

Darwin Initiative Final Report

*To be completed with reference to the Reporting Guidance Notes for Project Leaders (<http://darwin.defra.gov.uk/resources/>) it is expected that this report will be a **maximum** of 20 pages in length, excluding annexes)*

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 institution(s)	JERA (Uganda), SANBI (RSA), Nong Nooch Tropical Botanical Garden (Thailand), Fairylake BG (China), De La Salle Univ. (Philippines).
Darwin grant value	£192,676
Start/end dates of project	1 April 2014 / 31 March 2017
Project leader's name	Prof Hugh W Pritchard
Project website/blog/Twitter	
Report author(s) and date	Year 3 and Final Report, 30 June 2017 Hugh W. Pritchard, Charlotte Seal (Kew) with inputs from all partners compiled in three volumes of Supplementary Material submitted as bound volumes

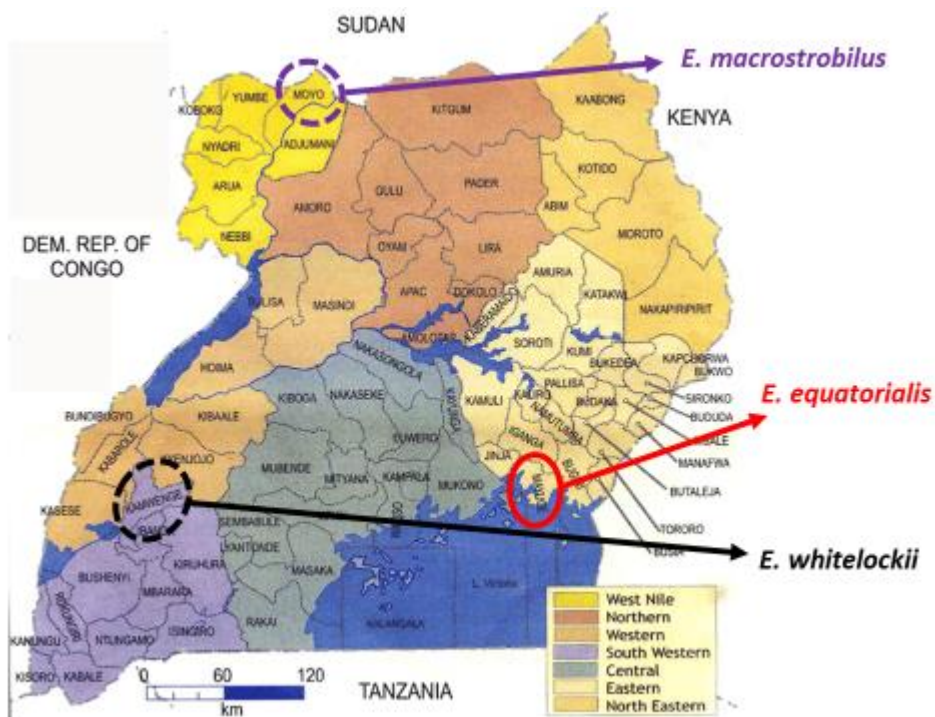
1 Project Rationale

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 (NDF). 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). These are the broad aims of the project.

The main target cycad species for study are located in the Maguye District (species *Encephalartos equatorialis*) and Kamwenge District (species *E. whitelockii*) of Uganda. One other species is targeted in the north, but closeness to the border with Sudan poses some security risks based on reconnaissance missions in Y1 and 2. The *Encephalartos macrostrobilus* plant population in Moyo District in the NW is safer to visit than *Encephalartos septentrionalis* relatively close by. The aim then is to have NDF for three endangered cycads of Uganda and more detailed understanding of market demand, progress on nursery production, etc., for two species, supported by strong community engagement and a Cycad for Children programme.

2 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, country capacity building and knowledge transfer, and the involvement of local communities; specifically through better participatory planning (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. Kew and SANBI had already worked together in 2011-12 on a small project on *E. middelburgensis*, supported by the Mhd bin Zayed Species Conservation Fund. 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 in Uganda by hosting scientists for training. In the end this did not come to fruition with Fairylake, but Nongnooch provided extra support. The final partner in the project, De La Salle University (Philippines), has plans for a botanic garden, including cycads, for educational purposes. The main contact there, Mirabel Agoo, is already an active researcher

on cycad taxonomy and 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)

The Kew team visited JERA early in Y1 to launch the project, to meet community leaders and government representatives and to deliver CITES and Cycads books to the CITES authorities. The relationship with JERA was new and took time to take off. In Y2 JERA met with Kew team member Moctar Sacande (no cost to DI) in August 2015, and with Pritchard just into Y3 (a Y2 visit delayed by the national election and some demonstrations). Y1 communications were patchy, but by Y2 email communications were regular (c. 50 days a year across the partnership, or 25% of working days). Such progress in communication (although we never managed our ambition for regular Skype meetings) enabled the dovetailing of the visit of SANBI partner Phakamani Xaba with Pritchard's early in Y3; thus enabling a review of Y2 and discussion of Y3 plans. As an indication of solid progress throughout the project, the plans for the Y3 final meeting [with sessions on Café Scientifique, at the Management Authority (Ministry of Wildlife and Antiquities) and at Makerere University] were coordinated very well by JERA.

SANBI (South Africa) – Kew's relationship with SANBI on biodiversity research and conservation is longstanding (Millennium Seed Bank Project, Mhd bin Zayed SCF project) and communications were excellent throughout with Phakamani Xaba and John Donaldson. Xaba organised two weeks of training for two JERA staff in June 2015, enlisting the help of six staff (various specialisms), confirming SANBI's strong commitment to the project. Both Xaba and Donaldson attended the Y3 final meeting.

Nongnooch (Thailand) – Anders Lindstrom welcomed the Kew team at the start of the project, provided horticultural training for two JERA staff, promoted the project through a cultivation workshop he held at the institute in Y3 (at which Xaba, supported by the project, was a speaker) and led the writing of the 69 pp Cultivation Manual. Lindstrom also facilitated the meeting between Pritchard and the CITES office in Bangkok to review cycad trade into the country. Unfortunately, he was unable to attend the Y3 final meeting, due to circumstances beyond his control.

Fairylake (China) – Li Nan welcomed the Kew team at the start of the project. A request for the training of staff from China at Nongnooch was, disappointingly, beyond the project plan. The planned training in China did not happen, but was compensated for by additional training for JERA staff with SANBI and Nongnooch. Interaction with Fairylake was limited throughout the project. However, Li Nan's contribution to the cycad biology review was welcome.

De La Salle University (Philippines) - Dr Agoo spent one month in Y2 (July, 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 wrote the introduction to the 'Cultivation manual,' and hosted Xaba (SANBI) in Y3. The plan was for JERA staff to visit (Sept 2016) the Philippines which proved to be a problem regarding visas. In the event, Xaba shared knowledge gained from the DI project, and on the cultivation of African cycads, with the partners in the Philippines. He was provided with an interesting and valuable schedule of meetings and site visits.

WCMC – As planned WCMC provided a report on the Ugandan cycad trade, and on Ugandan reporting to CITES (extra report). Although WCMC played a small role in the project, it was supporting throughout and sent a contributor to the Y3 final meeting.

Summary

Overall this complex partnership worked well, with adjustments made along the way. Pritchard's non-attendance at the International Cycad Conference in Colombia (2015) did not impact negatively on the project as the partners from Thailand, Philippines and South Africa attended (contributing three presentations that promoted the project). At that time Thailand, the Philippines and South Africa agreed seed and pollen protocols. Solid research and technology relationships have been built, to the benefit of cycads. At the final workshop, the partners considered the future and identified assisted reproduction of *E. equatorialis* should be a priority. Possible sponsors for such work involving JERA and others are being sought. De la Salle

University are discussing project work on other, non-cycad, species. Finally, Pritchard will visit Lindstrom in March 2018 to discuss further pollen storage work on cycads.


The partners contributed to the production of this report and the Supplementary Information.

3 Project Achievements

Please fill in Annex 1 – summary of progress against the project logframe.

