CRITICAL ECOSYSTEM PARTNERSHIP FUND

CEPF Final Project Completion Report

Organization Legal Name:	The University of Queensland
Project Title:	Sustainable Management of Ngali Nut Trees and Threatened Flying Foxes in the Solomon Islands
Grant Number:	65978
CEPF Region:	East Melanesian Islands
Strategic Direction:	1 Empower local communities to protect and manage globally significant biodiversity at priority Key Biodiversity Areas under-served by current conservation efforts
Grant Amount:	$79,644.00
Project Dates:	May 01, 2016 - June 30, 2018
Date of Report:	August 30, 2018

Implementation Partners

List each partner and explain how they were involved in the project

Ecological Solutions Solomon Islands (ESSI): subgrant partners, staff member Cornelius Qaqara led studies of *Pteralopex flanneryi* and *Pteralopex anceps* on Choiseul Island. Staff members Piokera Holland and Ikuo Tigulu assisted with data collection for endangered flying-foxes on Makira, Isabel, and Kolombangara. Cornelius Qaqara alos assisted with data collection on Guadalcanal.
Solomon Islands Ministry of Environment, Climate Change, Disaster Management and Meteorology: staff member Trevor Maeda provided assistance on Makira and advise on the Integrated Forest Management Project on Makira. Plans were forwarded to Agnetha Vave-Karemui for input and development.
Solomon Islands Ministry of Forests and Research: staff member Myknee Sirikolo provided assistance on Makira and advise on the Integrated Forest Management Project on Makira.
Lubee Bat Conservancy: provided additional funding for data collection on endangered monkey-faced bats
Solomon Islands Community Conservation Partnership (SICCP): Edmond Bate'e collaborated with SICCP to conduct research into ngali nut management in the Western Province.
Solomon Islands National University (SINU): environmental studies student Abraham Qusa volunteered on Makira island to learn new skills in field studies of the environment.

Conservation Impacts

Summarize the overall impact of your project, describing how your project has contributed to the implementation of the CEPF ecosystem profile

Mentorship of indigenous Solomon Islands biologists

This project has directly enabled the training and mentorship of 4 Indigenous Solomon Islands, future conservation leaders. These personnel are: Cornelius Qaqara, Piokera Holland, Ikuo Tigulu and Edmond Bate'e. One of these (Edmond Bate'e) successfully graduated with a Bachelor of Science (Honours) from the University of Queensland and is now employed in Solomon Islands conducting environmental assessments and monitoring. Two other (Cornelius Qaqara and Piokera Holland) are in the process of applying for scholarships for additional studies and will continue to be supported by Dr Tyrone Lavery. Reference letters for these two scholarship applicants are attached to the report.

Ngali nuts

Annual nut production and local harvest was estimated at eleven study sites on Malaita Island. We also estimated seedling recruitment and determined how often people plant ngali nut trees. We used questionnaire surveys on Malaita and Gatokae to assess how urbanisation is affecting the use of ngali nut, perception of its importance, and how much households rely on current supplies of ngali nut for food and income.

Estimates of nut production indicate that current supply can meet the demand for ngali nuts. Although few people plant seeds, natural seedling recruitment was high; there was 100% seedling recruitment at more than half of the sites in 2016–2017. Both supply and demand of ngali nuts is lower in more urbanised areas. The numbers of harvesters, nut supplies, and the proportion of nuts sold increased with increasing distance away from urban areas. All questionnaire respondents indicated that ngali nuts are very important for their households. However, most people identified the supply of this food source is declining and does not provide enough for their needs (for income). With plans afoot for the development of an export market, better management and conservation strategies should be implemented to protect and increase ngali nut tree populations in forests, to ensure that the future ngali nut supply is guaranteed to meet the demands of future generations in Solomon Islands.

