

# **Diversity and Distribution of Waterbirds during Spring in Wetlands around Yellow Sea and Bohai Sea in China**

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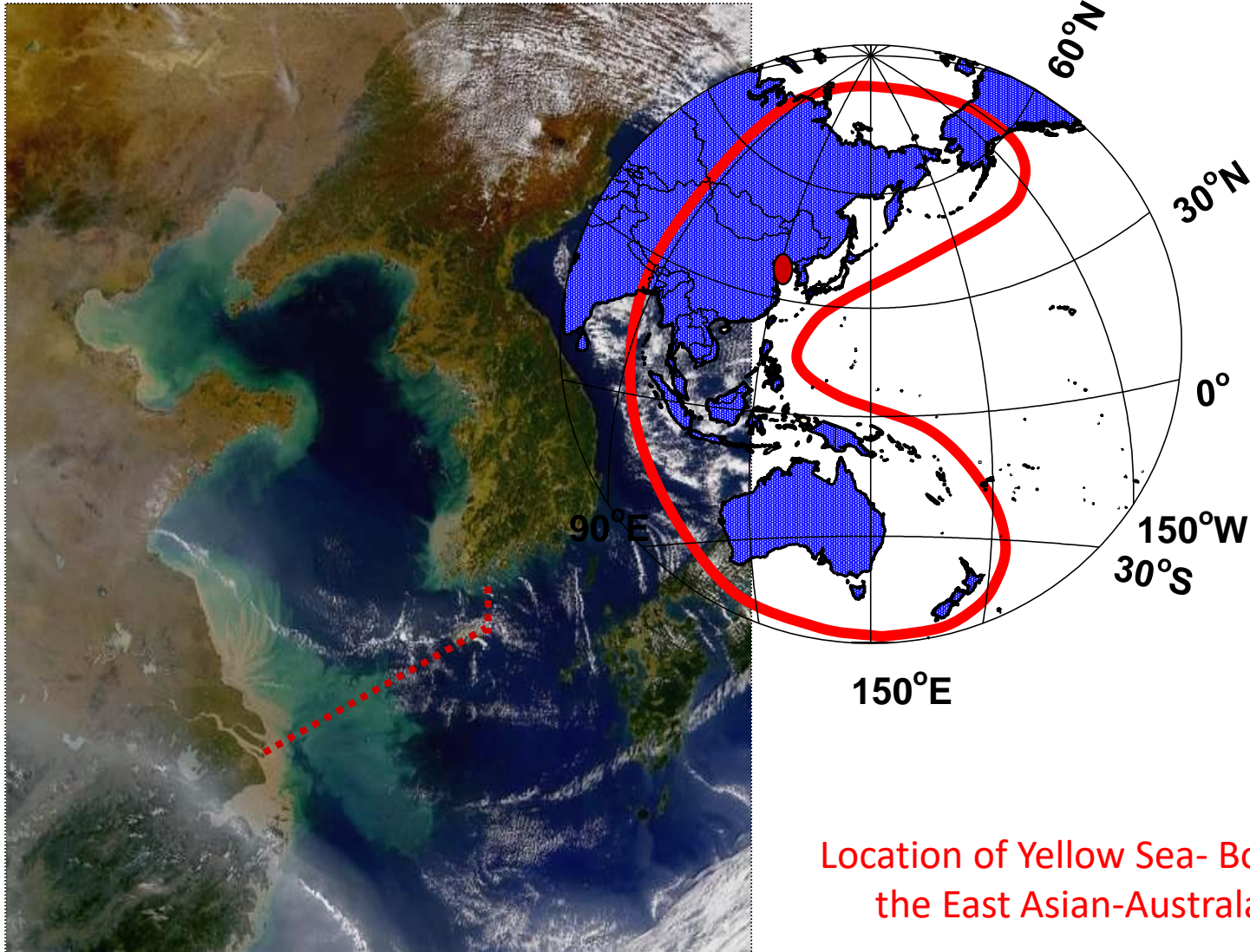




