

Final Evaluation Report

We ask all grant recipients to complete a project evaluation that helps us to gauge the success of your project. This must be sent in **MS Word and not PDF 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 – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please DO NOT fill in and submit this form until the project has been completed.

Complete the form in English. Note that the information may be edited before posting on our website.

Please email this report to jane@rufford.org.

Your Details	
Full Name	Batrisyia Binti Teepol
Project Title	Movement and habitat use of threatened migratory shorebirds wintering in Bako Buntal Bay, Malaysian Borneo
Application ID	44418-1
Date of this Report	17 October 2025

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
To identify the full range of local movement and habitat use of key shorebird species wintering in Sarawak			X	<p>We have analyzed the local movement and habitat use of Far Eastern Curlew in Bako Buntal Bay. While this objective has been marked as fully achieved, it is important to note that only seven individuals were tracked, each providing varying amounts of data. As such, the current findings do not represent the full range or movement patterns of the species.</p> <p>Upon observations prior to the catching period, we recognized the difficulty to use bow traps at the site as the substrate were unsuitable for bow trapping. We resolved to buying mist nets instead.</p> <p>We caught a total of 249 individuals of 18 species of which were ringed and flagged. This includes:</p> <ol style="list-style-type: none"> 1. Red-necked Stint 2. Long-toed Stint 3. Kentish Plover 4. Tibetan Sandplover 5. Greater Sandplover 6. Pacific Golden Plover 7. Terek Sandpiper 8. Curlew Sandpiper 9. Common Redshank

			<p>10. Marsh Sandpiper 11. Red Knot 12. Great Knot 13. Bar-tailed Godwit 14. Whimbrel 15. Far Eastern Curlew 16. Gull-billed Tern 17. Little Tern 18. Common Tern</p> <p>We had a total of seven trackers, however, one of the individuals exhibited a negative response to device deployment. While kept in her keeping cage for observation, she showed signs of distress, including an inability to stand with the tag attached. Upon removal of tracker however, she was able to stand and walk normally. The device was therefore removed, and she was released as soon as possible, after which we observed she was able to fly normally. C5 was considered a good weight for attachment and device would be at 3% of its body weight. This could be due to stress and as curlew are prone to leg cramping, we quickly removed the tracker.</p> <p>Count surveys and observations of behaviours were conducted to prepare for catching activities. We count the number of birds coming in different flocks to strategize our catching plans. As the earlier flocks are in smaller numbers, we planned in a way that we would catch the earlier</p>
--	--	--	--

				birds and removed the birds quickly before the next wave of birds arrived. Behavioural observations were mainly to observe in which direction the birds will fly into each pond.
To assess whether the habitat use of key shorebird species overlaps with the boundary of the proposed protected area			X	We have analyzed and assessed the habitat use overlapping the boundary of proposed protected area.
To describe the northward and southward migration patterns of key shorebird species wintering in Sarawak		X		We have described one full migration cycle from one individual. While this is novel, this objective has been marked as partially achieved. The other two individuals that undertook migration has yet to return to complete the full migration pattern.

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

a). From this project, we discovered the preliminary movement of endangered shorebird wintering in Sarawak. Out of seven trackers deployed, two adult Far Eastern Curlew undertook migration and one juvenile undertook partial migration. Both adults reached different breeding grounds in Kamchatka Krai (first finding for Far Eastern Curlew in Borneo) and discovered their stopover and staging sites along their route (e.g. Yellow Sea, Republic of Korea). One has completed a full migration cycle, both northward and southward as it reached Buntal Bay, Sarawak on 16th October giving us insight on the connectivity and importance of Bako Buntal Bay for migratory shorebird especially the endangered Far Eastern Curlew. The remaining juveniles over summering in Buntal Bay also provide us with further information on habitat utilization and local movements which are important in managing the site all year round. Sites are often overlooked on their over summering potential and use but as Far Eastern Curlew are known to take at least three to four years to reach adulthood, over summering sites are crucial in conserving this species. This study is the first tracking study of migratory shorebird in Malaysia and the island of Borneo, where findings and results can guide the conservation of shorebirds and wetlands in Malaysia.

b). We also analyzed the use of different habitat among different species and the protection efficiency of the proposed protected area. Although protected areas

are typically established with the objectives to conserve species occurring within their natural habitat, some might be poorly planned especially for migratory species which are highly mobile and known to utilize large landscapes of different habitat. Our findings show that the proposed boundary is protecting half of the daily movement of our key shorebird species. These findings can guide protection and management conservation on the ground for both natural and artificial wetlands which are deemed important from our study.

c). Our project also kickstarted the first leg flagging, ringing and tracking in Sarawak and the whole of Malaysia. Our project collaborating with our local government, Sarawak Forestry Corporation, encourages other local government overseeing wildlife (e.g. Sabah and Peninsular Malaysia) to expedite research and conservation efforts on shorebirds in Malaysia.