3.1 Outputs

Output 1:	Increased biodiversity knowledge and NDF			Comments (if necessary)
	Baseline	Change recorded by 2017	Source of evidence	
Indicator 1.1	6 fieldtrips over 3 years	7 made: 2 in Y1&2; 3 in Y3 (Apr, Nov, Mar)	Supplementary Information Vol 1,2,3	All 3 species sites visited in Y3
Indicator 1.2	Population trends for 3 species	NDF for 3 species	Supplementary Information Vol 2,3	For two sp. female:male of only c. 0.2
Indicator 1.3	Data on 20 other closely related species	24 extra sp phenology in Cultivation Manual	Supplementary Information Vol 3	“seed can be hand pollinated”; “cones usually produced”
Output 2:	Improved monitor / assess trade			
Indicator 2.1	50% wild populations microchipped	70 microdot cannisters purchased and waiting on Management Authority to permit spraying of 100% <i>E. equatorialis</i> females	-	Relatively large population of <i>E. whitelockii</i> , so turned focus to smaller <i>E. equatorialis</i> population
Indicator 2.2	Data sent to CITES/CDB	Project summary of Y1 and Y2 sent to 60 staff	Supplementary Information Vol 2	Same list of addressed used on both occasions
Indicator 2.3	Enforcement officer training	Kew colleague trained 6 Management Authority staff in Y3	Supplementary Information Vol 3	Staff mainly work on animal trade, hugely grateful for alert re. cycads
Indicator 2.4	Evidence base on trade in >3 species	Two reports by WCMC in Y2, on trade analysis and Uganda reporting to CITES	Supplementary Information Vol 2,3	
Output 3:	Reduced demand for wild source			
Indicator 3.1	Produce 2500 seedlings across three species	Focussed on <i>E. whitelockii</i> and c. 6700 seedlings raised.	Supplementary Information Vol 3	<i>E. equatorialis</i> found to have embryoless seeds. <i>E. macrostrobilus</i> not accessed until Y3 due to risk close to Sudan*

Indicator 3.2	Replanting to increase natural population sizes on three sites by 10%	Population estimate for <i>E. whitelockii</i> >6000 adults. Planted c. 5000 seedlings = c. 80% increase, on two sites across the gorge	Supplementary Information Vol 3	See comment above as to focus on <i>E. whitelockii</i> .*
	*challenges anticipated were natural and political / socioeconomic regarding poaching rather than access due to hostilities close to Sudan; action – put greater focus on <i>E. whitelockii</i> population and communities			
Indicator 3.3	50% reduction in wild material demand due to nursery plant availability	Market surveys indicate local sales of c. 100 seedlings of <i>E. whitelockii</i> in a 3-6 month period. DI project production could flood the market.	Supplementary Information Vol 3	Project partners opted to use produced seedlings in massive replanting.
Indicator 3.4	Decline in international trade of wild sourced material	Market is small (WCMC report) but some trade in all 4 Ugandan sp (53 plants in 2011-13).	Supplementary Information Vol 2, 3	Uganda submitted CITES reports 2005-14, which is encouraging
Output 4:	Strengthened knowledge and capacity			
Indicator 4.1	Two staff trained	Two staff trained in Y1 in Thailand and Y2 at SANBI	Supplementary Information Vol 1, 2	
Indicator 4.2	Project workshop at end of Y3	Held 6-10 March 2017, with SANBI reviewing <i>E. whitelockii</i> progress, 3-4 March 2017	Supplementary Information Vol 3	
Indicator 4.3	Cascade training to Philippine staff	Xaba delivered a Cycad Training Workshop at De La Salle University (Philippines).	Y3 half-year report	JERA attendance compromised by visa issues.# SANBI stepped in.
	#risk anticipated regarding JERA staff training. Whilst 4.1 training achieved, 4.3 was not, mainly due to delays with paperwork and set timing of visit			
Indicator 4.4	Communication to wider community	Two posters distributed to CSG + 60 CITES/CBD staff; 3 presentations at World Cycad Congress (2015); Cultivation Manual shared with CSG; Xaba (SANBI) talk at Nongnooch cycad horticultural workshop (2016)	Supplementary Information Vol 2, 3 	Also staged seed biology symposium (incl. cycads) at Makerere Univ for 40 staff / students
Output 5:	Community projects and school education			
Indicator 5.1	Community involvement increased from 2 to 4.	Two extra communities (either side of Mpanga Gorge) engaged in nursery work in	Supplementary Vol 2, 3	Sterile <i>E. equatorialis</i> seed meant no nursery production in Kayuga District,

		Kamwenge District for <i>E. whitelockii</i> production		but community facilitated fieldwork
Indicator 5.2	People on nursery activity increased by 40	Increase c. 10 involved in field work in Kamwenge; and >40 members of the community involved in raising and planting out 5000 seedlings	Supplementary Information Vol 3	Sterile <i>E. equatorialis</i> seed meant no nursery production in Kayuga District, but community facilitated fieldwork
Indicator 5.3	Education programme	2 posters (on cycad distribution AND reproduction) printed in English, Rukiga and Lusoga; cycad exercise book covers provided and cycad talk given to Rwenshama Primary School; and Café Scientifique held for 42 students and teachers	Supplementary Information Vol 2, 3	

3.2 Outcome

Knowledge generation and transfer, institutional capacity building and community awareness actions reduce threats to Uganda's endangered and endemic cycads

Measurable indicator	Means of verification	Achievements to 2017
Indicator 1: Three-fold increase in detailed autecology knowledge for endangered <i>Encephalartos</i> cycads (from one to three species) through annual population studies contribute to first available non-detriment findings.	<ul style="list-style-type: none"> 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 <i>Encephalartos</i> sp reproduction cycle from partners managing <i>ex situ</i> collections. 	<ul style="list-style-type: none"> Between 2 or 3 field visits for two species, but only one for the third (assumed security reasons in north on Sudan border proved true) generated phenology data and population size on all three. Insufficient data for Elasticity Analysis in three years; but low female to male ratios (c. 0.2 for two species) recorded and NDF (0.19 - 0.36) indicate risks of downward population trend. The information was not always submitted annually but incorporated for 24 species into the cultivation manual.
Indicator 2: Improved assessment of illegal collecting and trade of three Ugandan cycads species by analysing trade	<ul style="list-style-type: none"> Annual trade figure on Ugandan cycads by UNEP-WCMC; Reports of local cycad market surveys on supply and demand; 	<ul style="list-style-type: none"> WCMC report revealed African and Uganda annual trade small (based on 10 year analysis). Two market surveys reports show local trade in <i>E. whitelockii</i>

<p>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.</p>	<ul style="list-style-type: none"> • 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. 	<p>seedlings is c.100 per six months.</p> <ul style="list-style-type: none"> • Record of six attendees at Y3 training event using CITES and Cycad book / CD rom. • Two summary reports on Y1 and Y2 project progress sent to 60 CITES / CBD officials in six partner countries. • No inventory taken but decision taken to focus on all females of small population of <i>E. equatorialis</i>, microdot (technology advance cf 'chips') canisters purchased and waiting for permission in Uganda to spray plants (JERA committed to implementing post project)
<p>Indicator 3: Reduced demand for wild sourced cycads by 25 to 67% by producing 200 seedlings of <i>E. equatorialis</i> (67% of wild population size), 300 seedlings of <i>E. macrostrobilus</i> (~25%) and 2000 seedlings of <i>E. whitelockii</i> (~25%) for natural population restoration and to sell to local communities thereby reducing threat to natural populations.</p>	<ul style="list-style-type: none"> • Photographic evidence of replanted population; • Records of seedling sales from nursery; • Trade data report showing decline in sale figure for wild-sourced cycads. 	<ul style="list-style-type: none"> • Target of producing 2500 seedlings centred on <i>E. whitelockii</i> (6700 produced) as <i>E. equatorialis</i> set infertile seed (we assumed natural disaster to be greatest risk but this is probably genetic) and <i>E. macrostrobilus</i> only accessed in Y3. Photographic evidence provided. • No seedling were sold. Community decided not to compete with small existing horticultural supply locally of <i>E. whitelockii</i>, preferring instead to plant 5000 seedlings in the locality. • WCMC report on Uganda reporting to CITES shows very low 'official' trade.
<p>Indicator 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 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.</p>	<ul style="list-style-type: none"> • 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 <i>Encephalartos</i> cultivation; • Information leaflets on at least three species in English and Swahili; 	<ul style="list-style-type: none"> • Did not rely on structured questionnaires but on the training reports written for each of the placements, which included other network exchanges (SANBI and De la Salle to the UK). • One (re-written) multi-authored review is with Botanical Review; prospects for publishing NDF under consideration. • Release 1 of the Cultivation Manual (69 pp) on 34 <i>Encephalartos</i> species (half the genus) completed and under review by CSG. • Two posters on Cycad Distribution in Uganda (covering four species) and on Cycad Reproduction printed in three

	<ul style="list-style-type: none"> • 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 	<p>languages (two local dialects and English).</p> <ul style="list-style-type: none"> • Three published abstracts from 2015 International Cycad Congress, popular article in ITF journal, web article on Café Scientifique on cycads, for e.g. • Email received from Agoon (De la Salle Univ, Philippines) confirming that KT and training was extremely useful.
<p>Indicator 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).</p>	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Photographic evidence provided of two new village nurseries for <i>E. whitelockii</i>, engaging c. 40 people. • Audit carried out by SANBI during visit to the site in Y3. • Report provided on primary school work (not 70% involvement in talks but distribution of 'cycad covers' for exercise books exceeded 70%), and Café Scientifique event with secondary school children. No examples of stories written, but Brian Kibirige (Teacher at Gayaza High School) wrote that the school 'plan a new project on agribusiness and wildlife conservation, with a study trip to Murchison National Park to seed cycads in the wild.'

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

Impact statement from logframe: 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'

Productive cycad biodiversity conservation collaboration:

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).

Scientists from six nations, linking Africa to Asia, came together to strengthen understanding of the conservation status of three Ugandan endemic and endangered cycads, with the support of three communities close to the habitats of *Encephalartos whitelockii* and *E. equatorialis*. The conservation status of one species (*E. whitelockii*) was improved through the production of >6000 seedlings in community nurseries, with 5000 seedling being planted in the local area. Knowledge management and capacity in the community was supported on the ground by JERA and SANBI and wider community engagement further enhanced through a primary school initiative that reached hundreds of children using talks and posters in local language.