# Outline

- **I. Background**
- **II. Objectives and organization**
- **III. Survey area and methods**
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# Background

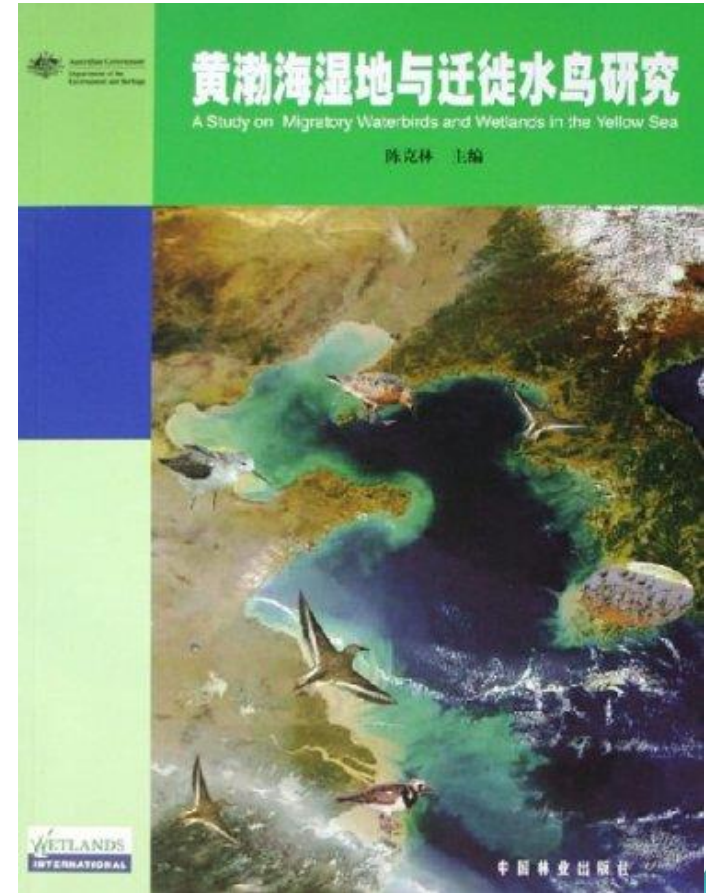


Location of Yellow Sea- Bohai Bay among  
the East Asian-Australasian Flyway

# History of Waterbird Surveys organized by International Wetlands on Yellow Sea-Bohai in China

From 1996 to 2005 International Wetlands organized 10 consecutive year-shorebird surveys along Yellow Sea-Bohai Sea, covering 80% of the coastlines of the Yellow Sea-Bohai Region in China during spring season.

1. Two millions of total waterbird number recorded;
2. 25 shorebird species number >30%;
3. At least 26 shorebird species number >1%;
4. To Identify at least 12 international importance sites for shorebirds;



# Yellow Sea-Bohai Region Coordinated Waterbirds Survey in China Programme

A Yellow Sea-Bohai Region Coordinated Waterbird Survey was organized jointly by the International Wetlands, China Wildlife Conservation Association, Northeast Institute of Geography and Agricultural Ecology of CAS and Beijing Biodiversity Conservation and Research Center since 2016.

- **30 units/organizations;**
- **More than 150 participants involved.**

## Objectives:

- **Finding out population status of Waterbirds in Yellow Sea-Bohai Region**
- **Improving capacity of managers**
- **Promoting public awareness on waterbird protection**
- **Promoting waterbird and biodiversity conservation in this region**



