Emergency Response to Introduced Green Iguanas in Fiji

CEPF Small Grant Final Project Completion Report

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NatureFiji MareqetiViti

CRITICAL ECOSYSTEM PARTNERSHIP FUND

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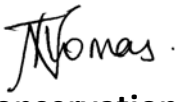
Signature: 

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CEPF SMALL GRANT FINAL PROJECT COMPLETION REPORT

Organization Legal Name:	Fiji Nature Conservation Trust
Project Title:	Emergency Response to Introduced Green Iguanas in Fiji
Date of Report:	15th February 2012
Report Author and Contact Information	Nunia Thomas nuniat@naturefiji.org

CEPF Region: Polynesia – Micronesia Hotspot

Strategic Direction: 1" "To prevent, control and eradicate invasive species in key biodiversity areas' and in particular 1.2. 'Control or eradicate invasive species in key biodiversity areas, particularly where they threaten native species with extinction.'

Grant Amount: USD $19, 994

Project Dates: 01st July 2010 to 30th June 2011. An extension was granted to 31st December 2011.

Implementation Partners for this Project (please explain the level of involvement for each partner):

This project was able to effectively engage a wide array of stakeholders in government, non-government, conservation and non-conservation and local communities.
The Fiji Department of Environment and the University of the South Pacific initiated the response survey to the iguana incursion. This action was followed by the set up of the multi-stakeholder American Iguana (Green iguana, *Iguana iguana*) Eradication Campaign Task Force which was initially spearheaded by the Fiji Department of Agriculture. Towards the end of 2010 and in early 2011, the Biosecurity Authority of Fiji was chairing the task force meetings and campaigns. NatureFiji-MareqetiViti had the role of being the technical adviser and implementer of actions identified for the project.
We were able to secure expert herpetologists (from Taronga Zoo, Australia) to voluntarily conduct scientific surveys to develop the eradication plan.
Tabled below are the stakeholders and their level of involvement in the project.

Table 1: Table of project stakeholders and their level of involvement in the Green iguana emergency response project.

	Level of involvement in project			
Project Partner	**Member of American iguana eradication task force**	**Technical advice/ research**	**Funding**	**Personnel/ Awareness campaign**
Fiji Department of Environment	x			
Fiji Department of Agriculture	x	x	x	
Fiji Department of Forests	x			
Secretariat of the Pacific Community	x	x		
Biosecurity Authority of Fiji	x		x	x
National Trust of Fiji		x		x
Cakaudrove Provincial Office				x
Fiji Police Force				x
Pacific Invasives Initiative		x		

University of the South Pacific (Institute of Applied Sciences)		x		
Taronga Conservation Society Australia		x	x	

Conservation Impacts

Please explain/describe how your project has contributed to the implementation of the CEPF ecosystem profile.

CEPF Strategic Direction	CEPF Investment Priority
1. "To prevent, control and eradicate invasive species in key biodiversity areas"	**1.2. 'Control or eradicate invasive species in key biodiversity areas, particularly where they threaten native species with extinction.'**

An endangered species in its native range of Central and South America, the green iguana *Iguana iguana* has become a pest in as many as thirty countries outside of its native range. Its invasiveness and associated problems is a surprisingly new concept – simply because it was not monitored - but it is becoming increasingly apparent that green iguanas pose a serious threat to biodiversity and the economic well-being of nations into which it has been introduced.

In Puerto Rico for example, the green iguana was introduced through the pet trade in the 1970s; they now have a population of 4 million (exceeding the human population) and the species is an airstrike hazard at the international airport where personnel have removed up to 1798 iguanas per year and annually costing $80,000 for aborted landings because of their presence on the runway.

In its introduced range, green iguanas can reach densities of up to 223 individuals per hectare which is higher than the densities in its native range; have serious negative impact on local crops and infrastructure (Lopez-Torrez *et al.* 2011). The general consensus (Savidge 1987; Day and Thorpe 1996; Mermin *et al.* 1997) is that introduced reptiles, particularly human mediated introductions have caused native fauna extinctions, hybridization with native species and increased incidence of salmonellosis in human populations (Lopez-Torres *et al* 2011).

