

## MONITORING AND EVALUATION PLAN

**Title:** Monitoring and Evaluation Plan for Far and Away Islands, Republic of Pacifica

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**Reviewers:** R. View (Moore Consulting)

### Version History:

| VERSION     | DATE                            | AUTHOR  | REASON FOR CHANGE                           |
|-------------|---------------------------------|---------|---|
| Version 0.4 | 3 <sup>rd</sup> September 2010  | V. Reed | Created                                     |
| Version 1.0 | 10 <sup>th</sup> September 2010 | V. Reed | Minor changes made after independent review |

### Citation:

This report should be cited as:

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## Monitoring and Evaluation Plan

### 1. INTRODUCTION

The purpose of this Monitoring and Evaluation Plan is to detail the project outcome indicators that will be measured and used to evaluate the success of the Far and Away Island Rat eradication project. See the Project Plan by Reed and Toa, 2010 for details of the project design. The project Operational Plan (Toa and Reed, 2010) and the project Biosecurity Plan (Sagolo and Reed, 2010) should also be read for background information on the project.

### 2. INDICATORS

- *Explanation: Record how each indicator will be measured for each project outcome. This Monitoring and Evaluation Plan covers the monitoring of project outcomes only. Monitoring of operational factors is recorded in the Operational Plan. Project management monitoring and reporting will be as recorded in the Project Governance Section of the Project Plan.*

*Prompts*

- *Copy and paste the outcomes and indicators from the Monitoring the Success of the Project section in the Project Plan.*
- *Review the Feasibility Study Report and the Project Plan for any existing baseline monitoring data and include in this section if available.*
- *Surveillance monitoring will also take place as part of the biosecurity work – this will be recorded in the Biosecurity Plan.*
- *Remove this Help Box when the Monitoring and Evaluation Plan is complete.*

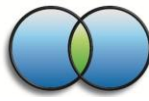
*Useful tools:*

- *Guidelines on Monitoring and Evaluation.*

| Outcome   | Indicator   | Data Collection Method  | Baseline Situation  | Timing  | Responsibility   |
|---|---|---|---|---|--|
| <i>The outcome that the indicator is measuring</i>                              | <i>What to measure to evaluate progress towards achieving the outcome</i> | <i>How the indicator will be measured – include details in the next section</i> | <i>The indicator measurement before the eradication operation</i> | <i>How often will the indicator be measured</i> | <i>Who is responsible for analysis and evaluation.</i> |
| <b>Objective 1 Eradicate Pacific rats <i>Rattus exulans</i> from Far Island</b> |   |   |   |   |  |

|  |                                   |   |   |  |            |
|--|-----------------------------------|---|---|--|------------|
| 1.1 No Pacific rat population on Far Island.                                       | Absence/presence of Pacific rats  | Tracking tunnels, searches for sign, sightings of rats, wax tags, baited snap traps, poison bait stations | Large population present  | All visits to islands after baiting, but with formal monitoring for success starting >1year after. | V. Reed    |
| 1.2 Increase in population size of native bird species on Far Island.              | All forest bird populations       | 5-min bird count at established points over islands   | Available from Feasibility Study Site Visit on 25-30 June 2009.                 | Annual counts to commence 1 year after baiting. Continue until review in 2015                      | R. Suleosi |
|  | Population size of crimson pigeon | 5-min bird count at established points over islands   | Available from Feasibility Study Site Visit on 25-30 June 2009.                 | Annual counts to commence 1 year after baiting. Continue until review in 2015                      |            |
|  | Population size of common noddy.  | Counts of occupied nests (= no. of pairs) at colonies from known vantage points and binoculars            | To be measured during pre-operation monitoring site visit.                      | Annual counts to commence 1 year after baiting. Continue until review in 2015                      | R. Suleosi |
|  | Population size of black tern.    | Counts of occupied nests (= no. of pairs) at colonies from known vantage points and binoculars            | To be measured during pre-operation monitoring site visit.                      | Annual counts to commence 1 year after baiting. Continue until review in 2015                      | R. Suleosi |
| 1.3 Increase in native vegetation densities on Far Island.                         | Photo points                      | Single digital photo points   | Baseline photos available from Feasibility Study Site Visit on 25-30 June 2009. | Photos to commence 1 year after baiting, to occur every 2-3 years                                  | R. Suleosi |
| <b>Objective 2. Eradicate Pacific rats <i>Rattus exulans</i> from Away Islands</b> |                                   |   |   |  |            |
| 2.1 No Pacific rat population on Away Island.                                      | Absence/presence of Pacific rat   | Tracking tunnels, searches for sign, sightings of rats, wax tags, baited snap traps, poison bait stations | Large population  | All visits to islands after baiting, but with formal monitoring for success starting >1year after. | V. Reed    |
|  |                                   |   |   |  |            |
|  | All forest bird populations       | 5-min bird count at established points over islands   | To be measured during pre-operation monitoring site visit.                      | Annual counts to commence 1 year after baiting. Continue until review in 2015                      | R. Suleosi |

