

# 2020 EAAFP Small Grant Fund (WG/TF) Report Template

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## JUVENILE DISTRIBUTION PATTERN AND CONSERVATION OF THE ENDANGERED BLACK-FACED SPOONBILL

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**Section 1. Project Overview – This report will be shared on EAAF website**

**1.1 BACKGROUND**

Please give a brief and background of your project:

A. Describe about your organization by filling out the table below:

<b>Type of the organization - Government/NGO/Private Sector/Other</b>	Duke Kunshan University
<b>Name(s) of the division and/or position</b>	Assistant Professor of Environmental Science
<p><b>List any contributions that your organizations or yourself might have been involved for the preservation of the migratory waterbirds, their habitats and East – Asian Australasian Flyway below.</b></p> <p>I have been studying the diet, habitat use, local movement, population dynamics as well as migration phenology and strategies of migratory waterbirds, often using the latest technology in wildlife tracking and remote sensing. Based on the findings from these studies, long-term habitat quality monitoring, protected area boundary adjustment and integrated natural and artificial management are proposed to improve the habitats for migratory waterbirds. These efforts not only contribute to nature conservation, but also to the restoration of wetland ecosystems on which humans depend.</p>	

B. Provide a brief abstract summary of your project. In the summary, please include its objective and its location (Name of Place, City and Country), and explain the significance and relations of the species and its location (in link with [EAAF Key Species](#) and [Flyway Network Site](#)) for your project.

Coastal wetlands along the East Asian–Australasian Flyway (EAAF) are being converted into new terrestrial-dominated land uses rapidly, mainly as aquaculture and agriculture land, together with erosion, resulting in the loss of more than 2/3 of coastal wetlands in the Yellow Sea over the last 50 years, a rate that is comparable to the loss of tropical forest (Murray et al. 2014). This is therefore, not surprising that the populations of many migratory waterbird species along the EAAF have been declining rapidly (Studds et al. 2017; Clemens et al. 2016), leaving the EAAF with one of the highest number of globally threatened or near threatened waterbird species compared to other flyways (Stroud et al. 2006). The conservation of these long-distance migratory species requires substantial improvement in the protection, management and monitoring of their habitats in wintering, stopover and breeding grounds (Szabo et al. 2016), with their adequate protection in China particularly crucial (Murray and Fuller 2015).



Among the threatened migratory waterbird species in the EAAF, the Black-faced Spoonbills (BFS) *Platalea minor* stands out as one of the very few species showing a recovering trend, from just a few hundreds to more than 6,000 over the last 30 years partly due to the extensive conservation effort and BFSs' ability to utilise artificial wetlands. Over the years, the foraging ecology (Yu et al. 2004a), habitat use (Yu et al. 2004b), threats (Sung et al. 2018) and migration routes (Wood et al. 2013) of BFS have been studied in various locations. Yet relatively little is known about their movement ecology, especially juveniles.

In this proposed project, we aim to quantify the wintering distribution pattern of juvenile BFS in their first boreal winter using GPS-GSM transmitters. The ultimate goal is to identify the key regions where juvenile BFS winter and safeguard these areas for the continuous recovery of this endangered population.

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- Murray, N.J., Clemens, R.S., Phinn, S.R., Possingham, H.P. & Fuller, R.A. 2014. Tracking the rapid loss of tidal wetlands in the Yellow Sea. *Frontiers In Ecology And The Environment*, 12, 267-272.
- Murray, N.J., Fuller, R.A. 2015. Protecting stopover habitat for migratory shorebirds in East Asia. *J. Ornithol.* 156, 217–225.
- Stroud DA, Baker A, Blanco DE, Davidson NC, Delany S, Ganter B, . . . & (on behalf of the International Wader Study Group). 2006. The conservation and population status of the world's waders at the turn of the millennium. In G.C. Boere, C.A. Galbraith & D.A. Stroud (Eds.), *Waterbirds around the world* (pp. 643-648). Edinburgh, UK: The Stationery Office.
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- Sung Y-H, Tse IW-L, & Yu Y-T. 2018. Population trends of the Black-faced Spoonbill *Platalea minor*: analysis of data from international synchronised censuses. *Bird Conservation International*, 28(1), 157-167.
- Szabo, J.K., Choi, C.-Y., Clemens, R.S., Hansen, B. 2016. Conservation without borders – solutions to declines of migratory shorebirds in the east Asian–Australasian flyway. *Emu* 116, 215–221.
- Wood, C., Tomida, H., Jin-Han, K., Lee, K.S., Cho, H.J., Nishida, S., Ibrahim, J., Hur, W.H., Kim,
- Yu YT, & Swennen C. 2004a. Feeding of wintering Black-faced Spoonbills in Hong Kong: When and how long? *Waterbirds*, 27(2), 135-140.
- Yu YT, & Swennen C. 2004b. Habitat use of the Black-faced Spoonbill. *Waterbirds*, 27(2), 129-134.

