in International Tree Foundation magazine (from Y1)	Annex 83-111	
Indicator 4.6	Report on training	Target for Y3	-	

	in Philippines			
Outcome: 5	Increased awareness of biodiversity and greater community involvement			
Indicator 5.1	Photos of community nursery	Recorded as part of fieldwork visits	Annex 4, p1, 29, 58-61	
Indicator 5.2	Audit of nursery	No formal assessment as yet	-	
Indicator 5.3	Cycads for children report	Due in Y3	-	

4.4 Monitoring of assumptions

Outcome risks:

		2015-16 update
Assump-tion 1	Natural disasters do not severely affect the natural population causing reduced availability of plants, seeds and pollen for conservation and sustainable use actions.	No change
Assump-tion 2	Political conflicts and socioeconomic crises do not accelerate threats to natural populations and reduce access to lands.	In both Y1 and Y2 the situation on the northern border with South Sudan has been dangerous and only reconnaissance missions there have been possible. So no detailed field work has been undertaken on *Encephalartos septentrionalis* in Moyo District. Further assessment of fieldwork in a third target species *Encephalartos macrostrobilus* in Madi district) will be made early in Y3. Our aim still is to have plant ecology and NDF for three species
Assump-tion 3	All international partners and their institutes remain committed to the delivery of the project goals, good governance remains in place and staff changes are minimal.	All partners strongly committed to the project except Fairy Lake. Its role is not large and there has been no obvious impact, particularly as stronger links have developed with South Africa (and Thailand).

Output risks:

Assump-tion 1	1. Natural disasters do not reduce access to natural populations and impact on field studies; and there is no catastrophic fall in pollinators or change in male/female cone production synchrony leading to no seed production. 2. Enabling partners remain committed to	There is evidence of asynchrony between male and female cone production in some (sub)populations, and unequal male:female ratio. We are attempting to overcome natural production of non-fertile seed set in *E. equatorialis* by using stored pollen for artificial pollination. SANBI and Nongnooch rmain

	providing complementary data on reproductive biology of *Encephalartos* cycads in ex situ collections. Risk minimised by having three enabling partners (SANBI, Nong Nooch Tropical Botanical Garden and Fairy Lake Botanical Garden) who both have extensive cycad collections of mature plants.	committed to providing complementary cultivation / phenology data; this started in Y2 and will be completed in Y3.
Assumption 2	1. Micro-chip (and DNA spray) technology is transferable and can be reliably used on a range of species. 2. CITES reports produced by countries importing cycads from Uganda are presented annually and accurately to enable valid trade data analysis. Risk minimised by cross referencing details of import and export country reports.	No change, although the cost of use might limit application in terms of total individuals tagged. WCMC report in Y2 reiterates that Uganda is notoriously late submitting such data (not yet for 2013 or 2014). We plan to involve the CITES people in Uganda in the final project workshop to encourage better compliance.
Assumption 3	1. Natural seed production is not too low for seed collection, thus hindering cultivation. Risk minimised by securing seed access from *ex situ* collections at enabling partners (SANBI, Nong Nooch Tropical Botanical Garden, Fairy Lake Botanical Garden). 2. Nursery plots not lost due to changes in land ownership. Risk minimised by identifying alternative site for back-up nursery.	It became very clear during the full sub-population ecology assessment of *E. equatorialis,* that non-fertile (embryoless) seeds were being set. No such issue with *E. whitelockii.* Because of challenges regarding cross-border exchanges of CITES seed (and ecological considerations), we are attempting assisted reproduction early in Y3 (with stored pollen) in *E. equatorialis*. No change.
Assumption 4	1. No insurmountable challenges in securing visas for JERA staff to train in other countries. Risk minimised through early applications for visas. 2. Essential, trained staffs leave the project. Risk minimised by training two scientists and followed by cascade training in Uganda.	There were no problems when JERA staff visited South Africa in Y2. No change
Assumption 5	1. Communities remain committed to cycad conservation efforts. Risk minimised by carefully selecting the communities that JERA has previous experience of collaborating with.	No change

4.5 Impact: achievement of positive impact on biodiversity and poverty alleviation

There is a continuing strong commitment to raising awareness of the potential worth of biodiversity. Two project posters have been discussed with local communities and are being

translated into local languages (Riukiga and Lusoga). The posters have been sent to the CITES, CBD and National Forest Authority staff in Uganda (about 15 people).

Awareness in the scientific community was heightened by three presentations by project partners at the 10th International Cycad Conference (Colombia, August 2015), talks by Pritchard to students at universities in Brighton, UK (April 2015) and Lima, Peru (June 2015), and Pritchard introduced the project to Defra Minister George Eustice on his visit to Kew on 16 March 2016. A popular article on cycads and the project is available online (October 2015; http://internationaltreefoundation.org/wp-content/uploads/2013/02/Trees-Journal-Oct-2015.pdf).

This project, under the Defra part of the DI call, has modest ambitions regarding local community livelihoods such that surplus seedlings produced in the nursery can be sold. This is targeted for Year 3.

5. Contribution to SDGs

5 Gender equality:
Community nursery work is engaging men and women equally. The Rwenshama School with whom we are working on an education programme is co-educational (>600 pupils, made up of c. 300 boys and girls).

15 Life on Land:
The project is supporting the aims of protecting, restoring and promoting the sustainable use of terrestrial ecosystems, in this context that of lands in Uganda containing endangered cycad species. Plans in Y3 include replanting as a contribution to reversing land degradation and halting biodiversity loss. We are also actively working to 'reduce the impact of invasive alien species on land' where *Encephalartos equatorialis* grows.

17 Partnerships for the Goals:
Uganda is recognised as one of the 'least developed countries' under the ODA Recipients scheme and the project funds contribute to foreign direct investment in science, technology and conservation in the country. Knowledge transfer for capacity building also being supported by training JERA staff (in Thailand in Y1, and in South Africa in Y2).