Makira flying-fox

For Makira flying-fox this project has greatly increased our knowledge of the species' biology and the threats it faces. The known range of the specieshas been increased from 350 m above sea level, to 850 m asl. Drivers of hunting pressure are now better understood and regional variations have been identified, allowing strategic targeting of conservation efforts on Makira. However, it is clear that lack of biological data on this species remains a serious impediment. Measures to reduce the impacts of threats to Makira flying-fox have been prescribed, allowing a viable population of the species to be sustained throughout its range. This will also preserve the species' important role in seed dispersal and pollination. We have outlined what we see as the necessary next steps to conserve Makira flying-fox, focusing on three key aspects:

- **increase biological data (reproductive biology, population size and habitat preference);**
- **raise awareness about the need for sustainable levels of hunting on Makira; and**
- **support established community based organisations in Arosi and Bauro regions.**

We also conducted a community awareness program on Makira (Bauro highlands) focussing on the significance of Makira flying-fox, highlighted that it is an endemic species to the island. Most people were well aware of the importance of flying-foxes. They knew full well that flying-foxes disperse seeds, pollinate plants that are an important food source for people and that their guano is a useful fertilizer. However, many community members were not aware of the fact that Makira

flying-fox is only found on Makira or that island flying-foxes are a highly threatened group of animals.

Pteralopex

We have identified a number of measures to save monkey-faced bats. The principal of these is to support key areas that preserve habitat at known species localities. We have highlighted communities with conservation sentiments and suggest the immediate action to safeguard Pteralopex should be to strengthen conservation in these areas, prevent further habitat destruction and advocate reduced hunting pressure.

Beyond supporting communities to conserve their forests, we advocate urgent, legislative measures to reduce the immediate impacts of logging. Principal of these are introducing regulations to the Solomon Islands Code of Logging Practice that require:

- **the protection of all strangler figs against clearing associated with logging operations;**
- **a requirement for a spotter / catcher to be present during the felling of all trees in logging operations. A spotter catcher is an individual with training in the care and handling of animals, that is present to catch, care for, and relocate all animals that are displaced from felled trees; and**
- **a requirements to protect strangler figs from clearing– strangler figs must be listed as species prohibited from being cleared during logging operations.**

Planned Long-term Impacts - 3+ years (as stated in the approved proposal)

Impact Description	Impact Summary
- Long-term conservation of 6 species of priority mammal (critically endangered or endangered under the IUCN Red List) is improved, their extinction is avoided. - Biodiversity values of 6 Key Biodiversity Areas are increased through preservation of priori	The long-term conservation of 6 species of priority mammal (critically endangered or endangered under the IUCN Red List) has been improved and the biodiversity values of 6 Key Biodiversity Areas have been increased through preservation of priority mammals via: - prioritisation of key sites for the conservation of threatened mammals; - identification of key threatening processes and prescriptions for how these can be mitigated; - quantifying threats to endangered flying-foxes from hunting and identification of low hunting pressure sites for focusing conservation; - awareness raining through educational flyers on how to reduce the impacts of logging on threatened mammals; - a proposal to requirements to be included within the Solomon Islands logging code of conduct to minimise impacts to endangered mammals.

Planned Short-term Impacts - 1 to 3 years (as stated in the approved proposal)

Impact Description	Impact Summary
1. The potential impact of climate change on critically endangered flying-foxes and nagli nut trees are better understood by December 2017. 2. Five Key Biodiversity Areas (on Kolombangara, Marovo,	We have prepared detailed information on five Key Biodiversity Areas (on Kolombangara, Marovo, Guadalcanal, Bougainville and Choiseul) - outlining their conservation value and recognising key areas areas for critically endangered, and endangered mammals. These