## 1.2 DETAILS

Please provide a project description of the following:



- A. **Detailed Project Progress:** Describe about process of your project, including methodologies, field work, interview, conference, etc. Please include analysis of your process, if applicable. (Any visual data, including maps, graphs, tables, photos, etc. are strongly preferred)

In 2020 June and July, juvenile Black-faced Spoonbills were captured near their nests from breeding islands along the west coast of South Korea. Measurements were recorded and unique colour ring combination on the tibia of BFS was used for individual marking. Solar-powered GPS/GSM satellite trackers (19g or 1.3% of juvenile BFS body weight) were deployed to the back of spoonbills using backpack method.



The individually-marked Black-faced Spoonbill 'Y75', was one of the twenty individuals tagged with satellite tracker. Y75 was ringed on Chilsando, Korea, 2<sup>nd</sup> July 2020, then seen on Taiwan Island 26<sup>th</sup> October 2020 and photographed by Yi-Cheng Chen (above).

- B. **Problems Encountered/Adjustments:** If there were some changes made, please indicate them and explain (ex. Unexpected circumstances, sudden cancellation, etc.)

The travel restrictions in East Asia during COVID outbreak made international travel almost impossible. We were lucky that the deployment of trackers did go ahead although the follow up analysis and write up were substantially delayed due to changes in working environment.



- C. Details on any community education and public awareness activities associated with your project. We published 5 popular science articles on WeChat in 2021 to introduce the migration journey of Black-faced Spoonbills to the public and raise public's awareness on the potential threats to the species, including green energy infrastructures. These articles had a total of more than 2400 read.

<https://mp.weixin.qq.com/s/cSaasYLy2jUroo9THpyJJA>

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<https://mp.weixin.qq.com/s/nb9oELJERVCP1H8XCRE89Q>

[https://mp.weixin.qq.com/s/CTtu9z7Fjgc\\_7zShbQA81A](https://mp.weixin.qq.com/s/CTtu9z7Fjgc_7zShbQA81A)

<https://mp.weixin.qq.com/s/DOnygLxcLdaDS7-2-CI30g>

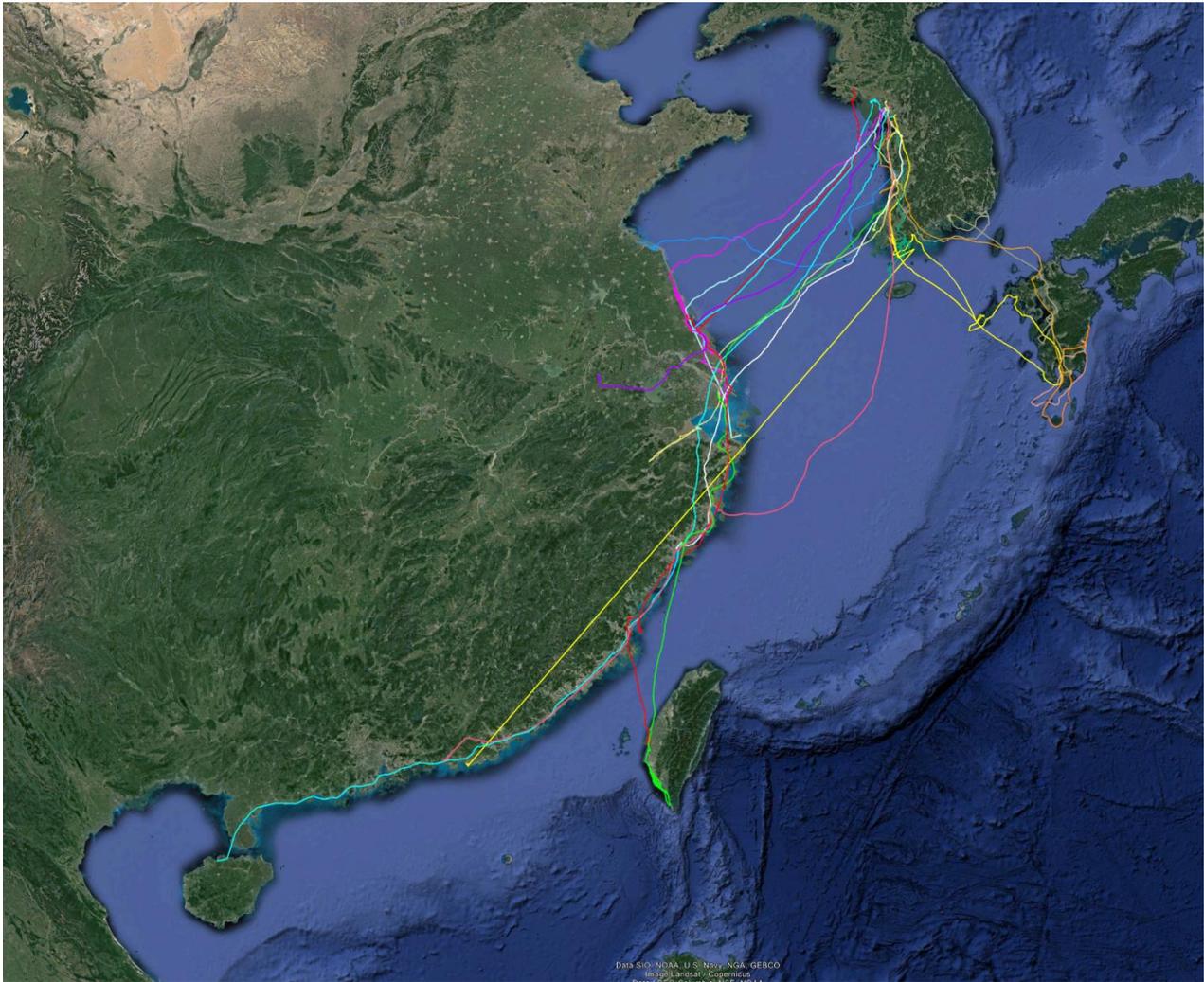
- D. Please include any additional supporters of this project  
The fieldwork component of this project was conducted by colleagues from the Waterbird Network Korea and National Institute of Ecology. The data analysis and public awareness related activities were supported by Wangwang Qiu and Muming Lin from the Southern University of Science and Technology, and Yi-Chien Lai from Tunghai University.