6. Project support to the Conventions, Treaties or Agreements)

Ambition: The project assists delivery of Uganda's National Biodiversity Strategy and Action Plan (NBSAP)[2] and implementation of CBD-linked (articles) objectives: a) develop and strengthen co-ordination, measures and frameworks for biodiversity management (6, 8, 9,11); b) facilitate research, biodiversity information management and exchange (7,12, 16, 18); c) reduce and manage negative impacts on biodiversity (8, 9,14); d) promote sustainable use and equitable sharing of costs/benefits of biodiversity (8, 10, 15); e) enhance awareness on biodiversity among stakeholders (13). There is strong synergy with GSPC (2010-20) and Aichi Biodiversity Targets, particularly the protection of threatened and socio-economically important species (12,13), functioning ecosystems (14, 15) and participation of local communities (18, 19). Contact is already established with CITES in partner countries.

Evidence to date: JERA is keeping Meri Sabino Ogwal at Uganda's CBD (NEMA) focal point and Mr Ouna Jimmy at CITES-Flora (under National Forestry Authority) up to date on project developments. In addition, a summary of the Y1 report was circulated to 60 CITES / CBD focal point staffs, with the two educational posters, in five partner countries (Uganda, South Africa, Thailand, China, Philippines). Finally, Pritchard had meeting on CITES imports with the Head of the CITES office in Thailand, Duang duen Sripotar (March 2016).

7. Project support to poverty alleviation

Seedling production for *Encephalartos whitelockii* is well underway by the communities in the Mpanga Gorge area, supported by this DI Project. It is anticipated that there will be some surplus material for sale in Year 3, including possibly to the National Tree Seed Centre (National Forest Authority) with whom connection was established in Y2. See also comments under 3.5 and 4.

8. Project support to Gender equity issues

Nursery work with the communities continues in Uganda, involving both men and women in the Mpanga Gorge area (Kamwenge District) and the Maguye District. The Rwenshama School with whom we are working on an education programme is co-educational (>600 pupils, made up of c. 300 boys and girls).

On the overall project management side, the original project partner gender balance was four female (Kew project manager, WCMC member, China member and Philippines member) and four male (Kew project lead, Uganda partner, RSA partner and Thailand partner. During Y2 Dr Moctar Sacande (male) on the management team left Kew, to be replaced Dr Charlotte Sea (female). Consequently, the main partners in the project are: UK: 1 male, 1 female (Kew), 1 female (WCMC); Philippines: 1 female; Thailand: 1 male; South Africa: 1 male; Uganda: 2 males. This gives a balance of 3:5 female:male. The training provision in South Africa for the JERA staff was strongly supported by women: Ms. Maud Sebelebele (Cycad Nursery Specialist) & Ms.Thembeka Malwane (Cycad Laboratory Specialist), Ms. Michelle Pfab (Cycad Protection Specialist) (Annex 4, p62). The training of Dr Agoo (Philippines) at Kew was supported by five women: Dr Charlotte Seal, Cristina Blandino, Eleana Lorenzo, Katie Pennick and Dr Louise Colville.

9. Monitoring and evaluation

The project has followed Kew's established project monitoring, evaluation and financial accounting protocols, SMART indicators and milestones, etc. The Kew project team have worked hard in Y2 to improve the timeliness of delivery of project objectives in Uganda. On-line meetings proved unachievable with Uganda but email exchanges have improved enormously (Pritchard exchanged emails [or phone calls] with partners on the project on 26% of his working days in Y2). Also partner meetings have progressed regularly: Kamogo-Luwemba-Xaba-

Donaldson in South Africa (June 2015); Agoo-Pritchard-Sacande in UK (July 2015); Kamoga-Sacande in Uganda (Aug 2015); Xaba-Pritchard-Seal in UK (August 2015); Lindstrom-Agoo-Xaba-Donaldson at the 10th International Cycad Conference (Aug 2015); Kamogo-Luwemba-Xaba in Uganda (Nov 2015); Lindstrom-Pritchard in Thailand (March 2016); Kamoga-Xaba-Pritchard in Uganda (April 2016).

The Darwin Initiative's internal reporting system has been complied with, such that the 6 monthly report was submitted on time. Solid progress meant that there was no need for an Advisory Board meeting in Y2; but that group will be mainly present at the final workshop (March 2017, Kampala).

10. Lessons learnt

Didn't work well: Whilst anticipating at the end of Y1 no further impacts of changes at Kew, Dr Moctar Sacande announced in August 2015 that he was leaving Kew. However, his project management role is now supported by Dr Charlotte Seal (co-author of the Y2 reports). Charlotte has considerable experience in seed biology and in project management, having been on the management committee of an EU COST Action.

Did work well: As mentioned above the Uganda-South Africa-Thailand-Philippine axis on cycads is working very well.

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

Evaluator comments at the end of Year 1:

1) management team to visit Uganda early in Y2 - Moctar Sacande visited in Aug 2015; and Pritchard in April 2016. A total of eight meetings (permitting April 2016) were held between the various partners in the project (see 8 Monitoring and Evaluation) which ensured that most activities progressed as planned;

2) there has been no evidential impact of Fairy Lake being a 'sleeping' partner, with a training visit undertaken by JERA staff to SANBI. Overall, the training component for JERA staff which was set at 6 weeks in Thailand, China and the UK has reached c. 5 weeks (over Y1 and 2) in Thailand and South Africa.

3) there is greater cross-referencing in this report to the information in Annex 4, particularly in the tables on Progress to Outputs and Progress to Outcomes.

4) a summary of the Y1 report has been distributed to c. 60 staff in CITES / CBD Offices in all partner countries; and the Y2 summary will be sent in May 2016;

12. Other comments on progress not covered elsewhere

As with all multi-country projects it takes a while to gather momentum. In this sense, 3 years is too short a time span. As most EU network projects are longer, I would recommend that the Darwin Initiative consider 4 year funding for such complex projects.

13. Sustainability and legacy

The project profile is good with the formal authorities in Uganda (National Forest Authorigy, CITES, CBD and the British High Commission) and there is awareness of the project work by CITES and CBD offices in South Africa, China, Thailand, the Philippines and the UK. The two posters produced have been a big hit with the IUCN Cycad Specialist Group (see Annex 4 for

feedback) many of whom will use them in their teaching. Also publication of a popular article on the project in Trees, meant that news of the project reached the broad membership of the International Tree Foundation (http://internationaltreefoundation.org/our-work/) which is active in many countries in Africa and a champion of gender equality.