Guadalcanal, Bougainville and Choiseul) have their conservation value improved and recognised via their identification as important areas for critically endangered and endangered mammals.	documents include information on the potential impact of climate change on critically endangered flying-foxes and ngali nut trees. Documents focusing on monkey-faced bats, Makira flying-fox and ngali nuts are appended to this report.
2. Information on the local cultural and global significance of New-Georgia monkey-faced bat (Pteralopex taki) and strategies for its conservation made available to customary landowners and government to assist conservation of the Kolombangara and Vangunu Key Biodiversity Areas by December 2017.	Information on the local cultural and global significance of New-Georgia monkey-faced bat (Pteralopex taki) and strategies for its conservation have been made available to customary landowners (Vangunu and Kolombangara) and Solomon Islands government to assist conservation of the Kolombangara and Vangunu Key Biodiversity Areas. A copy of this document is appended to this report.
3. Information on the local cultural and global significance of Greater monkey-faced bat (Pteralopex flanneryi) and Bougainville monkey-faced bat (Pteralopex anceps) and strategies for their conservation made available to customary landowners and government to assist conservation of the Mt Maetembe Key Biodiversity Area on Choiseul Island by December 2017.	Information on the local cultural and global significance of Greater monkey-faced bat (Pteralopex flanneryi) and Bougainville monkey-faced bat (Pteralopex anceps) and strategies for their conservation made available to customary landowners and Solomon Islands government to assist conservation of the Mt Maetembe Key Biodiversity Area on Choiseul Island. A copy of this document is appended to this report.
4. Information on the local cultural and global significance of Montane monkey-faced bat (Pteralopex pulchra) and Guadalcanal monkey-faced bat (Pteralopex atrata) and strategies for their conservation made available to customary landowners planning a conservation area in Guadalcanal Watersheds Key Biodiversity Area by December 2017.	Information on the local cultural and global significance of Montane monkey-faced bat (Pteralopex pulchra) and Guadalcanal monkey-faced bat (Pteralopex atrata) and strategies for their conservation have been made available to customary landowners planning a conservation area in Guadalcanal Watersheds Key Biodiversity Area. Copies of applicable documents have been sent to Noleyn Biliki and Joshua Kera - representatives of Uluna tribe.
5. A regime for managed offtake of Makira flying-fox (Pteropus cognatus) consistent with the long-term persistence of the species is in place by December 2017.	A conservation management plan for Makira flying-fox (Pteropus cognatus) has been developed and is appended to this report. The plan is consistent with the long-term persistence of the species and provides key conservation strategies: 1. support conservation organisations in areas where we have identified existing low hunting pressure (Tawatana) 2. support conservation of large areas of primary forest in high pressure hunting area (Bauro Highlands) and develop strategies to supplement dietary protein incorparated with the Integrated Forest Management Project.
6. The projected harvest of Ngali nuts over the next 50 years under various climate change scenarios is identified and measures to ensure a sufficient harvest	Edmond Bate'e successfully completed his study on the sustainability of nagli nut harvests in Solomon Islands. Edmond collected data on Malaita Islands and the Kavachi-Marovo Key Biodiversity Area using field data

are implemented by December 2017.	(collection of fruit, transects to calculate tree densities, seedling survival estimates), and questionnaire surveys of residents on their use of ngali nuts. Edmond has identified the future projected harvest of ngali nuts with recommendations to ensure a sufficient harvest. A copy of Edmond's ngali nut assessment is attached to this report.
7. Project participants, the Solomon Islands Government and local landowners are aware of the importance of key habitat areas and management requirements for threatened flying-foxes. Landowners and government have management plans to protect these species and areas by December 2017.	Project participants, the Solomon Islands Government and local landowners have been made of the importance of key habitat areas and management requirements for threatened flying-foxes. Management plans to protect these species and areas have been provided to landowners and government and are appended to this report.
8. Project participants, the Solomon Islands Government and local landowners are aware of the requirements to plan the provision of a sufficient ngali nut harvest with growing populations and climate change by December 2017.	Project participants, the Solomon Islands Government and local landowners are aware of the requirements to plan the provision of a sufficient ngali nut harvest via the preparation of a management report prepared by Edmond Bate'e. A copy of this document is appended to this report.
9. Indigenous Solomon Island conservation leaders are trained by December 2017.	This project has directly enabled the training and mentorship of 4 Indigenous Solomon Islands, future conservation leaders. These personnel are: Cornelius Qaqara, Piokera Holland, Ikuo Tigulu and Edmond Bate'e. One of these (Edmond Bate'e) successfully graduated with a Bachelor of Science (Honours) from the University of Queensland and is now employed in Solomon Islands conducting environmental assessments and monitoring. Two other (Cornelius Qaqara and Piokera Holland) are in the process of applying for scholarships for additional studies and will continue to be supported by Dr Tyrone Lavery. Reference letters for these two scholarship applicants are attached to the report.