### 1.3 RESULT

Explain and evaluate the outcomes and findings of your project (Any visual data, including maps, graphs, tables, photos, etc. are highly preferred).

Twenty juvenile Black-faced Spoonbills were captured and equipped with satellite trackers on their back during June and July 2020. Five individuals died without leaving Korea while one individual with tracker failure. In the remaining 14 individuals that left Korea and migrated, 10 of them (71.4%) spent their first winter in mainland China, two (14.3%) on Taiwan Island and two (14.3%) in southeast Japan. Among the 10 individuals that spent their first winter in mainland China, three individuals (30%) stayed in Jiangsu province and another three individuals (30%) in Zhejiang province, while two individuals (20%) resided in Guangdong, one individual in Hainan and one in Anhui. About half of the 14 wintering sites were protected. Among the 14 individuals that left Korea, the one that spent its first winter at the highest latitude (Jiangsu Lianyungang) and the one at the lowest latitude (Hainan) eventually died during their first winter.

Our results showed the importance of the coastal wetlands in mainland China, especially those along the Jiangsu, Shanghai and Zhejiang coasts, for juvenile Black-faced Spoonbills during their southward migration and first winter. All tracked individuals that flew across the Yellow Sea from the west coast of Korea made their first landfall in coastal wetlands along the Jiangsu, Shanghai and Zhejiang coasts.



The southward migration pathway and wintering distribution of satellite-tracked Black-faced Spoonbills in 2020.

#### 1.4 RECOMMENDATIONS

The tracking results indicated the importance of coastal wetlands in Zhejiang Zhoushan, Hangzhou Bay and Wenzhou Bay to juvenile Black-faced Spoonbills. Moreover, two of the tracked birds that migrated successfully to mainland China for their first winter, eventually died at Lianyungang and Hainan. The cause of mortality was unclear but 35% of tracked BFS died within 6 months after released, showing the challenges that young Black-faced Spoonbills faced in their early years. It is important to record the potential cause of mortality and mitigate those threats to ensure the continuous population recovery of this endangered species.

Our work contributed to some of the EAAFP Key Result Areas,



*KRA 1.1 A comprehensive and coherent Flyway Network of Sites is developed for migratory waterbirds, including sites that are not currently Protected Areas.*

We identified network sites, especially those overlooked ones in Jiangsu, Zhejiang and Guangdong provinces in mainland China.

KRA 1.3 Flyway Network Sites are valued by the community and sustainably managed.

Local movement of tagged BFS data were collected and could be used to inform local managers / communities how their sites should be managed.

KRA 3.3 Updated list of sites of international importance for migratory waterbirds for conservation management and prioritization.

See point 1 above.

This project laid the important foundation for further tracking projects that will help researchers to determine the potential drivers for the observed juvenile wintering distribution pattern. This could be achieved by combining the tracking data with findings with annual synchronized censuses. Moreover, the tracking data could also be used to evaluate the extent to which protected areas along the flyway encompass the full range of habitats used by BFS during non-breeding season.