Two staff of JERA have been trained this year (Dennis Kamoga and Simon Luwenba) in South Africa and another assistant (James) has been involved on occasions, gaining skills. James and another occasional staff member will receive further guidance in Y3. All four will be involved heavily in the final workshop.

14. Darwin Identity

The article published in Trees – the Journal of the International Tree Foundation clearly shows the DI logo. The draft review paper acknowledges financial support from DI Project Grant 21-003. The Darwin Initiative input to cycad work will have been indicated as part of a larger programme of work by the presenters (three) at the 10th International Conference on Cycads. The DI logo is on the two education posters circulated to the CSG of the IUCN and CITES and CBD offices in all partner countries.

15. Project Expenditure

Table 1 Project expenditure during the reporting period (1 April 2015 – 31 March 2016)

Project spend (indicative) since last annual report	2015/16 Grant (£)	2015/16 Total Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (se below)			0	
Consultancy costs	0	0	0	
Overhead Costs			0	
Travel and subsistence			-44	Sacande went to Uganda in Aug for project discussions, but as gift in kind (another budget); Pritchard did not go to the Colombia meeting (saving most of £2000). And we did not attend meetings in the UK (save £500). Some lower costs for fieldwork*
Operating Costs			+4	
Capital items (see below)	0	0	0	
Others (see below)			+5	
TOTAL				

*Not really planned changes, but gift-in-kind savings and safety issues close to border with South Sudan limited fieldwork to two rather than three species.

Other items – description	Other items – cost (£)
Consumables	
Printing	
Bank Charges	
TOTAL (Must match Others total in Section 6)	

Annex 1: Report of progress and achievements against Logical Framework for Financial Year 2015-2016

Project summary	Measurable Indicators	Progress and Achievements April 2015 - March 2016	Actions required/planned for next period
Impact Productive cycad biodiversity conservation collaboration between Africa and Asia will support the global delivery of the IUCN CGS 'Status Survey and Conservation Action Plan 2004'		Well functioning network of country collaborators. Good connection to communities in Uganda. Field work progressing and communications more widely accelerating (science, CITES, CBD). Letters of agreement signed with WCMC, and with De La Salle Univ, Philippines (not MoU, but to aid collaboration).	[redacted]
Outcome Knowledge generation and transfer, institutional capacity building and community awareness actions reduce threats to Uganda's endangered and endemic cycads	1) Three-fold increase in detailed autecology knowledge; 2) Improved assessment of illegal trade, improved training of enforcement officers; 3) Reduced demand for wild plants through seedling production; 4) 2-fold increase in JERA's capacity to conserve, through staff training; 5) 2-fold increase in conservation awareness by community, and outreach to children	1) 2 sp assessed, incl. NDF 2) WCMC report in; awareness raised of project with CITES / CBD offices 3) Seedling production of 1 sp. ongoing 4) Two staff trained including the local project manager (in RSA this year) 5) Contact with village clusters in two cycad species areas positive. Two education poster available and discussed.	1) Improved reports on 2 sp., and new report on the autecology of a third 2) WCMC report to be circulated; officer training to be delivered at final workshop; 3) Nursery to progress in second cluster of communities (in south) 4) Two part-time staff at JERA to receive basic training; 5) School's programme reinforced by use of translated posters
Output 1. Increased biodiversity knowledge and non-detriment findings on Ugandan endemic and endangered cycads	1) Six bi-annual field study reports over 3 years (from NIL) generating baseline data on autecology and reproductive biology for *E. equatorialis, E. macrostrobilus and E. whitelockii*. (Years 1- 3) 2) Enhanced knowledge on population trends and habitat degradation assessed for three species (from NIL) through completion of an 'Elasticity	1) The field reports on species from Y1 have been merged with evidence in Y2. Target remains appropriate, although practically speaking the work tends to be written up for the year. 2) Population trends being monitored and to continue in Y3. Target remains broadly appropriate, but analysis may be more simple population trends.	

	Analysis'. (Y3) 3) Biodiversity data on c. 20 other closely related Encephalartos sp. enhanced through inputs of historical / current information from world-leading ex situ collections at SANBI (RSA), and NNTBG (Thailand) (Y1-3)	 3) Eight species summaries presented in Annex 4. Target likely to be exceeded as species summaries will total 40 for the cultivation compendium,
Activity 1.1 Establish agreement with local authorities for field study and seed/pollen collecting permission		Community and local authority permission for access fine; but new management at the dam (*E. whitelockii*) delayed access in Y2. On the contrary, company land owner in regionof *E. equatorialis* positively engaged (and offered nursery space).
Activity 1.2, Conduct field study to evaluate population size, distribution, phenology and meteorological data of *E. equatorialis, E. macrostrobilus* and *E. whitelockii.*		Correction to Y1 report: field studies undertaken on 2 species. Similarly in Y2, due to security fears in the north (*E. macrostrobilus, E. septentrionalis*). Aim to conduct field study on species number 3 in Y3
Activity 1.3, Undertake 'Elasticity Analysis' on the population data to simulate population trends		Population analysis in Y3
Activity 1.4, Collect reproductive biology data for other closely related Encephalartos sp from SANBI, Nong Nooch Tropical Botanical Garden and Fairy Lake Botanical Gardens' ex situ collections.		Data collection is ongoing at Nongnooch and 8 species summarised for cultivation compendium. SANBI (RSA) and Nongnooch (Thailand) are main delivers of this activity in Y3
Activity 1.5, Write two peer-reviewed papers (on population trends of Ugandan cycads and another on cycad pollen and seed biology)		One review on cycad reproductive biology (pollen, seed, cells) drafted
Activity 1.6, Write an e-compendium volume of *Encephalartos* biology and cultivation		About 20 species being worked on and 8 species summaries pulled in from Activity 1.4
Output 2. Improved monitoring and assessment of cycad trade in (and out of) Uganda	1) 50% of the wild populations of three species micro-chipped by end Y3; 2) New and updated data from DI project report(s) delivered to CITES and CBD authorities (Y1-3) to support their production of country annual reports; 3) Enhanced enforcement training of at least five Ugandan officers through use of a new training pack on 'CITES and Cycads' (Y3); 4) Increased evidence-base data on (over)exploitation of a minimum of three Ugandan endemic and endangered cycads through world	1) no DNA tagging in Y2, but target populations agreed and will take place in Y3. Target remains appropriate, although only 2 species might be tagged. 2) Summary of Y1 progress sent to 60 CBD, CITES and other staff. Y2 summary to be sent in May 2016. Target remains appropriate. 3) Invitation extended to Head of CITES Office in Bangkok to lead training at the final workshop (half-day set aside); resolve arrangements early in Y3. Target remains appropriate. 4) Full report from WCMC on African cycad trade in Y2 will be updated in Y3 and a staff member will attend the final workshop. Market survey in five towns completed in Y2, and further analysis will be made in Y3. Target remains generally appropriate.