|   |  |   |   |   |  |
|---|--|---|---|---|--|
| 2.2 Increase in population size of native bird species on Away Island                                     | Population size of crimson pigeon.   | 5-min bird count at established points over islands   | To be measured during pre-operation monitoring site visit.                      | Annual counts to commence 1 year after baiting. Continue until review in 2015   |  |
|   | Population size of common noddy  | Counts of occupied nests (= no. of pairs) at colonies from known vantage points and binoculars                        | To be measured during pre-operation monitoring site visit.                      | Annual counts to commence 1 year after baiting. Continue until review in 2015   | R. Suleosi                                     |
|   | Population size of black tern.   | Counts of occupied nests (= no. of pairs) at colonies from known vantage points and binoculars                        | To be measured during pre-operation monitoring site visit.                      | Annual counts to commence 1 year after baiting. Continue until review in 2015   | R. Suleosi                                     |
| 2.3 Increase in native vegetation densities on Away Island  | Photo points   | Single digital photo points   | Baseline photos available from Feasibility Study Site Visit on 25-30 June 2009. | Photos to commence 1 year after baiting, to occur every 2-3 years   | R. Suleosi                                     |
| <b>Objective 3. Safeguard the ground dove populations on Far and Away Islands.</b>                        |  |   |   |   |  |
| 3.1 1 Increase in population sizes of ground dove on Far and Away Islands.                                | Population size of ground dove   | 5-min bird count at established points over islands.<br><br>Record all sightings of colour-banded and unbanded birds. | To be measured during pre-operation monitoring site visit.                      | Annual counts to commence 1 year after baiting.<br><br>Sightings to be recorded on every trip to islands<br><br>Continue until review in 2015 | R. Suleosi                                     |
| <b>Objective 4. Improve the capacity of NPC to undertake larger eradication projects.</b>                 |  |   |   |   |  |
| 4.1 NPC staff have skills to undertake further eradication projects of a similar size to current project. | Skills and knowledge in areas of planning and implementation of current project. | Review of current project documentation.  | Documentation does not exist.   | Review of project documentation on completion of Final Project Report.  | Independent technical reviewer (to be decided) |



### **Monitoring of Reptiles, Invertebrates, Plant Pests**

It has been decided that any monitoring of reptiles and invertebrates is currently beyond the resources and current expertise of the NPC to carry out in the medium term future.

However, if resources and expertise improve, it is possible to conduct some evaluations of changes as a result of the rat eradication. Past work (e.g. McCormack et al (2000, 2001) and Parita *et al* (2004) for lizards and invertebrates, Leary (2001) for weed species) can be used to provide a rough baseline of activity though these surveys were designed to determine species diversity rather than to set up a quantitative monitoring system. However they will show roughly how abundant the species were and provide ability to look for any major changes.

Surveys of nesting turtles (December-March) have been carried out on Far and Away beaches on several occasions and these are expected to be repeated as part of the WMPA monitoring programmes. Though rats may theoretically have impacts on turtle hatchlings this is likely to be a minor factor compared to other mortality factors.

### **Social Monitoring**

No formal social monitoring is proposed for the project. However the community at Magaia village is small, and any outcome effects of the project (e.g. employment opportunities, income derived from assisting conservation projects on the islands, greater conservation awareness etc) should be relatively easily assessed through NPC's continued commitment to the islands and the natural involvement with the local community in this regard. Long-term community reaction to a successful eradication can be assessed through their on-going input into the Windward Marine Protected Area management.