Impact on poverty alleviation:

The ambition was for surplus seedlings raised to be sold. A surplus of about 4000 seedlings (6700 produced minus 2500 target) was available, and the market surveys indicated opportunities to undercut the local traders on price. However the community decided to commit to replanting more than the project target (population sized increased by 10%), by transplanting 5000 seedlings of whitelockii. More than the target 40 individuals were involved in this endeavour and the community was recompensed for the nursery work and the planting, thus providing some income benefits. The main beneficiaries were the two nursery managers / attendants on a monthly salary. Two male field assistants were 'employed' during each field ecology trip for whitelockii, and individuals were paid per seedling transported to the planting site in the field.

4 Contribution to Darwin Initiative Programme Objectives

4.1 Contribution to Global Goals for Sustainable Development (SDGs)

5 Gender equality:

Community nursery work (production and planting) on *E. whitelockii* engaged men and women. But as a conservation project, more men (35; culturally land matters are presided over by men) than women (8) were involved. Similarly only men (10) were involved in the *E. equatorialis* field work. These were community decisions. 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), and the student participants in the Café Scientifique event were drawn from boys and girls schools.



15 Life on Land:

The project supported 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. In Y3 5000 nursery produced seedling of *E. whitelockii* were planted contributing to reversing land degradation and halting biodiversity loss. The community around the *E. equatorialis* population worked in Y2 to 'reduce the impact of invasive alien species on land' where the species 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 was also supported by training JERA staff (in Thailand in Y1, and in South Africa in Y2) and holding a seed (including cycad) symposium for 40 staff / students. In addition, JERA staff benefitted from the exchange of ideas about the project, have enhanced project management skills and greater experience of scientific writing by contributing to a peer-review journal paper.

4.2 Project support to the Conventions or Treaties (CBD, CMS, CITES, Nagoya Protocol, ITPGRFA)

The project assisted 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).

CITES

JERA kept 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. The project in Y1 provided copies of the CITES and Cycad book and CD-rom to national authorities in all partner countries (Uganda, South Africa, Thailand, Philippines and China; 60 staff). In the case of Uganda and Thailand, the copies were delivered by hand. For China, South Africa and South Africa copies were provided via the partners in the project who were also CSG members. Thus the national authorities were alerted to the project's commitment to CITES. Pritchard met the Head of the CITES office in Thailand, Duang duen Sripotar (March 2016) to discuss import/export trade.

CBD-Aichi targets (aligned with Annex 4)

There was also strong synergy with GSPC (2010-20) and Aichi Biodiversity Targets, particularly: awareness of biodiversity (1), sustainable management of forest area (7) the protection of threatened species (12), functioning ecosystems (14, 15), knowledge sharing (19) and financial support (20).

1. Community awareness around *whitelockii* and *equatorialis* cycad populations of the value of biodiversity has been enhanced as a result of project partners visiting the sites on numerous occasions.

7. The company with the forestry concession around the *equatorialis* site offered their land for nursery establishment, demonstrating strong awareness of the need to conserve biodiversity.

12. The plight of *E. whitelockii* has certainly been improved with extensive planting of seedlings.

14, 15. Ecosystem restoration and resilience enhanced and community livelihoods, including that of women, modestly supported through the nursery and planting work.

19. The project has shared widely (new and existing) knowledge (technologies, conservation need) on cycad biodiversity, through: Cycads for Children programme (talks to classes, posters in three languages, exercise book covers); Café Scientifique (and blog); seed symposium at Makerere Univ.; c. 10 talks to scientific meetings and universities; cultivation manual (e-compendium) production. The reach is estimated to be: c. 50+15+40 university students; c. 400 schoolchildren; >100 scientists at conferences and workshops and in CSG.

20. The mobilization of financial resources for this project from the Darwin Initiative helped to implement the Strategic Plan for Biodiversity 2011-2020, contributing positively to action within a biodiversity rich, but infrastructure poor, country - Uganda.

4.3 Project support to poverty alleviation

Poverty alleviation was not a main focus of this Defra-related Darwin Initiative project. However, community nursery seedling production for *Encephalartos whitelockii* was extensive, with >40 people involved and whose occasional employment [collecting and sowing seeds, tending to the seedlings and planting (>5000)] was paid for by the project within JERA's budget. The planting may have longer-term benefits to wellbeing as the communities have contributed to the revegetation of their local surroundings. The photographic evidence of engagement in these activities indicate women representation was only about one fifth of those involved. (SI Vol 3).

4.4 Gender equality

We aimed to get a good gender balance during delivery of the project.

The project promoted, at all opportunities, gender equality with the nursery work and planting on both sides of the Mpanga Gorge (*E. whitelockii*) delivered by the communities. The Cycads for Children programme centred on the co-educational Rwenshama School (c. 300 girls and 300 boys) and Café Scientifique engaged with a mixed group of 42 staff / students.

On the overall project management side, Kew support was provided by two males (Pritchard, Sacande) and three females (Nadarajan, Seal, Smythe). WCMC support was from three females (Rossiter, Hinsley, King), SANBI from two males (Xaba, Donaldson), Nongnooch by one male (Lindstrom), JERA by three males (Kamoga, Luwemba, Kintu), De la Salle Univ (Philippines) by one female (Agoo) and Fairylake at the inception of the project by one female (Nan). **Summary:** 8 females and 8 males involved in project planning and delivery.

The training provision in South Africa for the JERA staff was strongly supported by women: Ms. Maud Sebelebele (Cycad Nursery Specialist) & Ms. Thembeke Malwane (Cycad Laboratory Specialist), Ms. Michelle Pfab (Cycad Protection Specialist) (SI Vol 2). The training of Dr Agoo (Philippines) at Kew was supported by four additional women: Cristina Blandino, Elena Lorenzo, Kay Pennick and Dr Louise Colville. **Summary:** 7 females, 0 males.

Without specifically targeting females, the general feedback from events, e.g. training reports and workshop feedback, was positive.

4.5 Programme indicators

- **Did the project lead to greater representation of local poor people in management structures of biodiversity?** The project team worked more with the local community more than local government, which is not well funded to offer service delivery.
- **Were any management plans for biodiversity developed?** Not yet, but JERA envisages engaging with local government to pave the way for the development of management plans based on the project findings and in relation to the NDF.
- **Were these formally accepted?** N/A
- **Were they participatory in nature or were they 'top-down'? How well represented are the local poor including women, in any proposed management structures?**
N/A
- **Were there any positive gains in household (HH) income as a result of this project?** There were modest gains by individuals 'employed' to carry out specific tasks (nursery management, field assistant, planting assistant).
- **How many HHs saw an increase in their HH income?** Steady income only applied to the two nursery managers.
- **How much did their HH income increase (e.g. x% above baseline, x% above national average)? How was this measured?** This was not estimated.

4.6 Transfer of knowledge

The cycad posters were used beyond the Cycad for Children programme, being provided to local community leaders and district government officers, so they can be tabled in management meetings to inform other interested parties in the hierarchy. The Management Authority were also issued with the posters. Knowledge transfer was enabled by the posters being available in two local dialects (Riukiga for west Uganda and Lusoga for southeast Uganda). The article in the New Vision national newspaper on 14 March 2017 on 'Rare plants faces extinction' was aimed at influencing the public and policy makers. (SI Vol 3). Also the summary reports on the project from Y1 and Y2 were sent to 60 policy making staff in CITES/CBD offices in the six contributing countries (Uganda, UK, South Africa, China, Thailand, Philippines).

There were no plans for people to achieve formal qualifications in the project

4.7 Capacity building

No evidence yet that staff in Uganda involved in the project have an increase in status nationally, regionally or internationally.

5 Sustainability and Legacy

The project profile is good with the formal authorities in Uganda (National Forest Authority, CITES, CBD) and there is awareness of the project work by CITES and CBD offices in South Africa, China, Thailand, the Philippines and the UK, including the role played by country nationals. The educational achievement has been excellent (six posters, Café Scientifique, cycad exercise book covers, etc), extending to the positive feedback on two of the posters by the IUCN Cycad Specialist Group (SI Vol 2) 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. Overall, the skills of three staff and the profile of JERA have been enhanced and it is now involved in vegetation survey work on a major pipeline project in the country. At the final workshop in Kampala, the partners committed to working with JERA to source further funds to protect the *E. equatorialis*.

6 Lessons learned

Didn't work well: Turnover of staff is a modern day feature of science and having three project supports at Kew required periods when new staff involved needed to get up to speed. The same was true at WCMC. Securing travel visas for many of the countries involved is clearly not as straightforward as from the UK; early planning may have helped.

Did work well: After a slowish start in Y1, the Uganda-South Africa-Thailand-Philippine-UK axis on cycads developed into a strong working relationship. Moreover, the stability at JERA (with the main partners Kamoga and Luwemba) was extremely valuable. The information generated proved to be interesting and valuable. The educational programme had many strong points; diverse in approach and delivered to hundreds of schoolchildren. And the communities were welcoming and helpful.