Describe the success or challenges of the project toward achieving its short-term and long-term impact objectives

The major challenge of this project in achieving its short-term and long-term impacts has been the extreme lack of knowledge of our target species of flying-fox. We have greatly advanced basic distributional data and knowledge of the major threats facing these species. However, understanding in several key areas is still severely lacking, including:

- **data on population sizes**
- **understanding of the most important habitat types**
- **clarification of the long-term population trends; and**
- **basic natural history data (diet, how often they reproduce)**

Were there any unexpected impacts (positive or negative)?

The opportunity to contribute to the Integrated Forest Management Project on Makira was unexpected. We teamed up with the Solomon Islands Ministry of Environment, Climate Change, Disaster Management and Meteorology and the Solomon Islands Ministry of Forests and Research to provide information on the biodiversity of the Bauro Highlands. We also assisted with community awareness for the IFMP work and the IFMP team were also able to greatly assist us in the development of management plans.

Project Components and Products/Deliverables

Describe the results from each product/deliverable:

Component		Deliverable		
#	Description	#	Description	Results for Deliverable
4	Mentorship of Indigenous Solomon Island and Bougainville biologists and strengthening of the existing Memorandum of Understanding between UQ and SINU.	4.3	By December 2017 provide copies of two presentations (on flying-fox management, ngali nut management and general conservation) made to SINU students studying environment and ecology.	Copies of presentations made to SINU on the following have been provided to CEPF: > Conservation and management of flying-foxes in Solomon Islands (Diana Fisher) > Recovery planning for species conservation (Tyrone Lavery) > Management and sustainable harvest of Ngali nuts (Canarium indicum) in Solomon Islands
4	Mentorship of Indigenous Solomon Island and Bougainville biologists and strengthening of the existing Memorandum of Understanding between UQ and SINU.	4.4	By December 2017 report on a least one look and learn exchange visit between Solomon Island and Bougainville conservationists.	A look and learn exchange visit was undertaken in collaboration with the broader conservation activities enabled by this project and partnerships with the Australian Museum. Partners from The Kainake Project (Bougainville), and Kwainaa'isi Cultural Centre (Malaita) traveled to the Tenkile Conservation Alliance at Lumi, Papua New Guinea to look and learn about a Melanesian conservation area with long-term success and impact.
5	By end of the project, methods for fostering sustainability of the management and recovery plans supported under this project have been established.	5.1	By December 2017 a list of measures that can be undertaken by logging companies to reduce impacts on priority flying-foxes is prepared.	Information flyers detailing a list of measures that can be undertaken by logging companies to reduce impacts on priority flying-foxes has been prepared and printed in English, Bahasa Melayu and Pijin. Copies are appended to this report.
5	By end of the	5.2	By December	A list of management recommendations for ngali nuts

	project, methods for fostering sustainability of the management and recovery plans supported under this project have been established.		2017 a list of management recommendations for ngali nuts across Solomon Islands is provided to Kastom Garden Association.	across Solomon Islands has been provided to Shane Tutua (formerly associated with Kastom Garden Association).
5	By end of the project, methods for fostering sustainability of the management and recovery plans supported under this project have been established.	5.3	By December 2017 a list of recommendations on how project results can be incorporated into government policy is provided to Solomon Islands Ministry for Environment, Conservation and Meteorology.	A list of recommendations on how project results can be incorporated into government policy has been provided to Solomon Islands Ministry for Environment, Conservation and Meteorology.
5	By end of the project, methods for fostering sustainability of the management and recovery plans supported under this project have been established.	5.4	By December 2017 two additional funding applications are made to continue implementing the findings of flying-fox and ngali nut management and recovery plans.	Additional funding applications have been made to continue implementing the findings of flying-fox and ngali nut management and recovery plans. The first of these was a successful application in collaboration with the Australian Museum - via Fondation Segre. This funding allows support for grassroots conservation organisations on Bougainville and Malaita. The focus is on threatened mammals - particularly monkey-faced bats (Pteralopex spp.) https://www.rainforesttrust.org/project/protection-for-endemic-species-in-the-solomon-islands/ Lubee Bat Conservancy have twice made grants of USD$4,000 to assist with design and implementation of Pteralopex recovery plans.
6	Monitoring and reporting meets	6.1	Semi-annual safeguard	We have complied with CEPF safeguard policies on Indigenous Peoples and Involuntary Resettlement.