	trade data (UNEP-WCMC) and local market survey. (Y1-3)	
Activity 2.1. Ugandan scientists trained by SANBI partner in micro-chipping cycads by end of Y1		Training this technology delivered in June 2015 when JERA staff visited SANBI. Implementation of micro-dotting will be in Y3.
Activity 2.2. Matured plants identified in the natural population for micro-chipping by middle of Y2		NA in Y2
Activity 2.3. Identified matured plants micro-chipped by end of Y2		Plant populations chosen for marking (on community land for *E whitelockii*; all 29 sub-populations for *E. equatorialis*).
Activity 2.4. Submit project report (annually) to CITES and CBD focal points before their annual report is due		Report sent to CITES and CBD offices in Uganda, Thailand, China, Philippines, RSA and UK. Repeat process early in Y3 with summary of Y2 progress.
Activity 2.5. Training of Ugandan enforcement officers using the 'CITES and Cycads' training CD Rom.		Pritchard also visited CITES office in Bangkok and invited the Head to attend the final workshop and to lead training. Formal letter to be sent early in Y3.
Activity 2.6. Collate trade data for *E. equatorialis, E. macrostrobilus* and *E. whitelockii* to understand the demand and supply chain.		WCMC provided full analysis of African cycad trade in last 10 years.
Output 3. Significantly reduced demand for wild sourced cycads	1) Production of ~2,500 nursery seedling for all three species through local community nursery project in the villages of Ntarama and Karuhuguma. (Y2-3) 2) 10% increment in natural population sizes in three sites through replanting of nursery-raised plantlets (Y3) 3) 50% reduction in demand for wild sourced cycad material (seed, seedling) through sale of nursery-raised plants (Y3) 4) Decline in international trade on Ugandan wild sourced cycads (Y3)	1) c. 2000 seedlings of *E. whitelockii* in the Mpanga Gorge community nurseries. No fertile seed production from E. equatorialis plants we counteracted by harvesting pollen for artificial pollination in Y3. But seed set will still be too late for nursery establishment, so aim to provide seedlings of other cycads (from Mpanga community or the National Tree Seed Centre) to enable community in Mayuge to develop skills. Target remains broadly appropriate. 2) Scheduled for Y3. Target remains appropriate. 3) Assessment scheduled for Y3. Target remains appropriate. 4) Assessment scheduled for Y3. Target remains appropriate.
Activity 3.1. Conduct market survey at four local market towns (Fort Portal, Ibanda, Kasese and Mbarara)		The market survey was undertaken at five market towns close to the *E. whitelockii* population of plants.
Activity 3.2. Suitable plot for nursery agreed between JERA and the local communities in the villages of Ntarama and Karuhuguma		Nursery working well in villages of Ntarama and Karuhuguma for *E. whitelockii* seedling production (c. 2000 in pots). Plots also agree with communities in Kayuge District close to *E. equatorialis* (and local company positively involved)

Activity 3.3 Collect (and receive) seed and set up germination trial in the nursery		Awaiting germination level data from nursery (including from incubator sowing at JERA).
Activity 3.4 Seedlings replanted in the natural habitat in Y2 and monitored into Y3		Scheduled for Y3.
Activity 3.5, Sell surplus seedlings from nursery to local community (mainly Y3)		Scheduled for Y3
Output 4. Strengthened knowledge and capacity of Ugandan staff and the cycad community involved in conservation and sustainable use	1) Two full time Ugandan scientist/horticultural staffs trained by end Y1; 2) Project workshop in Uganda at the end of Y3 to share knowledge with the wider cycad community and to celebrate success of the project with local community and children; 3) Cascade training by Ugandan scientist to Philippine scientists/ horticulturists (Y3), increasing local cycad conservation knowledge from 5 to 20 staff; 4) Value of Ugandan endemic cycad biodiversity in local and global conservation action communicated to wider cycad conservation community, local government, local communities, schools through scientific publications, talks, guidelines on best practise and cascade training. (Y2, 3)	1) Two staff trained in RSA in Y2. One part-time helper has received some basic training. In Y3 another part-time assistance will receive cascade training from JERA staff. Target continues into Y3 2) Final workshop schedule decided and discussion ongoing for support from the British High Commission. Target remains appropriate. 3) Engagement by Pritchard with National Tree Seed Centre staff in Kampala. Cascade training / knowledge transfer from Africa to Philippines (cycad garden establishment) scheduled in Y3 for Sept 2016. SANBI's Xaba to support. Target remains appropriate. 4) Two posters distributed to c. 30 members of the Cycad Specialist Group of the IUCN; with positive feedback. Poster also sent to CITES / CBD in six countries. Now being translated into best local languages. Popular article and three abstracts published; review paper drafted but not submitted. Target remains appropriate.
Activity 4.1. Train two Ugandan scientist/horticulturalist through a short term scientific missions in NNTBG, FLBG and the UK for 6 weeks		Two Ugandan scientist/horticulturalist were each trained for >2 working weeks (>4 person weeks) at SANBI (RSA), and Agoo (Thailand) and Xaba (RSA) were trained at Kew for another 5 person week in total. All training reports are very positive about experiences.
Activity 4.2. In house (and cascade) training of other members of staff at JERA and (>50) students of Makerere University		Regular contact JERA and Makerere University did not result in lecture slot for Pritchard (even though one was agreed). Pritchard will be selective inviting university staff to the final workshop. Pritchard lectured to other UG and PG students (in UK and Peru) and to National Tree Seed Centre staff in Kampala.