Recommendations: As mentioned in the Y2 report, this type of complex network – with the appeal of the broad flow of knowledge on a group of rare species – probably needed a four year project to do the fieldwork justice.

6.1 Monitoring and evaluation

There were no major changes to the project design.

The project has followed Kew's established project monitoring, evaluation and financial accounting protocols, SMART indicators and milestones, etc, including making quarterly internal reports.

The Darwin Initiative's internal reporting system has been complied with, such that the 6 monthly reports (Y1, 2, 3) and annual reports (Y1, 2) were submitted on time. The evaluation and feedback (with follow-through comments) were very helpful, with comments that were balanced and fair. Once the network started to run more efficiently and effectively, towards the end of Y1, the team did not see the need to have further Advisory Board meetings; and wider Kew representation and WCMC involvement was secured for the final workshop (March 2017, Kampala).

6.2 Actions taken in response to annual report reviews

The Evaluation Reports at the end of Y1 and Y2 raised few matters and scored the project 2, meaning there was good progress towards purpose completion and most outputs had been achieved, particularly the most important. Around the end of Y1 the Team agreed to focus more on the *ex situ* collection in Thailand for phenological information and to ramp up the flow of general communications (achieved primarily by email), backed up by eight 'occasional' meetings of some of the partners (SI Vol 2, Y2 annual report). Both steps were noted by the evaluator(s) as being adaptive management.

The main items raised were acted on by the Project Leader and communicated with the specific partner. The evaluator comments for Y2 were summarised and included in the Summary Report for Y2 that was sent to the CITES / CBD offices in the five partner countries.

There are no outstanding issues.

7 Darwin identity

The article published in *Trees – the Journal of the International Tree Foundation* clearly shows the DI logo (SI Vol 2). The review paper acknowledges financial support from DI Project Grant 21-003 (SI Vol 2). The Darwin Initiative input to cycad work was 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 six (two x three languages) education posters used with the schools (SI Vol 2, 3), the English versions being circulated to the CSG of the IUCN and CITES and CBD offices in all partner countries. Release 1 of the Cultivation Manual (e-compendium) for *Encephalartos* has the DI logo on the front page and an acknowledgement at the end of the text. The blog on the Café Scientifique event includes the DI logo (SI Vol 3). Finally, Xaba used the DI logo on talks at the horticulture of cycads workshop in Nongnooch and during KT in the Philippines in Sept 2016.

The Project Leader cited the DI website at the end of his talks, and acknowledged wider UK government input in relation to Kew receiving grant-in-aid from Defra.

Makerere University staff were aware of the DI, as was the National Forest Authority, particularly because of its involvement in an earlier DI project.

The project did not have social media account, but did contribute to a web report on the Café Scientifique event (SI Vol 3).

8 Finance and administration

8.1 Project expenditure

Project spend (indicative) since last annual report	2016/17 Grant (£)	2016/17 Total actual Darwin Costs (£)	Variance %	Comments (please explain significant variances)
Staff costs (see below)			-6	Kew Project Manager joining in Year 3 was at a higher spine point compared to anticipated at the time of grant submission
Consultancy costs				
Overhead Costs			-41	Overheads associated with project lead spending more time on project due to lack of involvement from Chinese partners
Travel and subsistence			28	Saving associated with the Y3 workshop. For medical reasons the Kew Project Manager and the main Thailand collaborator

				could not travel; plus the Philippines collaborator had problems with a visa. In addition, the two local project staff in Kampala did not stay in the congress hotel, saving on room costs.
Operating Costs			24	Proved unable to receive CITES material from Uganda for work in Kew labs, hence some underspend on consumables.
Capital items (see below)				
Others (see below)			-6	Higher than anticipated costs for open access publication of paper
Audit costs				
TOTAL	75,926	70,146.24		

Staff employed (Name and position)	Cost (£)
Hugh Pritchard (Project Leader)	
Charlotte Seal (Project Manager)	
5175Uganda Researcher 1, Dennis Kamoga – Ugandan lead	
Uganda Researcher 2, Simon Luweba – Uganda support	
Philippines - RA – student support (year on year)	
Thailand – RA – student support (year on year)	
South Africa – RA, Phakamani Xaba	
TOTAL	29,865.07

Capital items – description	Capital items – cost (£)
-	
TOTAL	0

Other items – description	Other items – cost (£)
Microdot technology for tagging <i>Encephalartos equatorialis</i>	
Open Access publishing	
TOTAL	5,928.65

8.2 Additional funds or in-kind contributions secured

Please confirm the additional funds raised for this project. This will include funds indicated at application stage as confirmed or unconfirmed, as well as additional funds raised during the project lifetime. Please include all funds relevant to running the project as well as levered funds for additional work after the project ends. N.B.: the total of both these sections is the figure required for Annex 4, Q23.

Were any additional in-kind contributions secured during the project?

Source of funding for project lifetime	Total (£)
[34% total project costs (tpc)] from the Royal Botanic Gardens, Kew towards project management, specialist input and associated overhead.	
(3% tpc) from Mohamed Bin Zayed Species Conservation Fund (MBZSCF) to work with South Africa National Biodiversity Institute (SANBI) for conservation of critically endangered <i>E. middelburgensis</i> cycad.	
(8% tpc) from The other enabling partners will contribute: De La Salle University (DLSU), Manila, Philippines (institutional and staff costs for input to cultivation manual and to host visiting scientist); Fairy Lake Botanical Garden (FLBG), China (input to review paper) and Nong Nooch Tropical Botanical Garden (NNTBG), Thailand (cultivation experience, hosting JERA staff) and the World Conservation Monitoring Centre (WCMC) (trade data and expertise).	
RBG Kew as gift-in-kind for UK staffs to combine travel to attend project progress meetings in partner countries	
TOTAL	162946

Source of funding for additional work after project lifetime	Total (£)
TOTAL	

8.3 Value for Money

Balance of funding

UK salary cost were minimised, covering project management and essential specialist scientific and technical input only. Kew provided for c. 50% of the UK salary cost and c. 40% of associated overheads costs. International travel cost was minimised by appointing SANBI as the main training partner for Ugandan scientists/horticulturalist. Staff time for Ugandan and other international participants was an order of magnitude greater than UK staff time (just over 1 person years), a ratio that is in line with earlier DI projects managed by the Kew team (i.e., OSSSU, CCESSA, and DIRECTS).

Development of the budget

Even though the project was complex, involving inputs from seven institutes in six countries, we were able to keep costs to a minimum through protracted but balanced discussions on the needs of partners to deliver the project on time and within realistic expense. Inter-institutional letters II

from the start of the project confirmed these cost bases, to avoid budget creep. Whilst small annual increases in salaries were accounted for, the currency exchange situation was regularly and carefully monitored.

Cost effectiveness and efficiency

In addition to the monitoring of the exchange rates, collaboration with so many partners required active budget management, to ensure that no single part of the project jeopardised spend elsewhere (potential negative impact) unless there was general agreement between the collaborators. The project management team in the UK regularly reviewed the financial situation to identify any significant divergences in spend and took corrective action, and kept a close scrutiny on any inherent risks in the assumptions made.

ANNEX 1 Project's original (or most recently approved) logframe, including indicators, means of verification and assumptions.

Note: Insert your full logframe. If your logframe was changed since your Stage 2 application and was approved by a Change Request the newest approved version should be inserted here, otherwise insert the Stage 2 logframe.

Project summary	Measurable Indicators	Means of verification	Important Assumptions
<p>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.</p>			
<p>Outcome: Knowledge generation and transfer, institutional capacity building and community awareness actions reduce threats to Uganda's endangered and endemic cycads</p>	<p>1) Three-fold increase in detailed autecology knowledge for endangered <i>Encephalartos</i> cycads (from one to three species) through annual population studies contribute to first available non-detriment findings.</p> <p>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.</p> <p>3) Reduced demand for wild sourced cycads by 25 to 67% by producing 200 seedlings of <i>E. equatorialis</i> (67% of wild population size), 300 seedlings of <i>E. macrostrobilus</i> (~25%) and 2000 seedlings of <i>E. whitelockii</i> (~25%) for</p>	<p>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 <i>Encephalartos</i> sp reproduction cycle from partners managing ex situ collections.</p> <p>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.</p> <p>3) Photographic evidence of replanted population; Records of seedling sales from nursery; Trade data report showing decline in sale figure for wild-sourced cycads.</p>	<p>A) Natural disasters do not severely affect the natural population causing reduced availability of plants, seeds and pollen for conservation and sustainable use actions.</p> <p>B) Political conflicts and socioeconomic crises do not accelerate threats to natural populations and reduce access to lands.</p> <p>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.</p>