The aims of this project were to:

i) contain the Green iguana in its current range in Fiji (to the islands of Qamea, Laucala and Matagi); and

ii) conduct awareness campaigns to inform the general public about the presence of this iguana in Fiji and the threats they pose and in the process,

iii) produce and implement a well-informed, widely consulted and feasible eradication plan and program.

Please summarize the overall results/impact of your project against the expected results detailed in the approved proposal.

The overall project design had 2 stages:
Stage 1: (funding being reported here) – to dramatically increase the level of awareness of the green iguana; collect information; train staff and pilot eradication methods.
Stage 2 (funding to be sought) will complete the eradication.

A very key and important result of this project is that through this CEPF grant, NFMV was able to leverage more funding from the Ministry of Primary Industries and the Biosecurity Authority of Fiji

to begin activities for stage 2 of the project. Overall, the project leveraged FJD 96, 482 – a sum which would not have been possible had we not had this CEPF grant.

Listed below are the expected outcomes for stage 1; and the actual outcomes. Incorporated in here are the results of activities funded by the Fiji government. The financial report will clearly highlight that without the CEPF grant, the project would not have been as widely conducted as it has been so far. Similarly, the funds secured from government were critical to the full implementation of the project.
Technical reports relating to these outcomes are attached in Annexes 2 to 9.

Activity/Action	Outcome
Public Awareness Outreach Programme	All communities in northern Taveuni, Laucala, Rabe, Kioa and Vanua Levu (Natewa-Buca Bay), are fully aware of the Green iguana and the dangers it poses; the implications of the declaration of a Biosecurity Area; and, understand the risks in moving Green Iguanas between islands.

Actual outcome:
The awareness campaigns were conducted in 41 villages, 6 schools and one settlement. Above and beyond this, NFMV published newspaper articles (Annex 10), presented at Provincial council meetings, district level meetings and created awareness amongst government and non-government stakeholders on the seriousness of the incursion (Annexes 1 – 9). The project was strongly supported by the Ministry of Primary Industries and gained nationwide attention.

Training	Island Coordinators are fully trained to enable the full extent of Green Iguana infestation to be determined; that they can react quickly and with confidence to new reports; and are able to pilot eradication methods.

Actual outcome:
Six series of training for nesting beach monitoring, iguana handling and euthanasia were conducted;
One hundred and eight individuals underwent training to be confident enough to implement the nesting beach monitoring and euthanasia;
Fourteen community-based Temporary Biosecurity Officers were confirmed by the Biosecurity Authority of Fiji in October 2011.
See Annexes 2, 6, 8 and 9.

Piloting Eradication Methods	Worldwide experience with eradicating Iguanas will be reviewed and appropriate methods trialed in Fiji

Actual Outcome:
Four experts were engaged for this aspect of the project; and a network of world experts in iguana eradication methods was established (through the Pacific Invasive Species Initiative). These experts informed the development of the Eradication Strategy document (Annex 4).
One full month of scientific observations (Blossom 2010, Annex 3) and 3 months of trialing methods and building local capacity to implement these methods was conducted (Van Veen 2011, Annex 7).
One scientific publication in the Conservation News section of *Oryx* 45(3), 321-323. See Annex 11.

Please provide the following information where relevant:

Hectares Protected: N/A
Species Conserved: N/A
Corridors Created: N/A
Describe the success or challenges of the project toward achieving its short-term and long-term impact objectives.

1.0 Green iguana ecology in Fiji

We were able to gather scientific data to support the eradication strategy document (Annex 7) and gauge a better understanding of the ecology of the American iguanas in Fiji. Data from the community awareness campaigns were added to produce a calendar of iguana activity helping us understand some aspects of their ecology here in Fiji.

