Final Evaluation Report

Your Details	
Full Name	Agus Sudibyo Jati
Project Title	Developing an optimal monitoring program for the Endangered Togean babirusa through the support of citizen scientists
Application ID	36883-1
Date of this Report	11 January 2023

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
Map the distribution of Togean babirusas			■	Using occupancy modelling, remote sensing, and GIS, we have created a predicted map of babirusa distribution. However, we acknowledge that we used spatial data (i.e., Landsat-8 imagery) acquired in 2018-2021, while the project took place in 2022. Therefore, we will update our analysis for the coming months using a new set of spatial data from the respective period.
Develop a cost-effective monitoring protocol for the Togean babirusa		■		We are working with one of our partner institutions (BPSI LHK Makassar) to make the monitoring protocol a regulation. Considering this importance, we decided to work on the monitoring protocol over the next 6 months, allowing us to utilise more resources and analysis to produce this procedure. We already have all the data from this project to develop the protocol.
Train national park wardens and local citizen scientists to conduct the monitoring			■	We successfully organised a 3-day training workshop for the national park wardens and local citizen scientists. We also invited participants from all over Indonesia to join virtually via Zoom. We donated the equipment we used in the project (i.e., camera traps and GPS) to the Kepulauan Togean National Park agency for future monitoring in the islands.

2. Describe the three most important outcomes of your project.

a). Factors affecting the babirusa occupancy were identified. We found that the Togean babirusa has the highest occupancy probability in pioneer and old growth forests, and if a large forest patch is nearby. This emphasises the importance of forest to the species and that deforestation is among the greatest threats this babirusa is facing.

b). A predicted map of the babirusa distribution is available. We have generated the occupancy-based distribution map of the Togean babirusa throughout its entire

distribution range. Through this map, we can visualise the areas where the babirusa is most likely to present and where the species has disappeared. The map is presented in the detailed final report.

c). A group of citizen scientists was trained and equipped to perform babirusa monitoring. More than 30 people, including national park wardens and Togean locals, participated in the training workshops. At the end of the training, we donated our camera traps (25 units) and GPS to the national park agency to be used for future monitoring activities. With human resources trained and equipped, the management authority (i.e., the national park) should be able to perform babirusa monitoring regularly. The rest of our camera traps were donated to study Buru babirusa (*Babyrousa babyrussa*). This study is currently being proposed by Mr. Bayu Broto, one of my collaborators.

This project was the first field-based ecological study of the Togean babirusa. The project also covered the entire distribution range of the species. Therefore, we believe our work will contribute significantly to the conservation and knowledge of the species. For example, we found that forest is essential for the presence of the Togean babirusa (see point 1 of the previous question). This finding is contrary with the previous interview study which stated that Togean babirusas were more often seen in agricultural areas. On the other hand, deforestation is happening in the islands, becoming a threat to the species. A large, forested area in the islands is not part of the national park, and a large area within the park boundaries is not forest. We have discussed and shared our findings with the national park agency. We hope the agency can incorporate our findings into the next revision of the national park zonation.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

There were two main challenges we faced while implementing the project. First, locals were divided into those who support the national park establishment and those who against it. One of our camera traps was damaged by locals (the memory card was stolen) because they thought it belonged to the national park. We got the stolen memory card back after the thief learned that our project was not a national park activity. Since then, we hid our relationship with the national park and explained to local leaders that this was "a student project" every time we visited a new village territory. The national park understood the situation and went along with our strategy.

Second, we did not expect inflation to happen during the project implementation. Gas prices in Indonesia were soaring high, especially in a remote area like the Togean Archipelago, where no modern gas station is available. Because we used a lot of water transportation (i.e., speedboat), gas was a staple logistic to our fieldwork. Initially, we estimated that we could finish our camera trapping after five to six trapping sessions. However, it would make the transportation cost too excessive. After careful calculation, we decided to use our spare camera traps (the cameras provided by the University of Maine) in the fieldwork, allowing us to work on more sites per trapping session. By doing so, we could finish our fieldwork after four sessions and adjust our budget accordingly.

