Final Evaluation Report

Your Details	
Full Name	Muhammad Danie Al Malik
Project Title	Improving Spinetail Ray Population in Savu Sea through Scientific Research and Conservation Education for Local Stakeholder and University
Application ID	30112-1
Grant Amount	£5,996
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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
Webinar of Elasmobranch conservation status including Spientail ray in Savu Sea				The webinar was held to share the knowledge of current conservation status and morphological identification of elasmobranchs, including spinetail ray in Savu Sea. We invited the speakers from multi-stakeholders like Balai Kawasan Konservasi Perairan Nasional (BKKPN) as the authority institution in Savu Sea, Indonesia Manta Project as the NGO that is concerned about elasmobranchs in Savu Sea, and individual expertise of elasmobranchs. The total of 333 participants joined the webinar from stakeholders such as governments, NGOs, students, lecturers and researchers.
Training of collecting sample and molecular genetic conservation				The training was managed to share the knowledge of sample collection with 39 participants from 10 local universities. This training focused on collecting elasmobranch samples, including from spinetail ray, for molecular genetic purpose. We also provide 3 days of online training on how to do the molecular process from the DNA extraction, PCR, electrophoresis, sequencing, and data analysis.
Tissue samples collection				We collaborated with Misool Foundation and Indonesia Manta Project to collect the spinetail ray samples from three locations (Solor, Nangalili, and Rote) in Savu Sea. The total of 70 samples of spinetail ray (39 from Solor, 29 from Nangalili and 2 from Rote) were collected during this project. However, to fulfil the genetic population study, we needed 20 samples from each

				location, while we only collected two samples from Rote. We will keep in touch with our partners and local fisherman to collect more samples from Rote site.
Laboratory work & data analysis				We have done lab work and data analysis from two locations (Solor and Ngangalili). We have not yet analysed the data from Rote because the lack of samples collected. In this analysis, we used two molecular markers, which are mtDNA (ND5 loci) and microsatellites to study the barcoding and population structure between location sampling in Savu Sea.
Scientific publication				We are currently in progress on joining *Simposium Hiu & Pari di Indonesia ke-3* (national symposium) and writing a scientific paper to share these research results. The symposium will be held from 7th – 8th April 2021, and we will submit the article on a scientific journal in the following months.
Building networking				We have made an MoU with two universities in Savu Sea (Nusa Cendana University and Nusa Nipa University). In this collaboration, we also managed to train the students and staff of these universities on the genetic methods used to help protect the conservation and sustainability of spinetail ray in Savu Sea. We also collaborated with Missol Foundation and Indonesia Manta Project to gather information on spinetail ray trade and conservation.

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

We had a difficulty with the sample collection from Rote; we only collected two samples from the total of 20 needed for proper analysis. This is due to the spinetail ray caught in Rote by fisherman is only from bycatch.

Due to the Covid19 situation, we also forced to hold the capacity building activities with local stakeholders. The activities were also limited only using online platforms, limiting the training activities, especially those that need the hands-on experience.

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

- To get the information about the current conservation status of spinetail ray in Savu Sea, we held a discussion forum through a webinar. We invited the relevant speakers such as the representative from the local government - Balai Kawasan Konservasi Perairan Nasional (BKKPN), representative from NGO - Indonesia Manta Project and representatives from elasmobranch expertise. This webinar also attended by 333 participants from multi-stakeholders. During this event, the speakers share their expertise on elasmobranch conservation conducted at Savu Sea.

- Increasing the local university's capacity on molecular genetic methods and the application of molecular genetic to study spinetail ray's population in Savu Sea. We held a short online course for 3 days and invited 39 participants (lecturers and students) from 10 local universities in Indonesia. We teach the participants on how to do samples collection for molecular purpose and also showed them on how to do the molecular laboratory processes (extraction, PCR, electrophoresis, and data analysis). To identify the success of this short online course, we conducted pre-test and post-test during the event. The overall teaching method that we gave has been increasing participants' knowledge (result grade: pre-test: 80.6 % and post-test: 91.2%). It is expected that this type of course will help the local university to give other perspectives about ocean conservation study in Savu Sea.

- As our effort to build the networking on protecting the sustainability of spinetail rays in Savu Sea, we collaborated with two local universities (Nusa Cendana University and Nusa Nipa University). We have signed MoUs with these universities, hoping that this will increase the capacity building and elasmobranch-related research activities between our institution and the universities. We also build our collaboration and connection with Misool Baseftin and Indonesia Manta project in sample collection

4. Briefly describe the involvement of local communities and how they have benefitted from the project.

In this project, we have collaborated with local NGOs such as Misool Baseftin, Indonesia Manta Project, and local fisherman to get the spientail ray samples in Solor, Nangalili, and Rote. The local university also helped us build a network between stakeholders related to the current information about conservation and sustainability plan of elasmobranchs, including spinetail rays in Savu Sea. Furthermore, the local authority like *Balai Kawasan konservasi Perairan Nasional* (BKKPN) was given us the current status conservation and information on elasmobranch species, including spinetail rays in Savu Sea during the webinar.