Activity 4.3 Organise a project workshop in Uganda by end of Y3		Project workshop schedule is already planned and location considered. Discussions ongoing with BHC over contribution (reception e.g.) and partners will draw up a list of cycad people in Uganda and other countries in East Africa to invite to meeting.
Activity 4.4 Cascade training on cultivation of cycads to around 20 staffs of De La Salle University, Philippines as they develop an institutional botanic garden.		Scheduled for Y3
Activity 4.5 Ongoing training and progress meeting between JERA project manager and S. African partner (SANBI) once every 6 months.		Two planned exchanges in Y2 went well: two JERA staff visited SANBI and Xaba (SANBI) visited Uganda. Similar level of exchange in Y3
Activity 4.6 Write and distribute information leaflets on at least three cycad species, in English and Swahili.		Two posters printed in English have been warmly welcomed (CSG IUCN; and communities) but need translating into two local languages (not Swahili) early in Y3.
Activity 4.7 Present findings in scientific conference (Y2, 3), at final workshop (Y3) and public talks (Y1-3).		Three talks given at the 10th International Cycad Conference in Colombia by partners. Public promotion of the project through the International Tree Foundation magazine article (on the web) and to Minister George Eustice on visit to Kew.
Output 5. Community cycad projects (plant nursery and schools programme) established in Uganda	1) Number of local communities involved in cycad conservation project increased from two to four by end Y3; 2) Number of people to be directly employed to work part-time in the new nursery project increased from 0 to 40 (Y2, 3); 3) Educational programme 'Cycads for Children' included in school activities to promote understanding of the value of cycad biodiversity and its conservation (Y2,3)	1) Two new communities involved and one nursery is fully operational. The other communities' nursery did not launch in Y2 as E. equatorialis did not set fertile seed. In Y3 we will provide seedlings for this nursery so the skills can be developed. Target remains broady appropriate 2) More than 40 people involved but no list of names (and gender) has been received yet. Target remains appropriate 3) Posters provided to Rwenshama Primary School, and plan in Y3 to print covers for school exercise books for all the children. Target remains appropriate
Activity 5.1. Consultation with two communities (villages of Ntarama and Karuhuguma), including primary school teachers, on awareness of conservation and sustainable use issues		Consultation with communities broadened to Kayuge District where the E. equatorialis plants grow. Communications with the villages of Ntarama and Karuhuguma (E. whitelockii location) has remained positive. JERA and SANBI staff visited in Y2 (See Annex 4). Posters helpful in promoting school interest in the project and cycads.
Activity 5.2. Draft agreement between JERA and two local communities on rota for part-time work in nursery		Broad agreement with the communities in Kayuge District to be involve in the project. To be consolidated in Y3.

Activity 5.3. Appoint local community nursery project manager to oversee activity and progress	The individual(s) within the community responsible for the nursery activities are in place and working well.
Activity 5.4. Training of local people in cycad seed collection and cultivation	During the visit of JERA and SANBI staff in Y2, training was delivered.
Activity 5.5. Develop and delivery of 'Cycads for Children' school programme	'CYCADS for Children' is based on the posters which will be translated into Riukiga and Lusoga. The real impact will be judged in Y3.

Annex 2 Project's full current logframe as presented in the application form (unless changes have been agreed)

Project summary	Measurable Indicators	Means of verification	Important Assumptions
Goal: Effective contribution in support of the implementation of the objectives of the Convention on Biological Diversity (CBD), the Convention on Trade in Endangered Species (CITES), and the Convention on the Conservation of Migratory Species (CMS), as well as related targets set by countries rich in biodiversity but constrained in resources.			
Outcome: **Knowledge generation and transfer, institutional capacity building and community awareness actions reduce threats to Uganda's endangered and endemic cycads**	1) Three-fold increase in detailed autecology knowledge for endangered Encephalartos cycads (from one to three species) through annual population studies contribute to first available non-detriment findings. 2) Improved assessment of illegal collecting and trade of three Ugandan cycads species by analysing trade data through UNEP-WCMC and via local market surveys of supply and demand, enhanced training of enforcement officers through use a new (Dec 2013 launch) training pack on 'CITES and Cycads' developed by the Conventions and Policy Section of Kew and increased (at least a doubling) regularity of communications with CITES (and CBD) authority. 3) Reduced demand for wild sourced cycads by 25 to 67% by producing 200 seedlings of E. equatorialis (67% of wild population size), 300 seedlings of E. macrostrobilus (~25%) and 2000 seedlings of E. whitelockii (~25%) for natural population restoration and to sell to local communities thereby reducing threat to natural populations. 4) Two-fold increase in JERA's capacity (from two to four people) to conserve and sustainably use (cultivate) cycads through training visits supported by IUCN Cycad Specialist Group members	1) ●Annual field study reports including population size, distribution, phenology and meteorological data; ● A report on population trend analysis using 'Elasticity Analysis' (Raimondo & Donaldson, 2003); ● Annual reports on closely related Encephalartos sp reproduction cycle from partners managing ex situ collections. 2) ●Annual trade figure on Ugandan cycads by UNEP-WCMC; ●Reports of local cycad market surveys on supply and demand; ●Records of training of Ugandan enforcement officers using the 'CITES and Cycads' training CD Rom; ●Annual project reports to CITES (and CBD) authorities to facilitate them in the production of annual country reports; ● An inventory of micro-chipped cycads in the natural population. 3) ●Photographic evidence of replanted population; ●Records of seedling sales from nursery; ●Trade data report showing decline in sale figure for wild-sourced cycads. 4) ● Assessment questionnaires (pre- and post-training) of learning outcomes and implementation of two Ugandan staff; ●Two open access co-authored peer-reviewed papers on endangered cycad autecology / reproductive biology / population trends; ● e-Compendium volume of Encephalartos cultivation;	A) Natural disasters do not severely affect the natural population causing reduced availability of plants, seeds and pollen for conservation and sustainable use actions. B) Political conflicts and socioeconomic crises do not accelerate threats to natural populations and reduce access to lands. C) All international partners and their institutes remain committed to the delivery of the project goals, good governance remains in place and staff changes are minimal.