This data is now comparable to global case studies. We have been able to ascertain the following:

The iguanas are most visible during their breeding and nesting season (beginning as early as April and through to October);

Hatchlings were observed in late December to early February;

Nesting areas were confirmed in four sites (Qamea and Matagi Island); and fifty other possible nesting sites identified for further intensive monitoring and action.

2.0 Green iguana eradication

In terms of locating and capturing iguanas, the studies conducted through the project confirmed that the most effective method of eradicating the iguanas are to wait till their breeding and nesting season (when they are most visible). Through this knowledge we were able to capture 26 individuals. Of the twenty six, 12 were captured by local community members who had been trained in nesting beach monitoring and iguana capture. More than four hundred and sixty-five eggs were destroyed; and all captured females were killed. This data confirms that local communities can participate in the eradication programme if provided with the training and equipment to implement the eradication. See Annex 7.

3.0 Community involvement

The project has confirmed that while communities can monitor the nesting areas for iguana activity it needs a more efficient method to confirm iguana nests. Further consultation with the network of experts has indicated that the project needs to invest in wildlife detector dogs for this aspect of the eradication plan; and thereby eliminate the iguana eggs to control and minimize the population growth. The exponential growth of the Green iguana population, has serious implications for the eradication efforts and the risk of the spread of the iguana to other parts of Fiji.

The project has confirmed that the Green iguanas are breeding on two islands: Qamea and Matagi. They are probably also breeding on Laucala but because of the access restrictions this was not confirmed. There have been no confirmed breeding populations on Taveuni – Fiji's biodiversity hotspot; and all actions identified the need to ensure that breeding populations do not establish breeding populations on Taveuni. The iguanas can swim long distances. Boat operators traveling between Qamea and other islands have witnessed and captured iguanas swimming between islands The immediate actions identified here is to strengthen biosecurity monitoring at ideal incursion sites on Taveuni, monitor potential nesting sites and strategically remove female iguanas. See Annex 7.

We have identified one individual from the community to continue the technical aspect of the eradication programme – Isikeli Pita – who was an understudy to Rick Van Veen on his three months research on Qamea Island.

4.0 Finances

The project was successfully able to leverage FJD 96, 482 from the Fiji government to achieve the objectives of raising awareness and implement the eradication strategy document.

The funds leveraged from government were however post implementation of specific activities; and government was invoiced upon completion of the activities.
In the long term, this is not a feasible way to administer the project and was only possible in this circumstance because we had the CEPF grant in place.
In the absence of the CEPF grant, this manner of implementing projects is financially risky and we have made an administrative decision to not continue this. Therein lies the challenge, because since the cessation of the CEPF grant, we have not been able to continue awareness campaigns and monitoring and eradication on the ground as government has not been able to secure funds to continue the project; allowing for the risk of the project to be discontinued and for the American iguana to spread to other parts of Fiji.
The immediate practical actions that need to be funded to prevent the spread of the iguanas are:

1. Contain the iguana population to Qamea, Matagi and Laucala by strengthening the biosecurity protocol on Taveuni and neighbouring islands;
2. Increased awareness campaigns and strengthened biosecurity for boat and ferry operators to their crew and passengers; and
3. Develop incursion response plan for non-infested islands, ferries and boats;
4. Train wildlife detector dogs to periodically sniff out Green iguanas at points of incursion and potential nesting sites on Taveuni and high risk non-infested islands.

In the long term, financing is needed for:

5. Eradication of the iguanas from Qamea, Matagi and Laucala. This will need a good scientific methodology and community participation. The immediate actions have been identified in the Eradication strategy document.

Were there any unexpected impacts (positive or negative)?