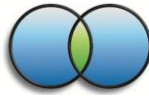
## **3. DATA COLLECTION DETAILS**

*Explanation: Explain the details of the methods for measuring each indicator*

*Prompts*

- *Use this section to give the details on each of the monitoring methods*
- *Explain the methods to be used and other details (area, timing, etc)*
- *Are the methods likely to be scientific? What advice or scientific protocols are you following?*
- *Remove this Help Box when the Monitoring and Evaluation Plan is complete*

### **Approximate Schedule of Monitoring Required**



June 2012 (1 year post-baiting) and at least annually until review in 2015:

- 5-min bird counts
- Seabird colony counts
- Ground dove sightings
- Rat monitoring
- Vegetation photopoints

All the above (with exception of vegetation photopoints) will also be done opportunistically when trips to the islands make this possible.

Post-2015:

Data will be examined in 2015 and future monitoring requirements will be determined. It is likely that monitoring will be scaled back to at least a 2-3 year cycle, i.e. monitoring efforts will occur only once every 2-3 years. The exception would be for rodent and ant monitoring, which will need to be regularly undertaken as part of biosecurity surveillance measures.

**Five-minute Bird Counts**

The well-established method of 5-minute bird counts will be used to measure changes in general forest bird abundance. Specific count sites have been established on each island.

A transect of nine count stations at c. 200m intervals has been established on Far Island, with each station permanently marked with yellow plastic markers and its location recorded using a GPS.

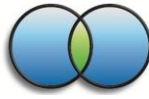
A similar transect was not established on Away due to the small size of the island and difficulties of access. However 5-min bird counts will be made at two set locations, the campsite and at the high point of the island. Data has been collected at these sites and a further three days of 'pre-eradication' data will be obtained in June 2011, prior to baiting in July 2011.

The transect on Far Island should be counted as frequently as possible taking advantage of any expeditions spending more than a day on the island. Ideally three days of counts would be undertaken on each occasion with the first count started in the morning (after 8am) and the last count completed in the afternoon (by 1pm). The transect should generally be counted in the same direction, from west to east.

Following the eradication it is proposed that, as a minimum, annual surveys (3 days of counts) should be conducted in June each year for comparison with pre-eradication data.

Opportunistic surveys at other times would be valuable to build up a more complete picture including seasonal variation in bird numbers and conspicuousness.

Equipment Required: GPS; map and GPS co-ordinates showing where the stations are; notebook and pen, plus normal field and safety equipment.



## **Ground Dove**

Observations of ground doves should be recorded during each and every visit to the island. Information required is as follows:

- Date, time of day
- Location (as precise as possible – GPS reading if available)
- No. of birds (single, pair or family group) and sex
- Banded (if so record colour-band combination) or unbanded?

Following the operation it is expected that most of the ground dove population will be banded so band details will also be needed.

Equipment Required: Binoculars; GPS; map of island; notebook and pen, plus normal field and safety equipment.

## **Seabirds**

Only the smaller ground-nesting species (e.g. black terns and noddies, those species which are most vulnerable to rats) will be monitored in detail. If possible larger species such as frigatebird and booby will be counted at the same time but their numbers are less likely to be influenced by successful rat eradication so will remain a secondary priority.

Sites of existing tern and noddy colonies are recorded using GPS and have been mapped. Vantage points, where the colonies can be observed through binoculars without undue disturbance are established and GPSed. The same vantage points will be used for all future monitoring. The counts from all of the vantage points will be averaged to give a mean number of pairs.

All future monitoring trips to the island will be aware of the possibility of new colonies forming or old ones shifting location. Any new sites will be recorded using GPS and will be monitored on the same schedule as current ones.

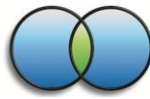
Monitoring will attempt to count occupied nests, which equates to breeding pairs. Timing of surveys should occur during the egg incubation period.

Equipment Required: Binoculars; GPS; map of island and GPS co-ordinates showing where the colonies are; notebook and pen, plus normal field and safety equipment.

## **Rat monitoring**

Post-operation monitoring for rats will take place for two reasons:

- 1) Project outcome monitoring. To assess whether the project objectives have been achieved, ie
  - Objective 1 Eradicate Pacific rats *Rattus exulans* from Far Island.
  - Objective 2 Eradicate Pacific rats *Rattus exulans* from Away Island.