	and their institutes. Country capacity further strengthened through KT in Uganda and to the Philippines and wider community through new compendium on cultivation, scientific and technical publications, talks, and other communications. 5) Two-fold increase in awareness of the importance of biodiversity and local community involvement in cycad conservation and sustainable use (from two to four villages and 40 to 80 people) directly through the setting up of a community plant nursery, and supported by outreach to 70% of children in Rwenshama primary school (i.e. 350 out of 500).	●Information leaflets on at least three species in English and Swahili; ● Conference records (e.g. abstracts) of talks given, web articles on BGCI, IUCN sites, annual reports, etc. ●Report on value of compendium during cascade training in Philippines. 5) ●Photographic evidence of community nursery establishment; ●Audit of nursery set up for functionality and security. ● Report on 'Cycads for Children' school programme and stories written by children.	
Outputs: **1**. Increased biodiversity knowledge and non-detriment findings on Ugandan endemic and endangered cycads	1a. Six bi-annual field study reports over 3 years (from NIL) generating baseline data on autecology and reproductive biology for E. equatorialis, E. macrostrobilus and E. whitelockii. (Years 1- 3) 1b. Enhanced knowledge on population trends and habitat degradation assessed for three species (from NIL) through completion of an 'Elasticity Analysis'. (Y3) 1c. Biodiversity data on c. 20 other closely related Encephalartos sp. enhanced through inputs of historical / current information from world-leading ex situ collections at SANBI (RSA), FLBG (China) and NNTBG (Thailand) (Y1-3)	1.1. Records of field training/work attendance by participating partners 1.2. Autecology and reproductive biology data for E. equatorialis, E. macrostrobilus and E. whitelockii submitted with Annual and Final Report. 1.3. Population trend of the above three cycads written up as a manuscript for scientific journal. A copy sent with Final Report. 1.4. Baseline data on other closely related Encephalartos sp from SANBI (RSA), FLBG (China) and NNTBG (Thailand) ex situ collections submitted with Annual and Final Report. 1.5. e-Compendium on Encephalartos cultivation and conservation biology compiled and available online, and printout submitted with the Final Report.	1. Natural disasters do not reduce access to natural populations and impact on field studies; and there is no catastrophic fall in pollinators or change in male/female cone production synchrony leading to no seed production. 2. Enabling partners remain committed to providing complementary data on reproductive biology of Encephalartos cycads in ex situ collections. Risk minimised by having three enabling partners (SANBI, Nong Nooch Tropical Botanical Garden and Fairy Lake Botanical Garden) who both have extensive cycad collections of mature plants.
2. Improved monitoring and assessment of cycad trade in (and out of) Uganda	2a. 50% of the wild populations of three species micro-chipped by end Y3 2b. New and updated data from DI	2.1.Training record of micro-chipping by SANBI partner to JERA staffs 2.2. Identification and documentation of	1. Micro-chip (and DNA spray) technology is transferable and can be reliably used on a range of species.

	project report(s) delivered to CITES and CBD authorities (Y1-3) to support their production of country annual reports. 2c. Enhanced enforcement training of at least five Ugandan officers through use of a new training pack on 'CITES and Cycads' (Y3) 2d. Increased evidence-base data on (over)exploitation of a minimum of three Ugandan endemic and endangered cycads through world trade data (UNEP-WCMC) and local market survey. (Y1-3)	mature cycad plants in the wild for potential micro-chipping by Y2. 2.3. Inventory of micro-chipped cycad plants in the natural population compiled and sent with Annual Report. 2.4. Project reports submitted to Ugandan CITES and CBD focal points to support their annual country reporting. 2.5. Records of training of Ugandan enforcement officers using the 'CITES and Cycads' training CD Rom 2.6. Annual trade figures of Ugandan Endemic cycads compiled by UNEP WCMC and submitted in Annual and Final Reports. 2.7. Local market survey on supply and demand of cycads complied and submitted with Annual and Final Reports.	2. CITES reports produced by countries importing cycads from Uganda are presented annually and accurately to enable valid trade data analysis. Risk minimised by cross referencing details of import and export country reports.
3. Significantly reduced demand for wild sourced cycads	3a. Production of ~2,500 nursery seedling for all three species through local community nursery project in the villages of Ntarama and Karuhuguma. (Y2-3) 3b. 10% increment in natural population sizes in three sites through replanting of nursery-raised plantlets (Y3) 3c. 50% reduction in demand for wild sourced cycad material (seed, seedling) through sale of nursery-raised plants (Y3) 3d. Decline in international trade on Ugandan wild sourced cycads (Y3)	3.1. Project proposal on community nursery which includes establishment, appointment of staffs, training, maintenance of plants, replanting programme drafted by end of Y1. 3.2.Records of seed collection trips to the natural population as the source material for nursery 3.3.Records of seed germination and seedling establishment 3.4.Records of seedlings replanted in the natural population 3.5.Records of surplus seeds, seedlings, leaves and etc. sold to local communities and other interested parties (e.g. local municipalities) 3.6.Records of other plants co-planted and sold in the nursery as an incentive	1. Natural seed production is not too low for seed collection, thus hindering cultivation. Risk minimised by securing seed access from ex situ collections at enabling partners (SANBI, Nong Nooch Tropical Botanical Garden, Fairy Lake Botanical Garden). 2. Nursery plots not lost due to changes in land ownership. Risk minimised by identifying alternative site for back-up nursery.