	CEPF requirements		monitoring reports, describing compliance with the safeguard policies on Indigenous Peoples and Involuntary Resettlement.	
6	Monitoring and reporting meets CEPF requirements	6.2	By December 2017, a complaints process for project partners and stakeholders has has been established and any grievances raised have been communicated to CEPF.	A complaints process for project partners and stakeholders was established with mechanisms to communicate any grievances raised to CEPF. There have been no grievances raised in relation to this project.
7	Sub-grant to Ecological Solutions Solomon Islands (ESSI)	7.1	By December 2017 provide documentatio n of award and monitoring of the sub-grant.	Documentation of award and monitoring of the sub-grant has been provided to CEPF.
7	Sub-grant to Ecological Solutions Solomon Islands (ESSI)	7.2	By December 2017 provide details of data collected on Choiseul relating to Pteralopex species. This includes photographs, GPS points, distribution records,	A copy of the summary report prepared by Cornelius Qaqara is appended to this report.

			behavioral observations, accounts of population status given by local landowners.	
1	A recovery plan monkey-faced bat (genus Pteralopex) that occur in Solomon Islands and Bougainville.	1.1	A recovery plan with conservation recommendations for the five known species of monkey-faced bat (genus Pteralopex) that occur in Solomon Islands and Bougainville.	A recovery plan with conservation recommendations for the five known species of monkey-faced bat (genus Pteralopex) that occur in Solomon Islands and Bougainville has been prepared and is appended to this report.
2	A management plan for Makira flying-fox (Pteropus cognatus).	2.1	A management plan and conservation recommendations for Makira flying-fox (Pteropus cognatus) is developed.	A management plan and conservation recommendations for Makira flying-fox (Pteropus cognatus) has been developed and is appended to this report.
3	A harvest management plan for ngali nuts (Canarium indicum).	3.1	A harvest management plan for ngali nuts (Canarium indicum) is prepared that includes long-term planning to sustain sufficient numbers of this important food tree.	A harvest management plan for ngali nuts (Canarium indicum) has been prepared including long-term plans to sustain sufficient numbers of this important food tree. The plan is appended to this report.

4	Mentorship of Indigenous Solomon Island and Bougainville biologists and strengthening of the existing Memorandum of Understanding between UQ and SINU.	4.1	By December 2017 provide a copy of an honours thesis is submitted by an indigenous Solomon Islander (Edmond Batee) for a Bachelor of Science (Honours) degree at The University of Queensland.	A copy of an honours thesis is submitted by indigenous Solomon Islander (Edmond Bate'e) for a Bachelor of Science (Honours) degree at The University of Queensland has been provided to CEPF.
4	Mentorship of Indigenous Solomon Island and Bougainville biologists and strengthening of the existing Memorandum of Understanding between UQ and SINU.	4.2	By June 2016 provide an employment contract and job description for ESSI and Cornelius Qaqara to collect additional data, liaise with communities and government and contribute to management plans	An employment contract and job description for ESSI and Cornelius Qaqara to collect additional data, liaise with communities and government and contribute to management plans has been completed and copies provided to CEPF.

Please describe and submit any tools, products, or methodologies that resulted from this project or contributed to the results.

Major deliverables of this project have been tools to guide the management of 5 threatened monkey faced bats, Makira flying-fox and ngali nut harvest. We have also developed informational flyers to help promote incorporation of measures to reduce impacts on threatened flying-foxes via logging.

Lessons Learned

Describe any lessons learned during the design and implementation of the project, as well as any related to organizational development and capacity building.

Consider lessons that would inform:

- Project Design Process *(aspects of the project design that contributed to its success/shortcomings)*
- Project Implementation *(aspects of the project execution that contributed to its success/shortcomings)*
- Describe any other lessons learned relevant to the conservation community

The biggest lesson learned during this project relates to the formulation of individual species recovery plans. I other parts of the world these are primarily government documents that prescribe actions to be undertaken by governements. In this project it soon became apparent that this type of activity really needs to be centred on landowning communities. In Solomon Islands >90% of land is customary and it is still very much the case that communities and community based organisations (CBOs) are key to driving individual species conservation. National and provincial governemts also remain key, however CBOs are a provide real strength and opportunity to target the recovery of single species.

