

Final Evaluation Report

Your Details	
Full Name	Sayam U. Chowdhury
Project Title	Using cutting-edge technology to identify undiscovered sites and habitat features important for the conservation of migratory shorebirds in Asia
Application ID	39362-B
Date of this Report	06 February 2024

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
(1) Discover potentially previously unknown/unsurveyed wintering sites in Bangladesh, critical stop-over sites along the flyway and assess whether key sites used by shorebirds are protected;				We are still working on full scale data analysis and will share publications derived from this objective with RSG in due course.
(2) identify habitat use by shorebirds throughout the twice-daily including high-tide roosts and foraging areas available at different phases of the spring-neap tide regime;				Described in detail below (a).
(3) Remotely identify coastal features that are important for shorebirds;				Described in detail below (b).
(4) Model the impacts of sea-level rise on globally threatened shorebird populations in Bangladesh;				Underway

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

a). We have analysed data on 10 individuals. Data received from eight other individuals last year and shorebirds that will be tagged in the coming seasons will be analysed towards the end of the project. Preliminary results on local movement of 10 shorebirds: 5.2 gm and 6.4 gm tags on common redshank *Tringa totanus* (n = 4), black-tailed godwit *Limosa limosa* (n = 5) and Eurasian whimbrel *Numenius phaeopus* (n = 1), suggest that most shorebirds did not travel beyond 5 km. Majority of the shorebirds spent the winter utilising the same tidal flat areas (Figure 1), both at Nijhum Dwip and Bashkhali. Two black-tailed godwits travelled away (up to 20 km) from the main catching location but usually came back to the same foraging area during low tide. Mean range area of common redshank using 90% minimum convex polygon (MCP) was 5.31 km² (range: 1.17–11.14 km²), black-tailed godwit was 81.67 km² (range: 12.67–233.15 km²) and whimbrel was 5.24 km².

These preliminary findings have direct monitoring and conservation implications, since previously we thought shorebirds move around the Bay of Bengal substantially during the entire period of winter. However, based on our results, we now understand that shorebirds are using the same site throughout the winter and do not

change their main site/ground. These findings offer evidence that conservation measures can be concentrated to a few sites where key shorebird species winter. Moreover, waterbird censuses can be carried out throughout the main wintering period (Dec-Feb) and these census data would be comparable as birds do not move around much between sites and significantly reduces the possibility of double counting while covering a large area to conduct surveys.

b). Using the tracking data, we have validated our calculations on tidal flat exposure hours using satellite imagery. This is a novel and important variable that would act as a proxy of tidal flat habitat quality, which was previously unavailable. We will be using this variable for all our regression models including population estimates of shorebirds and sea-level rise impact.



Figure 1: Common Redshank migration from Bangladesh to North Asia and return following the same migration route.

c). Although the primary objective of the project is to understand local movement of shorebirds in Bangladesh, but the project results are already helping us to understand (6) routes (flyway) used by shorebirds during migration outside Bangladesh and (7) allowing us to identify critical stop-over sites along the flyway. Two of our satellite/GSM tagged common redshanks have travelled to north Asia

from Bangladesh and returned to the same general areas (Figure 1) where they were originally tagged in April 2022, following almost similar migration routes and did not use the coast at all. While much of the conservation activities are focused along the coast (especially the Yellow Sea) for migratory shorebirds of the East-Asian Australasian flyway, status of these inland staging sites is relatively little known and probably require conservation attention. We will be looking into these sites in more details in the coming months.



Figure 2: Various species of shorebirds with leg-flags. In addition to the tracking part of the project, we have ringed (with leg-flag) a total of 60 shorebirds (Figure 2). Shorebird leg-flags allow us to understand their migration and local movement by recording these digits in different places.

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

N/A

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

This was mainly a research project and had little community engagements. However, we have worked with the local communities in the previous phase of our project. We have included local community members during fieldwork.

5. Are there any plans to continue this work?

Yes, we hope to continue the research work at our project sites. The next steps will involve satellite tagging of migratory shorebirds in areas where it is likely to have mangrove plantations on tidal flats to better understand how mangrove restoration projects impacts shorebird survival.

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

Yes, we hope to continue the research work at our project sites. The next steps will involve satellite tagging of migratory shorebirds in order to understand their local habitat use and further engagement with local communities.

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

Yes, we hope to continue the research work at our project sites. The next steps will involve satellite tagging of migratory shorebirds in order to understand their local habitat use and further engagement with local communities.

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, during Phase I of the project.

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

Professor Rhys Green [Department of Zoology, University of Cambridge]: Advisor

Professor Andrew Balmford [Department of Zoology, University of Cambridge]: Advisor

Md. Foysal: Research Assistant

Nazim Uddin Khan: Research Assistant

Syed S. Inam: Research Assistant

Samiul Mohsanin: Volunteer expert

Omar Sahadat: Volunteer expert

Sakib Ahmed: Volunteer

Zohra Mila: Volunteer (Bangladesh Forest Department]

Shahriar Rushdee: Volunteer

10. Any other comments?

We are happy to share any additional materials including project photos. We will share our papers related to this project with The Rufford Foundation when publication.



Bird processing by Sayam & team.



Shorebird leg-flags used in Bangladesh and processing.



Sayam with a Common Redshank. © Nazim Uddin Khan.



Sayam processing an egret.



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