		for local communities 3.7. Audit of nursery set up for functionality and security. 3.8.Records of international trade on Ugandan cycads provided by UNEP-WCMC	
4. Strengthened knowledge and capacity of Ugandan staff and the cycad community involved in conservation and sustainable use	4a. Two full time Ugandan scientist/horticultural staffs trained by end Y1. 4b. Project workshop in Uganda at the end of Y3 to share knowledge with the wider cycad community and to celebrate success of the project with local community and children. 4c. Cascade training by Ugandan scientist to Philippine scientists/ horticulturists (Y3), increasing local cycad conservation knowledge from 5 to 20 staff 4d. Value of Ugandan endemic cycad biodiversity in local and global conservation action communicated to wider cycad conservation community, local government, local communities, schools through scientific publications, talks, guidelines on best practise and cascade training. (Y2, 3)	4.1. Short-term scientific mission training reports in China, Thailand and the UK for Ugandan partners by end of Y1. 4.2. Training records (post-training assessment questionnaire) of staffs in pollen, seed storage biology, artificial pollination and seed germination; institutional record on the establishment of a basic seed storage facility at JERA. 4.3. Programme of the project workshop in Y3 to be submitted with the Final Report. 4.5. Reports on cascade training by Ugandan scientist to Philippine scientists/ horticulturists (Y3). 4.6. Information / technical leaflets produced for three species in two languages (English and Swahili) to be distributed, uploaded onto the web and submitted with the Final Report. 4.8. Journal volume, page numbers (and Open Access location) of two peer-reviewed papers. Copies of papers to be sent with the Final Report. 4.9.Value of Ugandan endemic cycad biodiversity in local and global conservation action communicated to wider communities, local government, local communities and schools through, talks, interviews, media, local workshop, school programme.	1. No insurmountable challenges in securing visas for JERA staff to train in other countries. Risk minimised through early applications for visas. 2. Essential, trained staffs leave the project. Risk minimised by training two scientists and followed by cascade training in Uganda.

5. Community cycad projects (plant nursery and schools programme) established in Uganda	5a. Number of local communities involved in cycad conservation project increased from two to four by end Y3 5b. Number of people to be directly employed to work part-time in the new nursery project increased from 0 to 40 (Y2, 3) 5c. Educational programme 'Cycads for Children' included in school activities to promote understanding of the value of cycad biodiversity and its conservation (Y2,3)	5.1. Surveys on pre-project awareness, cultural impact, commitment in two local communities/leaders in the villages of Ntarama and Karuhuguma, Rwenshama primary school in Kamwenge district and local authorities sent with Y1 Annual Report. 5.2. Signed agreement between local community leader, local authority and other parties involved for local community nursery project sent with 1st year Annual Report. 5.3.Record number of people directly employed to work in the nursery project 5.4.Community group annual record on activities sent with Annual Report 5.4.Educational materials and school programme schedule included in Final Report; and children's stories on cycads available on web	1. Communities remain committed to cycad conservation efforts. Risk minimised by carefully selecting the communities that JERA has previous experience of collaborating with.

Activities (each activity is numbered according to the output that it will contribute towards, for example 1.1, 1.2 and 1.3 are contributing to Output 1)

Activity 1.1 Establish agreement with local authorities for field study and seed/pollen collecting permission
Activity 1.2 Conduct field study to evaluate population size, distribution, phenology and meteorological data of E. equatorialis, E. macrostrobilus and E. whitelockii.
Activity 1.3 Undertake 'Elasticity Analysis' on the population data to simulate population trends
Activity 1.4 Undertake 'Elasticity Analysis' on the population data to simulate population trends
Activity 1.5 Write two peer-reviewed papers (on population trends of Ugandan cycads and another on cycad pollen and seed biology)
Activity 1.6 Write an e-compendium volume of Encephalartos biology and cultivation

Activity 2.1 Ugandan scientists trained by SANBI partner in micro-chipping cycads by end of Y1
Activity 2.2 Matured plants identified in the natural population for micro-chipping by middle of Y2
Activity 2.3 Identified matured plants micro-chipped by end of Y2
Activity 2.4 Submit project report (annually) to CITES and CBD focal points before their annual report is due
Activity 2.5 Training of Ugandan enforcement officers using the 'CITES and Cycads' training CD Rom.
Activity 2.6 Collate trade data for E. equatorialis, E. macrostrobilus and E. whitelockii to understand the demand and supply chain.

Activity 3.1 Conduct market survey at four local market towns (Fort portal, Ibanda, Kasese and Mbarara)
Activity 3.2 Suitable plot for nursery agreed between JERA and the local communities in the villages of Ntarama and Karuhuguma

Activity 3.3 Collect (and receive) seed and set up germination trial in the nursery
Activity 3.4 Seedlings replanted in the natural habitat in Y2 and monitored into Y3
Activity 3.5 Sell surplus seedlings from nursery to local community (mainly Y3)

Activity 4.1 Train two Ugandan scientist/horticulturalist through a short term scientific missions in NNTBG, FLBG and the UK for 6 weeks
Activity 4.2 In house (and cascade) training of other members of staff at JERA and (>50) students of Makerere University
Activity 4.3 Organise a project workshop in Uganda by end of Y3
Activity 4.4 Cascade training on cultivation of cycads to around 20 staffs of De La Salle University, Philippines as they develop an institutional botanic garden.
Activity 4.5 Ongoing training and progress meeting between JERA project manager and S. African partner (SANBI) once every 6 months**.**
Activity 4.6 Write and distribute information leaflets on at least three cycad species, in English and Swahili.
Activity 4.7 Present findings in scientific conference (Y2, 3), at final workshop (Y3) and public talks (Y1-3).