	<p>natural population restoration and to sell to local communities thereby reducing threat to natural populations.</p> <p>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 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.</p> <p>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).</p>	<p>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 <i>Encephalartos</i> cultivation; 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.</p> <p>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.</p>	
<p>Outputs:</p> <p>1.</p> <p>Increased biodiversity knowledge and non-detriment findings on Ugandan endemic and endangered cycads</p>	<p>1a. Six bi-annual field study reports over 3 years (from NIL) generating baseline data on autecology and reproductive biology for <i>E. equatorialis</i>, <i>E. macrostrobilus</i> and <i>E. whitelockii</i>. (Years 1- 3)</p> <p>1b. Enhanced knowledge on population trends and habitat degradation assessed for three species (from NIL) through completion of an 'Elasticity Analysis'. (Y3)</p> <p>1c. Biodiversity data on c. 20 other closely related <i>Encephalartos</i> sp. enhanced through inputs of historical / current information from world-leading ex situ collections at SANBI (RSA),</p>	<p>1.1. Records of field training/work attendance by participating partners</p> <p>1.2. Autecology and reproductive biology data for <i>E. equatorialis</i>, <i>E. macrostrobilus</i> and <i>E. whitelockii</i> submitted with Annual and Final Report.</p> <p>1.3. Population trend of the above three cycads written up as a manuscript for scientific journal. A copy sent with Final Report.</p> <p>1.4. Baseline data on other closely related <i>Encephalartos</i> sp from SANBI (RSA), FLBG (China) and NNTBG (Thailand) ex situ collections submitted with Annual and Final Report.</p>	<p>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.</p> <p>2. Enabling partners remain committed to providing complementary data on reproductive biology of <i>Encephalartos</i> 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</p>

	FLBG (China) and NNTBG (Thailand) (Y1-3)	1.5. e-Compendium on <i>Encephalartos</i> cultivation and conservation biology compiled and available online, and printout submitted with the Final Report.	have extensive cycad collections of mature plants.
2. Improved monitoring and assessment of cycad trade in (and out of) Uganda	<p>2a. 50% of the wild populations of three species micro-chipped by end Y3</p> <p>2b. 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.</p> <p>2c. Enhanced enforcement training of at least five Ugandan officers through use of a new training pack on 'CITES and Cycads' (Y3)</p> <p>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)</p>	<p>2.1. Training record of micro-chipping by SANBI partner to JERA staffs</p> <p>2.2. Identification and documentation of mature cycad plants in the wild for potential micro-chipping by Y2.</p> <p>2.3. Inventory of micro-chipped cycad plants in the natural population compiled and sent with Annual Report.</p> <p>2.4. Project reports submitted to Ugandan CITES and CBD focal points to support their annual country reporting.</p> <p>2.5. Records of training of Ugandan enforcement officers using the 'CITES and Cycads' training CD Rom</p> <p>2.6. Annual trade figures of Ugandan Endemic cycads compiled by UNEP WCMC and submitted in Annual and Final Reports.</p> <p>2.7. Local market survey on supply and demand of cycads compiled and submitted with Annual and Final Reports.</p>	<p>1. Micro-chip (and DNA spray) technology is transferable and can be reliably used on a range of species.</p> <p>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.</p>
3. Significantly reduced demand for wild sourced cycads	<p>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)</p> <p>3b. 10% increment in natural population sizes in three sites through replanting of nursery-raised plantlets (Y3)</p> <p>3c. 50% reduction in demand for wild sourced cycad material (seed, seedling)</p>	<p>3.1. Project proposal on community nursery which includes establishment, appointment of staffs, training, maintenance of plants, replanting programme drafted by end of Y1.</p> <p>3.2. Records of seed collection trips to the natural population as the source material for nursery</p> <p>3.3. Records of seed germination and seedling establishment</p>	<p>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).</p> <p>2. Nursery plots not lost due to changes in land ownership. Risk minimised by identifying alternative site for back-up nursery.</p>

	<p>through sale of nursery-raised plants (Y3)</p> <p>3d. Decline in international trade on Ugandan wild sourced cycads (Y3)</p>	<p>3.4. Records of seedlings replanted in the natural population</p> <p>3.5. Records of surplus seeds, seedlings, leaves and etc. sold to local communities and other interested parties (e.g. local municipalities)</p> <p>3.6. Records of other plants co-planted and sold in the nursery as an incentive for local communities</p> <p>3.7. Audit of nursery set up for functionality and security.</p> <p>3.8. Records of international trade on Ugandan cycads provided by UNEP-WCMC</p>	
<p>4. Strengthened knowledge and capacity of Ugandan staff and the cycad community involved in conservation and sustainable use</p>	<p>4a. Two full time Ugandan scientist/horticultural staffs trained by end Y1.</p> <p>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.</p> <p>4c. Cascade training by Ugandan scientist to Philippine scientists/ horticulturists (Y3), increasing local cycad conservation knowledge from 5 to 20 staff</p> <p>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)</p>	<p>4.1. Short-term scientific mission training reports in China, Thailand and the UK for Ugandan partners by end of Y1.</p> <p>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.</p> <p>4.3. Programme of the project workshop in Y3 to be submitted with the Final Report.</p> <p>4.5. Reports on cascade training by Ugandan scientist to Philippine scientists/ horticulturists (Y3).</p> <p>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.</p> <p>4.8. Journal volume, page numbers (and Open Access location) of two</p>	<p>1. No insurmountable challenges in securing visas for JERA staff to train in other countries. Risk minimised through early applications for visas.</p> <p>2. Essential, trained staffs leave the project. Risk minimised by training two scientists and followed by cascade training in Uganda.</p>

		<p>peer-reviewed papers. Copies of papers to be sent with the Final Report.</p> <p>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.</p>	
<p>5. Community cycad projects (plant nursery and schools programme) established in Uganda</p>	<p>5a. Number of local communities involved in cycad conservation project increased from two to four by end Y3</p> <p>5b. Number of people to be directly employed to work part-time in the new nursery project increased from 0 to 40 (Y2, 3)</p> <p>5c. Educational programme 'Cycads for Children' included in school activities to promote understanding of the value of cycad biodiversity and its conservation (Y2,3)</p>	<p>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.</p> <p>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.</p> <p>5.3.Record number of people directly employed to work in the nursery project</p> <p>5.4.Community group annual record on activities sent with Annual Report</p> <p>5.4.Educational materials and school programme schedule included in Final Report; and children's stories on cycads available on web</p>	<p>1. Communities remain committed to cycad conservation efforts. Risk minimised by carefully selecting the communities that JERA has previous experience of collaborating with.</p>
<p>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)</p> <p>Activity 1.1 Establish agreement with local authorities for field study and seed/pollen collecting permission</p> <p>Activity 1.2 Conduct field study to evaluate population size, distribution, phenology and meteorological data of <i>E. equatorialis</i>, <i>E. macrostrobilus</i> and <i>E. whitelockii</i>.</p> <p>Activity 1.3 Undertake 'Elasticity Analysis' on the population data to simulate population trends</p> <p>Activity 1.4 Undertake 'Elasticity Analysis' on the population data to simulate population trends</p> <p>Activity 1.5 Write two peer-reviewed papers (on population trends of Ugandan cycads and another on cycad pollen and seed biology)</p> <p>Activity 1.6 Write an e-compendium volume of <i>Encephalartos</i> biology and cultivation</p>			

- 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 2 Report of progress and achievements against final project logframe for the life of the project

Project summary	Measurable Indicators	Progress and Achievements
<p>Impact:</p> <p>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'</p>		<p>Network functioned well across countries, supported when necessary (e.g. WCMC and De la Salle Univ) by letters of agreement. Good connection to communities in Uganda who actively participated in project, seedling production and planting. Many findings communicated to cycad community (posters, cultivation manual sent to CSG) and CITES/CBD strengthened (receipt of annual summaries).</p>
<p>Outcome</p> <p>Knowledge generation and transfer, institutional capacity building and community awareness actions reduce threats to Uganda's endangered and endemic cycads</p>	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1) Three species' populations assessed, incl. NDF, with timing of visits good even though populations spread across the country (West to North to East). 2) Informative reports from WCMC on trade and on CITES reporting by Uganda published; training on CITES and Cycads welcomed by Management Authority staff; summary report of project progress (Y1,2) widely circulated to CITES / CBD offices. 3) >6000 seedlings produced of <i>E. whitelockii</i> massively exceeded supply in market place. 4) Two staff members benefitted (Simon Luwembo, throughout; James Kintum occasionally; excluding Dennis Kamogo – the head of JERA) 5) Two communities either side of the Mpanga Gorge with raised awareness, and local primary school children (c. 400) through lectures, two posters (in three languages) and older children at Café Scientifique. Reach is hundreds of adults and children (> 5-fold increase prior to project).
<p>Output 1.</p> <p>Increased biodiversity knowledge and non-detriment findings on Ugandan endemic and endangered cycads</p>	<p>Insert agreed output level indicators)</p> <ol style="list-style-type: none"> 1) Six bi-annual field study reports over 3 years (from NIL) generating baseline data on autecology and reproductive biology for <i>E. equatorialis</i>, <i>E. macrostrobilus</i> and <i>E. whitelockii</i>. (Years 1- 3) 2) Enhanced knowledge on population trends and habitat degradation assessed for three species (from NIL) through 	<ol style="list-style-type: none"> 1) The indicator was challenging because of the location of the three species, each about 300 kms apart (in a triangle). But seven trips were made: three to <i>E. whitelockii</i>, one to <i>E. macrostrobilus</i> and three to <i>E. equatorialis</i>. Field reports on species from Y1 were merged with Y2 (Supplementary Information Vol 2) and Y3 visits are reported in SI Vol 3. Whilst depth of ecology information varied from visit to visit, three NDF were made, one for each species. 2) Knowledge of habitat degradation through burning, although not extensive, obvious around two species; and threat from poachers removing stems of clustering species seen too (SI Vol 2, 3). Also low female : male ratios (0.2) in <i>E. equatorialis</i> and <i>E. macrostrobilus</i> suggest high risk of

