

## Final Evaluation Report

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Your Details	
<b>Full Name</b>	Jennifer Keeping
<b>Project Title</b>	The importance of cleaning stations to critically endangered wildlife on shallow coastal reefs
<b>Application ID</b>	32205-1
<b>Grant Amount</b>	£5,300
<b>Email Address</b>	<a href="mailto:jenniferakeeping@hotmail.co.uk">jenniferakeeping@hotmail.co.uk</a>
<b>Date of this Report</b>	12.3.2022

**1. 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
Moor remote underwater cameras to observe the 'cleaning station' areas of the rocky reefs				We have moored long-life remote cameras for 62 hours between July and August 2021 and recorded 26 sharks, 63 reef manta, 36 other rays, four turtles, one bottlenose dolphin and one humpback whale. Most importantly, there were 23 sightings of bowmouth guitarfish, one of our critically endangered target species for observations.
Analyse results and disseminate to the public				Several showings of the footage and project presentations to the public have been undertaken, including the Rufford's own conference in Maputo, Mozambique. However, more cameras and more hours of footage are required for legitimate scientific analysis for publication.
Scientific publication of the results				The deployments of the cameras have been highly successful with incredible sightings of rare marine species in the cleaning stations. However, for scientific publication, more cameras and more hours are required to attain reasonable sample size for scientific publication.

**2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.**

The cameras were delayed in coming to Mozambique and then required several 'test runs' before we were able to set them down on the reef for their 5–6-day recordings. However, now the camera delivery route to Mozambique has now been ironed out and preliminary tests are complete, so this is unlikely to be a problem again.

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

- The first long-term, undisturbed sightings of the mind blowing diversity and abundance of marine life on the rocky reefs of Mozambique throughout

daylight hours and when divers are not there to disturb the animals' natural behaviour.

- Helping the development of new deep learning computer algorithms to recognise any large-bodied marine animals as they pass by the camera which reduced the time for footage analysis considerably.
- Show the local divers, fisherman, tourists and fellow researchers the incredible footage and the start of what these sightings mean for the importance of these 'cleaning station' areas that are on the rocky reefs along a lot of the Mozambican coastline.

#### **4. What do you consider to be the most significant achievement of this work?**

So far, the most important achievement has been the realisation that there is an incredible abundance of marine life, a lot of the species threatened with extinction, on the accessible rocky reefs of Mozambique. Although this project was formulated knowing that some sightings of rare and endangered marine life would be captured, the number of animals passing the cameras is in outstanding quantities.

It is imperative this work continues to get enough data for scientific publication and more public workshops and presentations to make the local fishers and Mozambican Government realise the importance of these rocky reefs and make steps towards conservation action before they are overfished.

#### **5. Briefly describe the involvement of local communities and how they have benefited from the project.**

The local fishers and those working in the diving industry (Mozambican divemasters, skippers, etc.) all have the same ultimate need – the abundant persistence of marine animals into the future. This footage of our underwater cameras has shown these people the incredible abundance of life that is passing by the rocky reefs. The local divemasters have played a pivotal role in the project by reviewing the majority of the 62 hours of footage thus far. A 'highlight reel' has been shown to a group of local fishers and families who rely on these reefs for sustenance. All who see the footage are taken aback by the amount of marine life (in both diversity and abundance) and are motivated to take steps to conserve it.

#### **6. Are there any plans to continue this work?**

Absolutely – it is imperative this work continues to ensure the biodiversity of these rocky reefs are properly quantified and presented to stakeholders (including local, international and government-level) so to properly conserve these rocky reef areas.

#### **7. How do you plan to share the results of your work with others?**

With more cameras and more footage, more stakeholder presentations will be undertaken. To legitimise the project, it is likely several scientific publications will be produced including "addressing the endangered species' abundance and

frequencies", "the implications for conservation in Mozambique" and "the development of a deep-learning computer algorithm to recognise marine megafauna species in underwater footage", to name a few.

**8. Timescale: Over what period was the grant used? How does this compare to the anticipated or actual length of the project?**

The original grant projected timeline was 12-months for deployment and analysis of camera footage. Currently, this and more has been achieved (as we have also had workshops and presentations). However, we still need more cameras and more footage to make legitimate scientific analysis for publication to attain credibility in the study and further our conservation efforts.

**9. Budget: 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. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.**

Item	Budgeted Amount	Actual Amount	Difference	Comments
Camera deployment and retrieval	3600	2750	-850	Fewer dive trips required due to delay in camera delivery
Workshop events	200	200		Exactly as planned
Subsistence	300	500	+200	More than planned as local divemaster's also assisted in the analysis of footage
Camera equipment	1200	1850	+650	More than planned as delivery costs were more than expected.
<b>TOTAL</b>	<b>5300</b>	<b>5300</b>		

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

I keenly plan to apply for a second year of Rufford small grant funding to bring this project to completion, with another two cameras and more footage for scientific publication and presentations to stakeholders.

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

Several social media posts and all presentations feature the Rufford logo, the website and social media handles. I also made a point to send thanks to Rufford at

the end of every presentation and workshop, as none of this work would've been possible without this funding!

**12. Please provide a full list of all the members of your team and briefly what was their role in the project.**

**Jennifer Keeping** – project lead. I planned the project, applied for funding, collected the data and analysed the results.

**Jonas Jocinta** – Local biologist. Reviewed the footage and analysed the results.

**Kim Roques** – Owner of All Out Africa Marine Research Centre – provided the facilities for storage, charging and deployment of the cameras, and the location of workshops and presentations of the results.

**13. Any other comments?**

I'd like to express my heartfelt thanks to all at Rufford who work hard to make important projects, like this one, possible. Without your support for this last 12-month period many endangered species, some critically endangered, would have continued to pass by the reefs unnoticed and unrecorded. In recording their presence, we have legitimate, scientific evidence to implement conservation action. Thank you, and I look forward to our continued work together in the future.