- 2) Surveillance as part of the Biosecurity Plan. To know if an incursion has occurred and an incursion response is required to avoid re-invasion.

Surveillance work is recorded in the Biosecurity Plan.

Formal monitoring for success of the eradication will follow procedures outlined in the PII Guidelines on Rodent Monitoring Techniques. A series of at least 20 monitoring stations will be run for at least 3 nights on each island at least once per year. These stations will consist of a baited tracking tunnel, a wax tag, and a baited snap-trap. The latter will be tied to sloping tree trunks to avoid interference from crabs.

The need is simply to determine presence or absence of rats, so efforts do not necessarily need to be consistent or comparable, rather they should be as extensive as possible given practical restraints.

Equipment Required: GPS; map and GPS co-ordinates showing where the permanent stations are; 20 tracking tunnels, 20 wax tags; 20 snap-traps and bait; permanent wooden tunnels; notebook and pen; plus normal field and safety equipment.

### **Vegetation**

Any potential changes in vegetation will be recorded through collection of a set of photos over time from set photo-points. For ease of monitoring, photopoints will be identical to the 5-minute bird count stations. At each photopoint, four separate photos will be taken, facing the four major compass points. Each monitoring period (once every 2-3 years approximately) these photos will be retaken, and a picture will be built over time of any significant vegetation changes (e.g. changes in sub-canopy or ground cover density or composition).

Equipment Required: GPS; map and GPS co-ordinates showing where the stations are; notebook and pen, plus normal field and safety equipment.

## **4. REFERENCES**

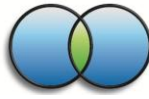
*Explanation: Use this section to record other documents that have been used and referred to in preparing the Monitoring and Evaluation Plan*

*Prompts*

- *List the references alphabetically*
- *Remove this Help Box when the Monitoring and Evaluation Plan is complete.*

**NB. For the purposes of this example document some references have been invented and some are real. The real documents are shaded like this and some are valuable references for developing projects. The others in the example reference list do not exist!**





Merton, D., Climo, G., Laboudallon, V., Robert, S. & Mander, C. 2002. Alien mammal eradication and quarantine on inhabited islands in the Seychelles. Pps. 182-198 in Veitch, C.R. and Clout M.N. (eds). *Turning the tide: the eradication of invasive species*. IUCN SSC Invasive Species Specialist Group, IUCN, Gland, Switzerland and Cambridge, UK.

Pierce, R. 2010. Biosecurity Guidelines For The Phoenix Islands, Kiribati. Eco Oceania Pty Ltd Report for Government of Kiribati and Critical Ecosystem Partnership

McCormack, I., Parita, R. & G.H. Aitchison. 2000. Report on the first monitoring visit to Far and Away Islands 25-31 July 2000. IAS Technical Report No. 2003/10. Institute of Applied Sciences, The University of South Pacific, Fiji.

McCormack, I., Parita, R. & Hound, S. 2001. Report on the second monitoring visit to Far and Away Islands, Republic of Pacifica 4-8 June 2001. IAS Technical Report No. 2003/11. Institute of Applied Sciences, The University of South Pacific, Fiji.

Parita, R., McCormack, I. & P. Lester. 2003. Report on third monitoring trip to Windward Islands. Unpubl. file report to Pacific Environmental Aid, Suva.

Sagolo, D. and Reed, V. 2010. Biosecurity Plan for the Eradication of Rats from Far and Away Islands, Republic of Pacifica. Unpublished report prepared for National Parks and Conservation Department, Republic of Pacifica.

Leary, C. 2001. Exotic plants of the Far and Away Islands, Republic of Pacifica. *Institute of Applied Sciences Technical Report* No. 2001/08. The University of the South Pacific, Suva, Fiji. 10p.

Parita, R., McCormack, I., Best, P. 2004. Fauna survey of the Windward Islands, Republic of Pacifica - 3<sup>rd</sup> Progress Report. *IAS Technical Report* No. 2004/05. Institute of Applied Sciences, University of the South Pacific, Fiji.

Toa, M. and Reed, V. 2010. Operational Plan for the Eradication of Rats from Far and Away Islands, Republic of Pacifica. Unpublished report for Department of National Parks and Conservation, Republic of Pacifica.

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