Activity 5.1 Consultation with two communities (villages of Ntarama and Karuhuguma), including primary school teachers, on awareness of conservation and sustainable use issues
Activity 5.2 Draft agreement between JERA and two local communities on rota for part-time work in nursery
Activity 5.3 Appoint local community nursery project manager to oversee activity and progress
Activity 5.4 Training of local people in cycad seed collection and cultivation
Activity 5.5 Develop and delivery of 'Cycads for Children' school programme

Annex 3 Standard Measures

Table 1 Project Standard Output Measures

Code No.	Description	Gender of people	Nationality of people (if relevant)	Year 1 Total (target)	Year 2 Total	Year 3 Total	Total to date End Y2	Total planned during the project
Estab-lished codes								
4 A	General lectures on cycad biology / conservation	F > M	10 UG at Sussex University (UK) and 40 at Santa Maria Univ, Lima (Peru), and 10 staff at National Tree Seed Centre, Uganda	0	50 (failed to speak at Makerere	50 (10 so far at NTSC Uganda	60	Estim-ate = 100
6A	Cascade training to Philippine scientists	M	Ugandans KT to Philippines	NA	(JERA visited SANBI)	15	NA	N = 15
6A	Specialist cycad cultivation training at partner institutes		Ugandan	2 new staff and 1 existing staff member	1 new staff (part-time involvement)	NA	2 new + 1 existing staff	N = 3
6B	2 people for 6 weeks each (linked to 6A immediately above)		Ugandan	6 person weeks (Thailand)	4 person weeks (in RSA)	NA	10 PW	12 PW
6A	5 Enforcement Officers trained using 'CITES and Cycads' pack		Ugandan	0	0	5	0	5 persons
6A	70% children in target primary school educated about cycads (Cycads for Children)		Ugandan	NA	2 posters being translated		2	About 400 children
9	Non-deterimental findings for three species		-	0	2	1	2	3 reports
9	Information leaflets for		-	0	2 posters in	0	2	3 leaflets in two

	three species				English covering 4 sp.			languages
10	e-compendium on cycad cultivation		-	NA	NA	1	NA	1
11A	PR journal papers		Many	NA	1 (ready to submit)	1	1	2
14A	Conference / final workshop		Many	0	0	1	0	1
14B	Conference papers presented			0	3	2	3	4
22	Nursery			Sites identified	2	0	2	2
23	Resources raised			**Confirmed (Y1-3)** £118,446 [34% total project costs (tpc)] from the Royal Botanic Gardens, Kew towards project management, specialist training and associated overhead. £10,000 (3% tpc) from Mohamed Bin Zayed Species Conservation Fund (MBZSCF) to work with South Africa National Biodiversity Institute (SANBI) for conservation of critically endangered E. middelburgensis cycad. £27,000 (8% tpc) from The other enabling partners will contribute: De La Salle University (DLSU), Manila, Philippines (institutional and staff costs for local survey study and to host visiting scientists from Uganda); and Nong Nooch Tropical Botanical Garden (NNTBG), Thailand (access to the world's largest cycad pollen store, specialist expertise in pollen handling and cultivation of a broad range of cycads from seeds) and the World Conservation Monitoring Centre (WCMC) (trade data). **Unsecured** £7500 G-I-K from UK staff linked to business on other projects **Y2 Sacande visit to Uganda was additional G-I-K (c. £1500 saving)**			

Table 2 Publications

Title	Type (e.g.	Detail (authors,	Gender of Lead	Nationality of Lead	Publishers (name, city)	Available from (e.g.weblink or publisher if

	journals, manual, CDs)	year)	**Author**	**Author**		not available online)
1	Popular article*	Pritchard, 2015	Male	UK	International Tree Foundation	http://internationaltreefoundation.org/our-work/
2,	Abstract*	Madulid & Agoo 2015	Male	Phiippine	Encephalartos magazine (Dec 2015)	http://www.cycad2015.org/wordpress/wp-content/uploads/2015/07/Cycad-2015-Schedule-and-Abstracts-071015.pdf
3	Abstract*	Xaba et al., 2015		RSA	Encephalartos magazine (Dec 2015)	http://www.cycad2015.org/wordpress/wp-content/uploads/2015/07/Cycad-2015-Schedule-and-Abstracts-071015.pdf
4	Abstract*	Donaldson et al., 2015		RSA	Encephalartos magazine (Dec 2015)	http://www.cycad2015.org/wordpress/wp-content/uploads/2015/07/Cycad-2015-Schedule-and-Abstracts-071015.pdf
5	Draft paper*	Nadarajan et al., 2016	Female	Malaysian	For Botanical Review, USA	For submission (see Annex 4)

1. Hugh Pritchard. 2015. Bringing ancient plants back from the brink. Trees – Journal of the International Tree Foundation 72, 10-11. (September 2015)
2. Domingo A. Madulid & Esperanza Maribel Agoo. 2015. Conservation status of the endemic cycads of the Palawan biogeographic region.
3. Phakamani Xaba, John S. Donaldson & Jayanthi Nadarajan. 2015. Pollination and germination as limiting factors in the propagation of threatened cycads, Encephalartos (Zamiaceae)
4. John S. Donaldson, De Wet Bösenberg, Anders Lindström, Michael Calonje, Jeff Chemnick & Andrew Vovides. 2015. An overview of the world's cycads: current conservation status and trends from 2003-2014.
5. J. Nadarajan, E. E. Benson, P. Xaba, K. Harding, A. Lindstrom, J. Donaldson, C. E. Seal, D. Kamoga, E. M. Agoo, N. Li , A. Rosser and H. W. Pritchard. 2016. Cycads: a review of the biology of pollen, seed and cells.

Key: DI Project Partner

Annex 4 Onwards – supplementary material (optional but encouraged as evidence of project achievement)

Annex 4 of > 100 pp is submitted as a separate PDF to reduce the file size

Checklist for submission

	Check

Is the report less than 10MB? If so, please email to Darwin-Projects@ltsi.co.uk putting the project number in the Subject line.	✓
Is your report more than 10MB? If so, please discuss with Darwin-Projects@ltsi.co.uk about the best way to deliver the report, putting the project number in the Subject line.	
Have you included means of verification? You need not submit every project document, but the main outputs and a selection of the others would strengthen the report.	✓
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 involved your partners in preparation of the report and named the main contributors	✓
Have you completed the Project Expenditure table fully?	✓
Do not include claim forms or other communications with this report.	