The expectations for this project were immense – it assumed that there would be community and government support for the project – and it had been successful in this. The eradication issue raised some animal ethics issues, but this was expected and all methods used were to a global standard for animal ethics as mentioned in the Eradication strategy document.
The greatest challenge will be keeping the eradication issue alive. In the project we learnt that Puerto Rico did not begin to see the impacts of the iguanas until some 30 years after the first incursion. This iguana has only been in Fiji for a decade now, and the lack of visual impact on non-infested islands at this point in time is a challenge in gathering community support. The Eradication document addresses this through continued awareness campaigns.

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 projects designed or implemented by your organization or others, as well as lessons that might be considered by the global conservation community.

Project Design Process: (aspects of the project design that contributed to its success/shortcomings)

The project design was a good design:

1. Public Awareness Outreach Programme. Without this component of the project, this issue would not have gathered the support it has from the local communities and Provincial office. The manner in which it was delivered: getting their input into the eradication strategy will undoubtedly ensure community and stakeholder support.
2. Training. This component of training local communities in monitoring and euthanasia was an eye-opener; and a good strategy to build local community capacity.

3. Piloting eradication methods. This component is an important one to test the cost-effectiveness of eradication methods. The research for this component helped establish the network of experts identified for the project.

Project Implementation: (aspects of the project execution that contributed to its success/shortcomings)

There are several aspects of the project execution that were important for its implementation:

1. Establishing a steering committee. Whilst there was a steering committee in place through the American iguana eradication campaign task force, the project implementation was still largely led by NatureFiji-MareqetiViti – a non-government organization rather than by a government body. This meant that the communities and other stakeholders identified NatureFiji-MareqetiViti as the lead organization for an important issue that needed government leadership. We tried to remedy this having all media released through the Biosecurity Authority of Fiji; and it seems to have worked for other communities not involved in the project. From this project we have learnt that we needed to help the Biosecurity Authority of Fiji by building their staff capacity in biodiversity related invasive species. This has been identified as a key follow-up action for invasive species work in Fiji. Having the steering committee in place and commenting on the progress reports helped NatureFiji-MareqetiViti secure the additional funds to implement the project.
2. Local counterparts. Having local counterparts to lead the project on Qamea and Taveuni were imperative. In this project our local counterparts were the village headmen of Naiviivi Village (Jerry Surumi) and Togo Village (Inoke Koli), who were exceptional individuals who led the teams on the ground. We also saw that working with the local village headmen was very efficient when we had the support of the Provincial office; so keeping the Provincial office updated through reports and by also helping the village headman articulate his report was very helpful. Another very important stakeholder was the National Trust of Fiji who already had established networks on the island. Engaging their local project officer, Sipiriano Qeteqete and his network helped greatly in the outreach programme and in establishing local community ownership of the issue.
3. Scientific/ Technical Advisory Group. There was no formal TAG established, but certain individuals were consulted throughout the project to ensure scientific integrity. Having good science from the very beginning of the project greatly helped in communicating the issue and eradication methods to the non-science and non-conservation communities. We knew that the follow-up data collection would be done by local communities, so teaching them foremost of some basic science ethics and methods were very helpful – the data sheets sent in have been filled out appropriately with minimal invalid data. Experts were engaged and lived amongst the communities during the project time. The presence of these individuals and their engagement of local communities to participate in the research greatly helped in the communities' understanding of the project objectives.
4. Community consultations. The community consultations towards the eradication strategy were very important. There is no doubt of community support and capacity to participate in the eradication plan. The only issue that needs to be addressed now is the funding to implement the strategy and further research.

Other lessons learned relevant to conservation community:

See above.

ADDITIONAL FUNDING

Provide details of any additional donors who supported this project and any funding secured for the project as a result of the CEPF grant or success of the project.

Donor	Type of Funding*	Amount	Notes
Fiji Government	B	FJD 96, 482	The government funding

			support only after NFMV was able to prove through this CEPF grant that there needed to be an emergency response to the green iguana incursion and that there was strong community support for it.
European Union (through BirdLife International Pacific Secretariat)	C		NatureFiji-MareqetiViti was able to secure funds to do the Fiji component of the regional BirdLife Invasive Species Programme. The project implementation period is from 2012 to 2015. NFMV will be leading the components on developing an incursion response plan on Taveuni for the mongoose and the green iguana; continuing the awareness campaigns with local communities and general public; working the Biosecurity Authority of Fiji on strengthening inter-island biosecurity protocol.