	<p>completion of an 'Elasticity Analysis'. (Y3)</p> <p>3) Biodiversity data on c. 20 other closely related <i>Encephalartos</i> sp. enhanced through inputs of historical / current information from world-leading ex situ collections at SANBI (RSA), and NNTBG (Thailand) (Y1-3)</p>	<p>population contraction; and lack of fertile seed production in <i>E. equatorialis</i> makes future look bleak.</p> <p>3) Beyond the targeted species, information on the coning or time to pollinate of 24 other species was compiled for the Cultivation Manual (e-compendium) (SI Vol 3). The indicator was appropriate and exceeded.</p>
Activity 1.1 Establish agreement with local authorities for field study and seed/pollen collecting permission		Community and local authority permission for access approved and around 7000 seeds of <i>E. whitelockii</i> collected for propagation. Access to <i>E. equatorialis</i> facilitated by the local community too, and supported by Busoga forestry company (BFC), on which part of the population grows (S1 Vol 2). Moyo District Senior Environmental Officer, Mr Alule Herbert and other two local guides, conducted field work on <i>Encephalartos macrostrobilus</i> with JERA staff (SI Vol 3).
Activity 1.2, Conduct field study to evaluate population size, distribution, phenology and meteorological data of <i>E. equatorialis</i> , <i>E. macrostrobilus</i> and <i>E. whitelockii</i> .		Population size of <i>E. equatorialis</i> estimated at 79 individuals and georeferenced so that meteorological comparison with historical can be made (SI Vol 2). <i>E. whitelockii</i> estimated at a 6000-8000 individuals at Mpanga Gorge – impossible to georeferenced individuals as population too large and unable to enter Hydroelectric Dam land (SI Vol 1). <i>E. macrostrobilus</i> has about 700 individuals (not georeferenced). (SI Vol 3). Male:female coning (phenology and) estimates about 5:1 for <i>E. equatorialis</i> and <i>E. macrostrobilus</i> .
Activity 1.3, Undertake 'Elasticity Analysis' on the population data to simulate population trends		Realistically, we needed to analyse each population each year for three years, i.e., at least nine trips when six were planned. Our opinion that the Elasticity Analysis would be unachievable was noted in the Y1 report (SI Vol 1)
Activity 1.4, Collect reproductive biology data for other closely related <i>Encephalartos</i> sp from SANBI, Nong Nooch Tropical Botanical Garden and Fairy Lake Botanical Gardens' ex situ collections.		Nongnooch and SANBI input data on the phenology of 26 species (including two target species + 24 more) of <i>Encephalartos</i> (SI Vol 3) from their experiences with <i>in situ</i> observations and <i>ex situ</i> collections management.
Activity 1.5, Write two peer-reviewed papers (on population trends of Ugandan cycads and another on cycad pollen and seed biology)		The cycad biology review (>70 references) drafted in Y2 (SI Vol 2) was revised with input for all collaborators and is now with Botanical Reviews for consideration. There is insufficient data on population trends but the NDF

		information and other observations on the populations may be sufficient for a short paper.
Activity 1.6, Write an e-compendium volume of <i>Encephalartos</i> biology and cultivation		The compendium (Cultivation Manual) release 1 is with the Cycad Specialist Group for comment. It contains information on 34 species, i.e., half the genus. Information includes: names, plant description, distribution, habitat, conservation status, cultivation, propagation and trade (SI Vol 3)
Output 2. Improved monitoring and assessment of cycad trade in (and out of) Uganda	<p>1) 50% of the wild populations of three species micro-chipped by end Y3;</p> <p>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;</p> <p>3) Enhanced enforcement training of at least five Ugandan officers through use of a new training pack on 'CITES and Cycads' (Y3);</p> <p>4) 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)</p>	<p>1) Indicator was too ambitious. As microchips can be located and removed, the use of micro-dotting was decided on by the partners. One species ready for micro-dotting.</p> <p>2) Indicator was appropriate, although feedback from recipients in CBD / CITES office on the project progress was very limited (SI Vol 2).</p> <p>3) Indicator was appropriate. Six Management (Enforcement) Authority staff trained in Y3 in Kampala (SI Vol 3) by specialist member of Kew staff.</p> <p>4) The indicator made an assumption of records on open trade being the whole picture, when illegitimate trade is the risk. WCMC reports on <i>Encephalartos</i> trade (SI Vol 2) and Ugandan reporting the CITES (SI Vol 3) reveal low level of recorded trade. This is supported by two local market surveys in the region of <i>E. whitelockii</i> showing low trade in seedlings (SI Vol 2, 3)</p>
Activity 2.1. Ugandan scientists trained by SANBI partner in micro-chipping cycads by end of Y1		Training in microdot technology delivered in Y2 when JERA staff visited SANBI.
Activity 2.2. Matured plants identified in the natural population for micro-chipping by middle of Y2		Decision taken in Y2 on cost grounds and scale of task to apply micro dots to females of the smallest, and most perilous population (<i>E. equatorialis</i>).
Activity 2.3. Identified matured plants micro-chipped by end of Y2		The microdot system is purchased and project staff await Management / Environment Authority approval for spraying.
Activity 2.4. Submit project report (annually) to CITES and CBD focal points before their annual report is due		Short report on project progress (Y1, Y2) sent to CITES and CBD offices in Uganda, Thailand, China, Philippines, RSA and UK (c. 60 staff). (SI Vol 2).
Activity 2.5. Training of Ugandan enforcement officers using the 'CITES and Cycads' training CD Rom.		CITES and Cycads book and CD-rom distributed to CITES authorities in all overseas countries in Y1 and training given to six staff of the Management Authority in Kampala in Y3 (SI Vol 1, 3). Pritchard also visited CITES office

		in Bangkok in Y2 who provided data on <i>Encephalartos</i> trade in/out Thailand (SI Vol 2).
Activity 2.6. Collate trade data for <i>E. equatorialis</i> , <i>E. macrostrobilus</i> and <i>E. whitelockii</i> to understand the demand and supply chain.		Two reports by WCMC (SI Vol 2, 3) and two local market surveys (SI Vol 2, 3) provided insights on <i>Encephalartos</i> trade globally and locally. The reported and visible trade is small.
<p>Output 3.</p> <p>Significantly reduced demand for wild sourced cycads</p>	<p>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)</p> <p>2) 10% increment in natural population sizes in three sites through replanting of nursery-raised plantlets (Y3)</p> <p>3) 50% reduction in demand for wild sourced cycad material (seed, seedling) through sale of nursery-raised plants (Y3)</p> <p>4) Decline in international trade on Ugandan wild sourced cycads (Y3)</p>	<p>1) Scale of the indicator (number of seedlings) was appropriate, but scope (three species) not. Failure to set fertile seed of <i>E. equatorialis</i> and fieldwork delay, for security reasons, until Y3 for <i>E. macrostrobilus</i>, meant attention for focussed on producing >6000 <i>E. whitelockii</i> seedlings in two new community nurseries either side of the Mpanga Gorge. Pollen was harvested from <i>E. equatorialis</i> and artificial pollination attempted in Y3 But seed set, if any, was too late for nursery establishment. (SI Vol 2).</p> <p>2) The indicator was broadly appropriate (scale). In Y3, >5000 <i>E. whitelockii</i> nursery-raised seedling were planted in the habitat. This is estimated to be >50% of the existing whitelockii population.</p> <p>3) The indicator was probably optimistic regarding achievement in three years. The scale of horticultural sales (100 seedlings every 3-6 months) could have been swamped by release of community-raised seedlings, but the community preferred to replant (SI Vol 3).</p> <p>4) Similarly the indicator was optimistic for a three year project, particularly as the international trade report by WCMC indicated low levels of recorded trade in / out of Uganda (SI Vol 2, 3).</p>
Activity 3.1. Conduct market survey at four local market towns (Fort Portal, Ibanda, Kasese and Mbarara)		The market survey was undertaken twice at five-seven market towns close to the <i>E. whitelockii</i> population of plants, revealing some awareness of livelihood opportunities as purchase from local suppliers was about \$1 each whilst onward sale was \$4. But trade limited to c. 200 seedlings in a year. (SI Vol 2, 3).
Activity 3.2. Suitable plot for nursery agreed between JERA and the local communities in the villages of Ntarama and Karuhuguma		Nurseries in villages of Ntarama and Karuhuguma produced > 6000 <i>E. whitelockii</i> seedlings, with nursery function verified by SANBI staff visit in Y3 (SI Vol 3). Plots were agreed with communities in Kayuge District close to <i>E. equatorialis</i> (and local company positively involved) but no fertile seed put these plans in abeyance.

Activity 3.3 Collect (and receive) seed and set up germination trial in the nursery	Two seed lots were subjected to the floatation method of separating viable from non-viable seed and indicated around 84 % viability, of which c. 90% germinated within about two months (nursery / incubator). (SI Vol 3).
Activity 3.4 Seedlings replanted in the natural habitat in Y2 and monitored into Y3	In a huge effort by the communities, >5000 seedlings of whitelockii were planted into the landscape (SI Vol 3).
Activity 3.5, Sell surplus seedlings from nursery to local community (mainly Y3)	The communities decide to plant than to sell the seedlings (SI Vol 3).
Output 4. Strengthened knowledge and capacity of Ugandan staff and the cycad community involved in conservation and sustainable use	<p>1) Two full time Ugandan scientist/horticultural staffs trained by end Y1;</p> <p>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;</p> <p>3) Cascade training by Ugandan scientist to Philippine scientists/ horticulturists (Y3), increasing local cycad conservation knowledge from 5 to 20 staff;</p> <p>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 practice and cascade training. (Y2, 3)</p> <p>1) The indicator was appropriate although a slow start meant that the two staff were trained in RSA early in Y2 (SI Vol 2). One part-time helper received some basic training in the field (SI Vol 3).</p> <p>2) The indicator was appropriate, although involving the communities from 300 km away, and with language challenges, was not. However, the JERA/SANBI team visited the communities to share progress just before the workshop started (SI Vol 3). The final workshop engaged with 42 children (and teachers) through a Café Scientifique event of cycads in Kampala; and older students through a seed biology symposium at Makerere Univ (SI Vol 3).</p> <p>3) The indicator was appropriate, although delivered (for reasons of visa problems) by Xaba (of SANBI) to c. 15 staff at De la Salle Univ (Philippines) where they are developing a cycad area in a new botanic garden (SI Vol 3). Kew also provided training to Agoo (Philippines) during Y2 on a visit funded by the university to the UK (SI Vol 2; and Y2 half-year report).</p> <p>4) The indicator was appropriate. Two posters in English were distributed to c. 30 members of the Cycad Specialist Group of the IUCN - with positive feedback – and sent to CITES / CBD in six countries. Both translated in Y3 into two local languages and distributed locally. Used to support cycad talk to hundreds of children at Rwenshama Primary School. A range of published output also achieved (Annex 5) including best practice for horticulture in the cultivation manual (e-compendium) (SI Vol 2, 3).</p>
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 weeks in total. All training reports are very positive about experiences. Strictly speaking JERA staff did not achieve the 6

		weeks' mission, but the project supported (with other inputs) about 9 pw training.
Activity 4.2. In house (and cascade) training of other members of staff at JERA and (>50) students of Makerere University		Cascade training at JERA was to James Kintu. Knowledge transfer about the project and cycads through lecture and discussion at the National Tree Seed Centre (10 people) and a half-day, 8-presentation seed biology symposium at Makerere University (>37 non-project delegates). Feedback from Makerere event was 96% satisfaction, based on 35 people replying to 10 questions (SI Vol 3).
Activity 4.3 Organise a project workshop in Uganda by end of Y3		The workshop was staged from 3-4 March (SANBI field visit), 6-10 March (main meeting in Kampala). It covered a review of progress against targets, a forward look, a Café Scientifique, a symposium at Makerere Univ and Management Authority training. The mid-week field trip involved a photo-journalist from New Vision – Uganda's main daily newspaper. The workshop involved 94 people, including 7 from the partners (with Philippines and Thailand not able to attend due to unforeseen circumstances).(SI Vol 3)
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.		Xaba (SANBI) stepped in to deliver as JERA had challenges with visas. He cascaded knowledge first at the Nongnooch cycad horticulture workshop (c. 30 attendees), then to 15 staff/ student at De la Salle Univ (Philippines) – Sept 2016 (Y2 half-year report).
Activity 4.5 Ongoing training and progress meeting between JERA project manager and S. African partner (SANBI) once every 6 months.		Two planned exchanges occurred in all three years, although not strictly on a 6-month schedule (SI Vol 1, 2, 3).
Activity 4.6 Write and distribute information leaflets on at least three cycad species, in English and Swahili.		Two posters (on Cycad Distribution in Uganda and Cycad Reproduction) printed initially in English and warmly welcomed (CSG IUCN; and communities) (SI Vol 2) were translated into two local dialects (not Swahili) and used in Cycads for Children programme (SI Vol 3).
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 (Y2 Ann Rep). Public promotion of project in International Tree Foundation magazine article (Y2 Ann rep) and New Vision Newspaper article. All seven partners at the final workshop gave talks during the week. The Café Scientifique was written up as an article (on the web) (SI Vol 3). The project was introduced to Minister George Eustice on visit to Kew (Y3, half-year report).
Output 5.	1) Number of local communities involved in cycad conservation	1) The indicator was appropriate. Two new communities were involved each with a nursery. For ecological reasons, both are for <i>E. whitelockii</i> seedling

<p>Community cycad projects (plant nursery and schools programme) established in Uganda</p>	<p>project increased from two to four by end Y3;</p> <p>2) Number of people to be directly employed to work part-time in the new nursery project increased from 0 to 40 (Y2, 3);</p> <p>3) Educational programme ‘Cycads for Children’ included in school activities to promote understanding of the value of cycad biodiversity and its conservation (Y2,3)</p>	<p>production as it was discovered that <i>E. equatorialis</i> is producing infertile / embryoless seeds.</p> <p>2) The indicator was appropriate. More than 40 people were involved (photographic evidence rather than a list of people’s names) in seedling production and planting out. (SI Vol 3)</p> <p>3) The indicator was appropriate. Talks, supported by two posters in the local language for Rwenshama Primary School and the printing of cycad exercise book covers promoted awareness hugely. The other local language into which the posters were translated were distributed to the community close to the <i>E. equatorialis</i> population. (SI Vol 2, 3).</p>
<p>Activity 5.1. Consultation with two communities (villages of Ntarama and Karuhuguma), including primary school teachers, on awareness of conservation and sustainable use issues</p>		<p>Consultation with communities broadened to Kayuge District where the <i>E. equatorialis</i> plants grow and who facilitated fieldwork. Communications with the villages of Ntarama and Karuhuguma (<i>E. whitelockii</i> location) positive throughout, including with the Head of the Rwenshama Primary School. (SI Vol 1)</p>
<p>Activity 5.2. Draft agreement between JERA and two local communities on rota for part-time work in nursery</p>		<p>Broad agreement (not a contract but negotiated by JERA) with the communities in Kayuge District to be involved in the project was secured in Y1, during the PLs visit (SI Vol 1)</p>
<p>Activity 5.3. Appoint local community nursery project manager to oversee activity and progress</p>		<p>Two nursery project managers lead the community nursery work. They organised the seedling production schedule (mainly in Y2) and planting (Y3). Raising about 6700 seedlings and planting c. 5000 of them shows a wonderful commitment to the project.</p>
<p>Activity 5.4. Training of local people in cycad seed collection and cultivation</p>		<p>The main training was delivered in Y2 when JERA and SANBI staff visited the community (SI Vol 2). However, JERA was sharing knowledge and ideas throughout.</p>
<p>Activity 5.5. Develop and delivery of ‘Cycads for Children’ school programme</p>		<p>The ‘Cycads for Children’ programme (talk, posters, book covers) engaged with hundreds of Rwenshama Primary School children in Kamwenge. (SI Vol 3). The Café Scientifique event (Kampala, final workshop) for 42 teachers and children targeted secondary school children. Showing the children a large, female cone from <i>whitelockii</i> really got the conversation started. Thanks to Betty Kituya for helping to organise this hugely enjoyable event. (SI Vol 3)</p>

Annex 3 Standard Measures

We use these figures as part of our evaluation of the wider impact of the Darwin Initiative programme. Projects are not evaluated according to quantity. That is – projects that report few standard measures are not seen as being of poorer quality than those projects which can report against multiple standard measures.

Please quantify and briefly describe all project standard measures using the coding and format of the Darwin Initiative Standard Measures. Download the updated list explaining standard measures from <http://darwin.defra.gov.uk/resources/reporting/>. If any sections are not relevant, please leave blank.

Code	Description	Total	Nation-ality	Gender	Title or Focus	Lang- uage	Comments
Training Measures							
4a	Number of undergraduate students receiving training	100+	UK; Peruvian; Ugandan	Mix	General lectures on cycad/seeds/conservation	Eng	10 Univ Sussex; 40 Univ in Peru; 10 Nat. Tree Seed Centre; 40 Makerere Univ.
4b	Number of training weeks provided to undergraduate students	0	-	-	-	-	No formal training courses
6a	Number of people receiving other forms of short-term education/training (e.g., not categories 1-5 above)	51	Uganda International Philippine	Mix	Management Authority staff on CITES and Cycads. KT on cycads from project delivered by SANBI staff. All about half-day sessions	Eng	MA (6) KT / cascade training to international attendees at workshop (30) and on cycad cultivation to De la Salle partners (15)
6a	Number of people receiving other forms of short-term education/training (e.g., not categories 1-5 above)	2	Uganda	Male	All aspects of cycad biology	Eng	JERA at Nongnooch (6 pw) and at SANBI (4 pw)
6b	Number of training weeks not leading to formal qualification (51 people x 0.5 d = 25 d = 3.5 weeks) + 10 pw as planned in project	13.5	Uganda, Philippine and international		KT from project delivered by SANBI staff. Full day.	-	Cycad cultivation to partner in the Philippines

7	Number of types of training materials produced for use by host country(s) (describe training materials)	2	-	-	'Cycad Distribution' and 'Cycad Reproduction'	Eng, Riukiga, Lusoga	Posters for school children but English versions being used by some CSG members
‘							
Research Measures		Total	Nationality	Gender	Title	Language	Comments/ Weblink if available
9	Number of species/habitat management plans (or action plans) produced for Governments, public authorities or other implementing agencies in the host country (ies)	3	Ugandan	Male	-	Eng	Non-detriment findings produced for 3 species, with some involvement of Environment Authority staff and facilitation by communities
10	Number of formal documents produced to assist work related to species identification, classification and recording.	1	Multi-nationality	Mainly male	Cultivation Manual on 34 species (Lindstrom et al)	Eng	Under review by CSG
10	Number of formal documents produced to assist work related to species identification, classification and recording.	2	UK	Female	Review of Uganda's annual reports to CITES Overview of trade in <i>Encephalartos</i> species in Africa, with particular focus on Uganda	Eng	Reports produced for the project and published by WCMC
11a	Number of papers published or accepted for publication in peer reviewed journals	1 (under review)	Multi-nationality	Mixed	Comparative biology of seeds, pollen and tissues in the context of cycad conservation (Nadarajan et al)	Eng	Sent to Botanical Review
11b	Number of papers published or accepted for publication elsewhere	5	UK / Ugandan/ Philippine /	Mixed	Various titles (see Annex 5)	Eng	Popular article in ITF magazine, one web article;

			multi-national x 2				three conference abstracts. (see Annex 5)
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Dissemination Measures		Total	Nationality	Gender	Theme	Language	Comments
14a	Number of conferences/seminars/workshops organised to present/disseminate findings from Darwin project work	2	-	mixed	Cycad horticulture Seed biology	Eng Eng	At Nongnooch (3 d); At Makerere Univ (0.5 d)
14b	Number of conferences/seminars/ workshops attended at which findings from Darwin project work has been presented/ disseminated.	1	-	-	International Cycad Congress (2015)	Eng	3 talks at meeting in Colombia

Physical Measures		Total	Comments
20	Estimated value (£s) of physical assets handed over to host country(s)		Small equipment budget for incubator (germination, £3000) and freezer (£1000, storage)
21	Number of permanent educational, training, research facilities or organisation established	0	-
22	Number of permanent field plots established	0	But two nurseries established either side of the Mpanga Gorge

Financial Measures		Total	Comments
23	Value of additional resources raised from other sources (e.g., in addition to Darwin funding) for project work		See Section 8 for details

Annex 4 Aichi Targets

Please note which of the Aichi targets your project has contributed to.

Please record only the **main targets** to which your project has contributed. It is recognised that most Darwin projects make a smaller contribution to many other targets in their work. You will not be evaluated more favourably if you tick multiple boxes.

	Aichi Target	Tick if applicable to your project
1	People are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.	✓
2	Biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.	
3	Incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.	
4	Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.	
5	The rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.	
6	All fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.	
7	Areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.	✓
8	Pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.	
9	Invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	
10	The multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	
11	At least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.	
12	The extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.	✓

13	The genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.	
14	Ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	✓
15	Ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.	✓
16	The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.	
17	Each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.	
18	The traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.	
19	Knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.	✓
20	The mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.	✓

Annex 5 Publications

Provide full details of all publications and material that can be publicly accessed, e.g. title, name of publisher, contact details. Mark (*) all publications and other material that you have included with this report

Type *	Detail (title, author, year)	Nationality of lead author	Nationality of institution of lead author	Gender of lead author	Publishers (name, city)	Available from (e.g. web link, contact address etc)
Magazine article	Bringing ancient plants back from the brink'. Pritchard H, Trees – Journal of the International Tree Foundation 72, 10-11. (September 2015)	UK	UK	Male	ITF	http://internationaltreefoundation.org/our-work/ :
Abstract in journal	Conservation status of the endemic cycads of the Palawan biogeographic region. Domingo A. Madulid & Esperanza Maribel Ago. (2015).	Philippine	Philippine	Female	South African Cycad Soc Journal	http://www.cycad2015.org/wordpress/wp-content/uploads/2015/07/Cycad-2015-Schedule-and-Abstracts-071015.pdf
Abstract in journal	Pollination and germination as limiting factors in the propagation of threatened cycads, Encephalartos (Zamiaceae). Phakamani Xaba, John S. Donaldson & Jayanthi Nadarajan. (2015).	South African	South African	Male	South African Cycad Soc Journal	http://www.cycad2015.org/wordpress/wp-content/uploads/2015/07/Cycad-2015-Schedule-and-Abstracts-071015.pdf
Abstract in journal	An overview of the world's cycads: current conservation status and trends from 2003-2014. John S. Donaldson, De Wet Bösenberg, Anders Lindström, Michael Calonje, Jeff	South African	South African	Male	South African Cycad Soc Journal	http://www.cycad2015.org/wordpress/wp-content/uploads/2015/07/Cycad-2015-Schedule-and-Abstracts-071015.pdf

	Chemnick & Andrew Vovides. (2015).					
Journal	Comparative biology of cycad pollen, seed and tissue in the context of plant conservation. J. Nadarajan, EE Benson, P. Xaba, K. Harding, A. Lindstrom, J. Donaldson, C. E. Seal , D. Kamoga, E. M. G. Agoo, N. Li , E. King and H. W. Pritchard (2017)	Malaysian	UK	Female	Botanical Review (in review)	
Web article	Students, teachers, experts..and cycads , Betty Kituyi Mukhalu (2017)	Ugandan	Ugandan	Female	Café Scientifique	https://cafescieastafrica.wordpress.com/news/
Newspaper, National	Rare plant faces extinction. Gerald Tenywa (2017)	Ugandan	Ugandan	Male	New Vision	14 March 2017, Volume 32, number 052, page 3
e-compendium	Cultivation Manual on the African Cycad Genus <i>Encephalartos</i> (Zamiaceae) [release 1]. Lindstrom A, Xaba P m'A, Zondi L, Mabuya N, Kamoga D, Donaldson J, Luwemba S, Agoo EMG and Pritchard HW (2017)	Swedish	Thailand	Male	-	69 pp. Under review by Cycad Specialist Group. Planned for CSG website and institutional websites
Report	Review of Uganda's annual reports to CITES. WCMC (May 2016)	-	-	-	WCMC	4 pp. WCMC
Report	Overview of trade in <i>Encephalartos</i> species in Africa, with particular focus on Uganda WCMC (April 2016)	-	-	-	WCMC	9 pp. WCMC

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Annex 6 Darwin Contacts

To assist us with future evaluation work and feedback on your report, please provide details for the main project contacts below. Please add new sections to the table if you are able to provide contact information for more people than there are sections below.

Ref No	21-003
Project Title	Protecting Ugandan endemic cycads from biodiversity loss and trafficking
Project Leader Details	
Name	Prof Hugh W. Pritchard
Role within Darwin Project	Leader
Address	Royal Botanic Gardens, Kew, Wakehurst Place, West Sussex RH17 6TN, UK
Phone	
Fax/Skype	
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Partner 1	
Name	Dennis Kamoga
Organisation	JERA – Joint Ethnobotanical Research and Advocacy
Role within Darwin Project	Project lead in Uganda
Address	P.O.Box 27901.Kampala, Uganda
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Partner 2	
Name	Prof John Donaldson
Organisation	SANBI – South African National Biodiversity Institute
Role within Darwin Project	Enabling institute (training and knowledge of cycad biology and CITES; CSG chairman)
Address	Kirstenbosch National Botanic Garden, Cape Town, South Africa
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Partner 3	
Name	Dr Anders Lindstrom
Organisation	Nong Nooch Tropical Botanical Garden (NNTBG)
Role within Darwin Project	Enabling institute (training and knowledge of cycad taxonomy and cultivation; and CSG member)
Address	34/1 Sukhumvit Highway, Najomties, Sattahip, Chonburi 20250 Thailand
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Partner 4	
Name	Dr Esperanza Maribel Agoo
Organisation	De la Salle Univ.,
Role within Darwin Project	Knowledge recipient
Address	Manilla, Philippines
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Partner 5	
Name	Emily King
Organisation	World Conservation Monitoring Centre
Role within Darwin Project	Trade reports
Address	Cambridge, UK
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Email	
Partner 6	
Name	Prof LI Nan
Organisation	Fairy Lake Botanical Garden,
Role within Darwin Project	Enabling institute (cycad cultivation; CSG member)
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