The local NGOs benefitted because we will work together in publishing this research finding and writing the scientific journals. Meanwhile, the local universities (lecturers, students and researchers) benefitted from the capacity building programmes that we held, which will help to increase their students and staff knowledge and understanding in molecular genetic and elasmobranch conservation. As for the local authority, we will share the research finding to help with the protection and sustainable policy of elasmobranchs in Savu Sea.

5. Are there any plans to continue this work?

We plan to increase the area of study throughout Indonesia, and also add additional species among the elasmobranch group, not only using the spinetail rays. We will be focusing on comparing the population of other mobula species found within Indonesia's Fisheries Management Areas (FMAs). This research will help the Indonesian Government decide the effective policies, especially for the sustainability of mobulids.

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

We have already given a presentation of the primary research result to the local universities during the short online course of "Marine Genetic Conservation" held from 11-13 January 2021. In the next 2 months, we will give a presentation of this result research with other stakeholders through the National Symposium "Hiu dan Pari 3" in April 2021. Then, we plan to publish the research findings in a scientific publication.

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

In the 1st to 3rd month of this project, we collaborated and discussed with NGOs local such as Misool Baseftin and Indonesia Manta Project related to sampling activities in three locations (Solor, Nangalili, dan Rote). Then, in the 4th to 9th month of this project, we performed molecular analysis from spinetail ray samples found in Nangalili and Solor. Two molecular methods were used from mtDNA and microsatellite to validate morphological identification and structure population. Furthermore, we have held a webinar to know the current issue of mobulids conservation, including spientail rays in Savu Sea and introducing this project to stakeholders in Savu Sea.

In the 10th to 12th month of this project, we conducted the molecular data analysis. Then, we collaborated with two local universities (Nusa Cendana University and Nusa Nipa University) to build the shorth online course on marine genetic molecular with invited 10 local universities in Indonesia.

In the 6 months after this project has finished, we plan to do a presentation about this result in a Symposium Nasional. Then, we will publish this result in scientific journal. Moreover, we will keep in touch with Indonesia Manta Project, local university, and fisherman to get additional samples from Rote to fulfil the minimum target of population study (20 samples), while we only have two spinetail ray samples from Rote).

The progress of the project is following the proposal, except for the number of samples collected from Rote, and also the used of online platform during the workshop.

8. 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
Transport & Fuel	3358	3358		
Internet & Communication	50	121	+71	Covered from unused budget from accommodation section
Accommodation	1521	431	-1090	
Food	330	330		
Subsistence payment	135	135		
Material & Supplies	100	661	+-561	Covered from unused budget from accommodation section
Equipment	502	502		
Symposium and Publication		458	+458	Covered from unused budget from accommodation section. This budget has not used yet, and will use for symposium and publication cost in the following month
TOTAL	**5996**	**5996**		

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

The critical next step for spinetail ray conservation in Savu Sea was to provide this information to the conservation managers or authorities in the Savu Sea. We also needed to assist local universities in research about elasmobranchs in Savu Sea, because this type of study is still lacking.

Furthermore, we need to collect more samples from broader population in Indonesia. Understanding broader population of spinetail ray throughout Indonesia will give us insight into the connection between population within certain Fisheries Management Areas (FMAs), which was also affected by this species' migration

behaviour. It will be beneficial for government policy to manage the effectiveness of FMAs in Indonesia.

10. 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?

We have used the Rufford Foundation logo in any events, banners or presentations during the program held. We also mention this grant in every introduction of every events held during this project.

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

Muhammad Danie Al Malik,
He role was to arrange all the activities in this project and conducting lab work & analysis, and leading in the scientific paper writing

Mohamad Iqbal Herwata,
He role was to supervise this project. He has advanced knowledge and have most experiences about the study of Elasmobranch, including Spinetail ray in Savu Sea

Lumban Nauli Lumban Toruan,
He role was to provide and to communicate the collaboration between our project teams and Local Universities in Savu Sea

Astria Yusmalinda, Yuliana Fitri Syamsuni, Ni Kadek Dita Cahyani, Andrianus Sembiring, and Ni Putu Dian Pertiwi
Their roles were to give advice and input for this project on capacity building program and molecular working & data analysis process. They have advanced knowledge about the molecular study used in this project.

12. Any other comments?

During the COVID-19 situation, we hold the capacity building activities with local universities through a short course online. The course has been challenging to us because we need to make a virtual genetic laboratory and lead the discussion forum through the step-by-step methods of the laboratory process (extraction, PCR and electrophoresis). As the result, the participant can still follow all the steps of the course and they were enthusiast to discuss anything about this molecular process.


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Bagi peserta terpilih, diharapkan untuk hadir dan mengikuti seluruh materi kegiatan
Materi
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Teori dan simulasi praktek ekstraksi DNA, PCR, Elektroforesis, dan Sequencing
Analisa data: Barcoding dan Filogenetika
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