Additional funding should be reported using the following categories:

A *Project co-financing (Other donors contribute to the direct costs of this CEPF 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 project.)*

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

Sustainability/Replicability

Summarize the success or challenge in achieving planned sustainability or replicability of project components or results.

The design of the public outreach and the eradication strategy or the science behind the strategy are replicable. The methods are outlined in the technical reports and the Eradication strategy documents attached.

We were able to secure funds to develop the incursion response plan, and further awareness campaigns from external sources (BirdLife International's European Union Regional Grant); and had been discussing with government on funds for the eradication component but to date we have not been able to secure any further funds from government. We will have to seek for external sources of funding whilst assisting government develop their capacity to manage this type of incursion and projects.

Summarize any unplanned sustainability or replicability achieved.

Safeguard Policy Assessment

Provide a summary of the implementation of any required action toward the environmental and social safeguard policies within the project.

N/A

Additional Comments/Recommendations

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.

Please include your full contact details below:

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*****If your grant has an end date other than JUNE 30, please complete the tables on the following pages*****

Performance Tracking Report Addendum

CEPF Global Targets

(Enter Grant Term)

Provide a numerical amount and brief description of the results achieved by your grant.
Please respond to only those questions that are relevant to your project.

Project Results	Is this question relevant?	If yes, provide your numerical response for results achieved during the annual period.	Provide your numerical response for project from inception of CEPF support to date.	Describe the principal results achieved from July 1, 2007 to June 30, 2008. (Attach annexes if necessary)
1. Did your project strengthen management of a protected area guided by a sustainable management plan? Please indicate number of hectares improved.				Please also include name of the protected area(s). If more than one, please include the number of hectares strengthened for each one.
2. How many hectares of new and/or expanded protected areas did your project help establish through a legal declaration or community agreement?				Please also include name of the protected area. If more than one, please include the number of hectares strengthened for each one.
3. Did your project strengthen biodiversity conservation and/or natural resources management inside a key biodiversity area identified in the CEPF ecosystem profile? If so, please indicate how many hectares.				
4. Did your project effectively introduce or strengthen biodiversity conservation in management practices outside protected areas? If so, please indicate how many hectares.				
5. If your project promotes the sustainable use of natural resources, how many local communities accrued tangible socioeconomic benefits? Please complete Table 1below.				

If you answered yes to question 5, please complete the following table.

Table 1. Socioeconomic Benefits to Target Communities

Please complete this table if your project provided concrete socioeconomic benefits to local communities. List the name of each community in column one. In the subsequent columns under Community Characteristics and Nature of Socioeconomic Benefit, place an X in all relevant boxes. In the bottom row, provide the totals of the Xs for each column.

Name of Community	Community Characteristics								Nature of Socioeconomic Benefit												
									Increased Income due to:												
	Small landowners	Subsistence economy	Indigenous/ ethnic peoples	Pastoralists/nomadic peoples	Recent migrants	Urban communities	Communities falling below the poverty rate	Other	Adoption of sustainable natural resources management practices	Ecotourism revenues	Park management activities	Payment for environmental services	Increased food security due to the adoption of sustainable fishing, hunting, or agricultural practices	More secure access to water resources	Improved tenure in land or other natural resource due to titling, reduction of colonization, etc.	Reduced risk of natural disasters (fires, landslides, flooding, etc)	More secure sources of energy	Increased access to public services, such as education, health, or credit	Improved use of traditional knowledge for environmental management	More participatory decision-making due to strengthened civil society and governance.	Other
Total																					

If you marked "Other", please provide detail on the nature of the Community Characteristic and Socioeconomic Benefit: