

The Rufford Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Dr Michael White
Project title	First biodiversity assessment of Mangarongaro Motu, Tongareva Atoll
RSG reference	13924-1
Reporting period	From 14 th October 2013 to 20 th October 2014
Amount of grant	£5887
Your email address	Crwban681@yahoo.co.uk
Date of this report	20 th October 2014

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Identify biodiversity		70%		In progress. Birds almost done, fish and invertebrates need more time.
Scientific training for local community		80%		In progress and going well. Includes some lessons and fieldwork with local school.
Habitat mapping		80%		Major areas defined, detailed surveys are underway. Plants identified.
Atoll Council		85%		Good relationship achieved, regular talks and advice provided.
Traditional Wisdom		90%		Much has been learned and I now share this with the younger folk too.
Food security		40%		Most food species are now known, protecting them requires time for the islanders to decide themselves to protect them. All take must be sustainable.
Environmental impacts		90%		Most issues identified. Some (e.g. green tides) are sporadic, cause unknown. Greatest problem is marine pollution, plastics especially. We've done four beach cleans and counted items (95% plastic; 99% man-made consumer goods)

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

The main difficulties were logistic, which are expected in remote Oceania. Shipping is infrequent and unpredictable, which meant getting motorboat fuel was challenging (it came from Hawai'i in the end). A waterproof digital camera came from New York (bought online), but getting species guidebooks was the biggest problem. Suitable books were available in USA but they were unable to send them abroad; electronic versions were investigated but none could be purchased (inability to accept payments with international credit cards, lack of US zip code, software incompatibility etc.). New Zealand did not stock the books; Australia got them for me very quickly (from USA within 10 days) but could not send them abroad. Eventually I found someone (Maggie Muurmans ~ another Rufford grantee) in Australia to collect the books and post them to me in the Cook Islands. The books arrived in Rarotonga in January 2014, but then took another 7 months to get to Tongareva. Habitat mapping could be achieved OK, but the various life-stages of key species remained less clear. I wrote to Jane Raymond in July 2014 explaining the situation, and asked if Rufford would like an update (which was sent) and we could then let fieldwork unfold at its own pace beyond the initial year. This is what is presently happening. Weather is another cause of delays: sometimes wind and waves prevent small boat use for several weeks; cyclone intensity, frequency, and impacts vary each year.

3. Briefly describe the three most important outcomes of your project.

- Tongareva supports a diverse range of wildlife, and many of its habitats are still close to pristine with most trophic groups represented. It is the atoll's isolation and small human population that allows this to occur. In much of the world biodiversity has already gone, or been severely diminished, due to human activities and encroachment.
- Mangarongaro, Atiati and Vaiere motu (cays) are now shown to be important refuge for biodiversity. In particular we provide a haven for nesting seabirds (the next nearest island is 450 km away), a breeding area for some shark species (e.g. blacktip reefshark *Carcharhinus melanopterus*) and the most important sea turtle habitat in the Cook Islands (nesting, mating, and juvenile development).
- Species diversity is lower than what may be encountered in a tropical rainforest, mostly because our remote location prevents many species reaching these oceanic atolls. However, local species are abundant and our impacts upon them are small, even for those species that are taken for food. We therefore contribute substantially to our regional biodiversity and ecosystem security. Our findings concern Data Deficient or threatened species (IUCN Red List), thus we aid global understanding.

4. Briefly describe the involvement of local communities and how they have benefited from the project (if relevant).

One-to-one conversations with islanders often occur; these talks allow our environment, food needs, threats, and concerns for our way of life to be discussed. Folk are very open to ideas, and I combine science with traditional wisdom to share in a culturally acceptable way.

People are interested in my research and several now participate in surveys. I know that they talk about this later, as other people mention what we were doing during fieldwork. Islanders learn best by doing, so I give the theory as part of our practical work. I always explain what I'm doing.

Working with the children is great - they are our future leaders, so we teach them about nature now, thus also influencing future generations. I've taught biodiversity lessons at school, this has been well received and they've then tried to teach their parents. This term we'll do some fieldwork with senior classes.

I'm launching a community environmental group that will help advise the Atoll Council. Living in a subsistence reality is always a balance between meeting your daily needs; perhaps making a small amount of money and giving nature the time to reproduce and grow. Sustainability is all.

5. Are there any plans to continue this work?

Definitely. Our surveys so far show we are an important site for biodiversity and such findings would not normally be known scientifically. Oceania has much to offer our world, as long as scientists do not assume that folk with no tertiary qualifications have nothing important to say - they do.

6. How do you plan to share the results of your work with others?

Publication of scientific papers; discussions with the Atoll Council; community presentations; reports to national government; advice to Pacific Regional bodies (www.sprep.org www.noaa.gov). Data added to Birdtrack, OBIS-SEAMAP; IUCN Red List as appropriate. Conferences as and when.

7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?

The Rufford Foundation grant has lasted for more than a year. Almost half of the grant was spent at the beginning to order equipment and fuel supplies, then we had to wait for cargo to arrive. Once we had motorboat fuel surveys began, but we still lacked a camera and species identification guides. Internet costs were paid periodically and those portions of the budget are used. Recently our major work got underway, and all remaining funds are allocated for local stipends.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Fuel and 2-stroke oil	1766.16	1986.33	+ 220.17	See below: point <i>b</i>
Internet	449.57	468.56	+ 18.99	See below: point <i>c</i>
Equipment: camera, books, flash drives	588.72	609.95	+ 21.23	See below: point <i>d</i>
Local stipends	3082.75	2816.73	- 266.02	See below: point <i>e</i> & <i>f</i>
Exchange rate				See below: point <i>a</i>
Total	5887.20	5881.57	- 5.63	

- a) The original grant £5887.20 was calculated using an exchange rate (xe) 1NZ\$ = £0.5352, which would have yielded NZ\$ 11000. At receipt the xe had changed 1NZ\$ = £0.5442 and we lost about \$200 in the transaction, which included a bank fee (£5.63). We received New Zealand \$ 10808, and then used xe = 0.5442 throughout to recalculate the budget categories.
- b) The cost of fuel per drum and 2-stroke oil had increased slightly.
- c) The cost of internet was slightly exceeded.
- d) The cost of equipment from overseas was increased by customs duty.
- e) The one factor we could control was the number of surveys and surveyors (local stipends), so the deficits were offset here.
- f) As mentioned in Section 7 above, all remaining funds are being used for the ongoing surveys.

9. Looking ahead, what do you feel are the important next steps?

Most important is to continue building our knowledge of nature at this atoll. We are clearly an important location for seabirds to breed at, some species are resident all year. A single year is not enough time to understand migratory patterns, especially as weather varies considerably here. Our surveys found nesting birds on other motu, so an obvious step forwards is to assess biodiversity on the entire atoll. This will take several years as species migratory patterns are affected by oceanic and atmospheric conditions, which in turn may limit food availability. An idea is to consider ringing some seabirds; although some Arctic nesting species (e.g. bristle-thighed curlew *Numenius tahitiensis*) are

known to use tropical Pacific islands to avoid the Alaskan winter: we are seeing them all year round, and wonder if they've changed their behaviour and might now be nesting locally.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?

Yes. Mentioned on www.honucookislands.com , during Community talks, FaceBook; Acknowledged in White (2014). *Tongareva Atoll: the most important sea turtle habitat in the Cook Islands. Testudo 8: 19-37.* <http://library.seaturtle.org/8489> I am planning a future paper on seabirds at Tongareva, you'll be mentioned in that too. We have planned a Science Fair at Omoka School on 4th December 2014 - I'll do 2-3 presentations based on this work (this is the 1st time science has been on the curriculum). I will include you in my report to NOAA www.noaa.gov due at the end of the year; they funded sea turtle genetics, but our Rufford study sheds light on the greater biodiversity of the motu.

11. Any other comments?

I expect to complete the major survey work by New Year. As soon as I've written a report that I'm happy with, I will email you a copy and final photographs. Thank you very much for your support.