Sustainability / Replication

Summarize the success or challenges in ensuring the project will be sustained or replicated, including any unplanned activities that are likely to result in increased sustainability or replicability.

The most significant challenges in ensuring this project will be sustained or replicated relate to a lack of funding and a lack of regulation in the logging industry. In the cases of threatened flying-foxes - we have identified logging as the most significant threat to conservation of our 6 target species. Logging represents a major threat in that is removes critical elements of these species habitat, namely hollow-bearing trees and strangler figs. We have proposed including provisions within the Solomon Islands Code of Logging Practice to reduce the impacts on flying-foxes (protection of strangler figs, and requirements ofr spotter / catchers). However, we have witnessed how existing provisions within this code (setbacks from waterways etc) are rearely adhered to. We have attempted to further influence logging companies by producing information flyers in Bahasa Melayu. This are being distributed in locations where they may be taken by logging company personell (e.g. ministry of forestry). Funding is alsways a challenging issue for conservation, especially so in Solomon Islands where government capacity is limited and few non-government organisations are engaged in terrestrial issues. Long-term funding for ongoing implementation of the work commenced in this project is critically needed.

Safeguards

If not listed as a separate Project Component and described above, summarize the implementation of any required action related to social, environmental, or pest management safeguards

Our work involved communities in surveys and ecological research. The information we have developed has been culturally appropriate and our approach has been to build on, and strengthen existing management regimes for natural resources. Our collaboration with local participants who speak indigenous languages has helped us to avoid grievences related to the project. We used village level discussions to monitor local opinion, positive and negative outcomes of the project. This involved an ongoing process of meeting with people in their homes, formal meetings with village leaders and arranging village forums. Community consultation will continued throughout the life of the project. People were encouraged to register any grievances through village and community leaders and contacts, and directly at community forums. We relied on existing leadership structures where we worked to monitor progress of the project and opinions of communities. No grievances have been registered for this project

Additional Comments/Recommendations

Use this space to provide any further comments or recommendations in relation to your project or CEPF

This project has raised the profile of the East Melanesian Islands and work of CEPF via some prominent media outlets:

- **http://blogs.discovermagazine.com/d-brief/2017/10/16/flying-fox-currency/#.W4RI9H4nYo8**
- **https://www.fieldmuseum.org/blog/how-save-giant-tropical-fruit-bats**
- **https://news.mongabay.com/2017/12/how-a-hunger-for-teeth-is-driving-a-bat-toward-extinction/**
- **https://pipap.sprep.org/news/solomon-islands-makira-flying-fox-teeth-are-currencyand-could-save-species**
- **https://www.sciencedaily.com/releases/2017/10/171016081959.htm**

This project also enabled the updating of IUCN RedList assessments for 5 species of *Pteralopex* and *Pteropus cognatus.*

Additional Funding

Provide details of any additional funding that supported this project and any funding secured for the project, organization, or the region, as a result of CEPF investment

Total additional funding (US$)
$672,355.64

Type of funding
Please provide a breakdown of additional funding (counterpart funding and in-kind) by source, categorizing each contribution into one of the following categories:

A *Project Co-Financing (other donors or your organization contribute to the direct costs of this project)*

B *Grantee and Partner Leveraging (other donors contribute to your organization or a partner organization as a direct result of successes with this CEPF funded project)*

C *Regional/Portfolio Leveraging (other donors make large investments in a region because of CEPF investment* or successes related to this project)

A Fondation Segre / Australian Museum (USD$289,199.64)
B Lubee Bat Conservancy (USD$4,000 2017–2018, USD$4,000 2018–2019)
C Rainforest Trust (USD$375,156) https://www.rainforesttrust.org/project/protection-for-endemic-species-in-the-solomon-islands/

Information Sharing and CEPF Policy

CEPF is committed to transparent operations and to helping civil society groups share experiences, lessons learned, and results. Final project completion reports are made available on our Web site, www.cepf.net, and publicized in our newsletter and other communications.

1. Please include your full contact details (Name, Organization, Mailing address, Telephone number, E-mail address) below

Tyrone Hamilton Lavery, Biodiversity Institute, The University of Kansas, Email: tyrone.lavery@uqconnect.edu.au, Phone: +1 312 799 9011