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

We recruited two locals as our primary assistants: Mr. Suardi and Ikal. Mr. Suardi is a member of MMP, a group of locals who assists the national park in performing activities in the field. Ikal is a local youth whose previous job was gathering rattan in the forest. When we negotiated with Ikal to join this project, he was unemployed. These two have outstanding skills in forest exploration and identifying animal tracks. However, they had very little experience with GPS and camera traps. During our first month, we extensively trained them to operate hand-held GPS, set up camera traps, and collect field data. We also involved them when reviewing videos and identifying animals from our camera traps, thus introducing them to the biodiversity of their homeland.

We are very proud of Mr. Suardi and Ikal for their growth in becoming citizen scientists. They are now very capable of leading their own team to perform babirusa monitoring. When we worked in a different village territory, we usually involved more locals from that village, allowing us to split into two small teams: one was led by me, and the other was led by either Mr. Suardi or Ikal. When working with new locals, we always shared our knowledge and skills with them. Many people often assumed that Ikal was the project leader (or the student) because of his abilities and the fact that he led the team.

We promoted Mr. Suardi, Ikal, and some other locals who helped us in the field to the national park management. We hope the national park will involve them in the future monitoring programs and learn camera trapping from Mr. Suardi and Ikal.

5. Are there any plans to continue this work?

We will apply for further grants to initiate direct conservation projects and more studies for babirusa and other wildlife in the Togean Archipelago. These grants may target activities such as habitat improvement, genetics and behavioural study, community empowerment to reduce their dependency on converting forests, and strengthening the local monitoring team (i.e., train more locals to be citizen scientists). We aim to have this follow-up project in the next 3-4 years.

We also plan to organise another similar training in mid-2023, involving a wider range of participants. We will invite all national parks and conservation agencies in Walacea region to participate.

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

Over the next two years, we are hoping to publish project results in international peer-reviewed journals (e.g., Journal of Mammalogy) and participate in international and national conferences to disseminate our findings on babirusas and other wildlife in the Togean Archipelago.

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

First, over the next 6 months, we will finalise the monitoring protocol for the Togean babirusa. We are working with BPSI LHK Makassar, a government institution under the Ministry of Environment and Forestry, Indonesia, to make the monitoring protocol a regulation. This is a critical step for babirusa conservation because the regulation will ensure the management authority applies the monitoring protocol.

Secondly, we will publish the project results in international journals. This project is the first ecological study of the species. Therefore, circulating our findings in the scientific communities will improve our knowledge and conservation effort of the species.

Thirdly, this project is the first step of what we hope will become a long-term conservation project in the Togean Archipelago, especially for the Togean babirusa. Therefore, future continuation projects should be organised to establish the species conservation strategy.

8. 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 always displayed the foundation logo on every printed and online material we made. For example, this YouTube video (https://www.youtube.com/watch?v=D2cxdJdHMZI&feature=youtu.be) is one of some selected camera trap footages we published online. We also displayed the foundation logo at the training workshop venue and always acknowledged The Rufford Foundation in every presentation.

9. Provide a full list of all the members of your team and their role in the project.

I am **(Agus Sudibyo Jati)** the Principal Investigator/ Project Leader responsible for the design, management, financial, and legality of the project. I am also responsible for reporting and correspondence with the project donors.

Bayu Wisnu Broto involved in developing the project concept and idea. Because he is based in Sulawesi, Bayu Broto is also responsible for coordinating with local stakeholders. Bayu Broto and I performed the fieldwork and organized project activities.

Dr. Alessio Mortelliti is my PhD advisor who helped us develop the project and ensure the research quality. During the project, he remotely advised us on how to perform the fieldwork and analysis. Further, he will advise us on publishing the project results in international journals.

10. Any other comments?


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