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

During the fieldwork, catching birds was not an unforeseen difficulty, it was expected, given that this was the first shorebird mist-netting project in Sarawak. The team had no prior experience catching birds at the site, aside from knowledge of the birds' habitat and behaviour. Our mist-netting efforts were limited to just 11 nights over a span of two-months due to adverse weather conditions during the monsoon season. We started with a modest approach, setting up only one or two nets per night. Since we were working in an active artificial wetland (ashpond), the habitat was constantly changing which required constant observation and planned adaptation. Despite Far Eastern Curlew being one of the hardest shorebirds to catch, we managed to catch a total of eight individuals. Understanding the behaviour of this species at the site, at different tidal cycle and with expertise from bird expert, Katherine Leung, our fieldwork was a success.

Another challenge is the uncertainty surrounding the longevity of the trackers as some did stop transmitting earlier than others, whether due to device failure (one confirmed individual) or the death of the bird (unconfirmed two individuals), resulting in reduced data collection, which is a common case for movement ecology studies. Further confirmation can only be done by conducting field survey. Given the standard application protocols were followed during device attachment, the observed failure could also reflect technical limitations of tracking device.

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

The local government, Sarawak Forestry Corporation was involved in the entire fieldwork. We also invited members of the local NGO, Malaysian Nature Society Kuching Branch to participate in the fieldwork. Only experienced bird ringers were permitted to handle the birds, as this was a formal research initiative rather than a training program. Others were involved by being the scribe and observing the entire process that took place. This collaboration with the government enabled their bird

ringer staff to gain valuable field experience and contribute to capacity building in this area.

5. Are there any plans to continue this work?

Yes, as we have now commenced the leg flagging activities in Sarawak, together with Sarawak Forestry Corporation, we will be catching, flagging and deploy trackers on birds (both adults and juveniles) in the upcoming season (I purchased an additional tracker and received three new trackers from the insurance that was purchased from the ones have ceased transmission). Additional data is still needed to better understand the species' movements within the site and their connectivity along the broader East Asian-Australasian Flyway. We also plan continue observational and count surveys in order to collect resighting leg flag data.

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

I will be producing a thesis and a scientific paper (as part of my Master's degree requirement). I will also be producing a report for the Sarawak Forestry Corporation as part of my research and permit requirement. I am also planning to share the movement results on social media after my paper and other important documents have been completed or published). Movement research and analysis will continue for as long as the trackers remain active and continue to generate data to ensure we fully utilize data from every tracked individuals.

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

Moving forward, I believe our focus should be on stakeholder engagement particularly with the Sejingkat Ashpond owner in order to mobilize resources and implement site management practices that benefit Far Eastern Curlew and other shorebird species during both nonbreeding and overwintering period at the site. Of course, continued counts are important for long term data. Leg flagging and ringing should be done to continue the effort we have started. Tracking study remains important as we still need a sufficient sample size to draw reliable conclusions for the species as a whole. For future projects, there is a need to highlight capacity building for shorebird research and conservation in not just in Sarawak, but across Malaysia.

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?

Yes, I have used the logo as acknowledgment in financial support during my presentation at the National Capacity Building Workshop on Migratory Waterbird and Wetland Management (10-14th February 2025) at Kuala Selangor, Malaysia. I would also be using the logo for upcoming presentation that I will be giving at one of the side events during the 12th East Asian-Australasian Flyway Partnership Meeting of Partners (MOP). This event will be held in Cebu, Philippines from 8 to 15 November 2025.

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

Member	Affiliation	Role
George Gale	King Monkut's University of Technology Thonburi	Supervisor
Noraisah Majri	Sarawak Forestry Corporation	Local collaborator
Katherine Leung	EAAFP Shorebird Working Group	Field assistant/Bird expert
Jimmy Choi	Duke Kunshan University	Flyway collaborator/Field assistant
Yong Ding Li	BirdLife International Asia	Committee Member
Daphawan Khamcha	King Monkut's University of Technology Thonburi	Committee Member
Dusit Ngoprasert	King Monkut's University of Technology Thonburi	Committee Member
Dr Ng Jia Jie	Sarawak Forestry Corporation	Field assistant/Wildlife veterinarian
Daniel Kong	Malaysian Nature Society Kuching Branch	Field assistant
Akas Bit	Sarawak Forestry Corporation	Field assistant
Franklin Diyeng	Sarawak Forestry Corporation	Field assistant
Tinna Wound	Sarawak Forestry Corporation	Field assistant
Akas Bit	Sarawak Forestry Corporation	Field assistant
Jacelyn See	Malaysian Nature Society HQ	Field assistant
Dr Sandy Ling	Sarawak Forestry Corporation	Wildlife veterinarian
Sayam Chowdhury	EAAFP Shorebird Working Group	Flyway collaborator
Tong Mu	EAAFP Shorebird Working Group	Flyway collaborator
Philipp Maleko	EAAFP Shorebird Working Group	Flyway collaborator

10. Any other comments?

Grateful for the support provided by the Rufford Foundation which has been instrumental in undertaking this project and your support towards research and conservation of migratory shorebird in Sarawak, Malaysian Borneo.

ANNEX – Financial Report
[Intentionally removed]