# Training Workshop 2016, Beijing



**Total 100 participants  
with more than 30  
units/organizations  
involved;**



# Training Workshop 2017, Dongying Shandong



**Total 120 participants with more than 30 units/organizations attended;**



# Training Workshop 2018, Panjin, Liaoning

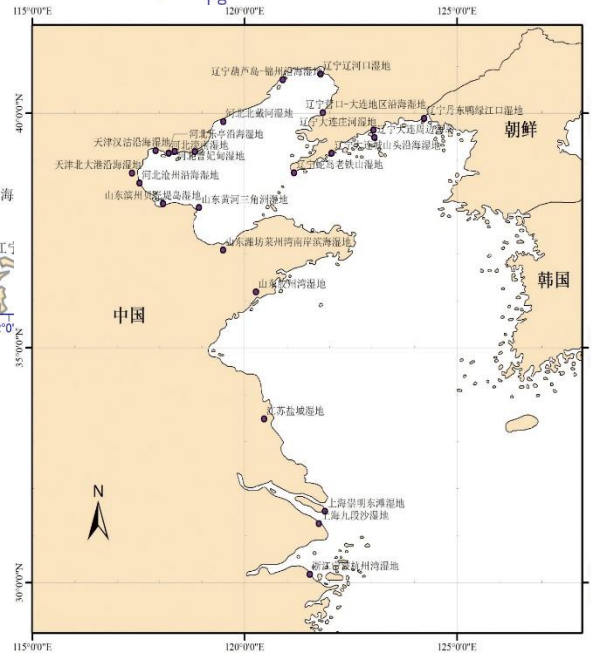
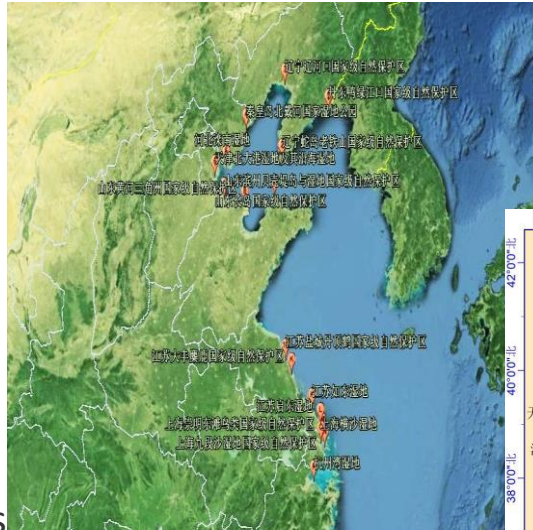


**Total 100 participants  
with more than 30  
units/organizations  
involved;**





# Survey Areas for 2016-2018



## Survey Area:

- In 2016 and 2017, survey sample areas have been set up in 18 wetlands area respectively;
- Survey sample areas in 23 wetlands in 2018.

## Survey Date:

The forth week of April  
(in Spring)

# Survey Methods



# Survey Results



## ( Waterbirds Community Structure )

**2016:** The survey recorded a total of nearly 80,7000 waterbirds of 119 species in 18 areas. The count was dominated by shorebirds, with about 656,830 recorded (81.4% of the total), followed by 54,727 (6.8%) gulls and terns, 21,999 (2.7%) swans, geese and ducks, 17,114 (2.1%) herons (Ardeidae), 3560 (0.4%) coot and gallinules and 2990 (0.4%) other species, mainly cormorant, grebes, ibis, spoonbill, stork, crane and pelican.

**2017:** The survey recorded a total of nearly 896,984 waterbirds of 118 species in 18 major sites. The count was dominated by shorebirds, with about 730,842 recorded (81.48% of the total), followed by 87,778 (9.79%) gulls and terns, 41,205 (4.59%) herons and bitterns (Ardeidae), 21,037 (2.35%) swans, geese and ducks, 6,666 (0.74%) coots and gallinules, and 9,456 (1.05%) other species, mainly cormorant, grebes, spoonbill, stork, crane.

**2018:** The survey recorded a total of 884,940 waterbirds of 119 species in 23 major sites along the Yellow Sea-Bohai Region. The number of unidentified waterbirds was 6538, accounting for 0.74% of the total number of waterbirds. The count was dominated by shorebirds, with about 669,262 recorded (75.63% of the total), followed by 131,627 (14.87%) gulls and terns, 40,139 (4.54%) herons and bitterns (Ardeidae), 26,778 (3.03%) swans, geese and ducks, 8,194 (0.93%) coots and gallinules, and 8940 (1.01%) other species, mainly cormorant, grebes, spoonbill, stork and crane.

# Survey Results



## (Waterbirds Community Structure)

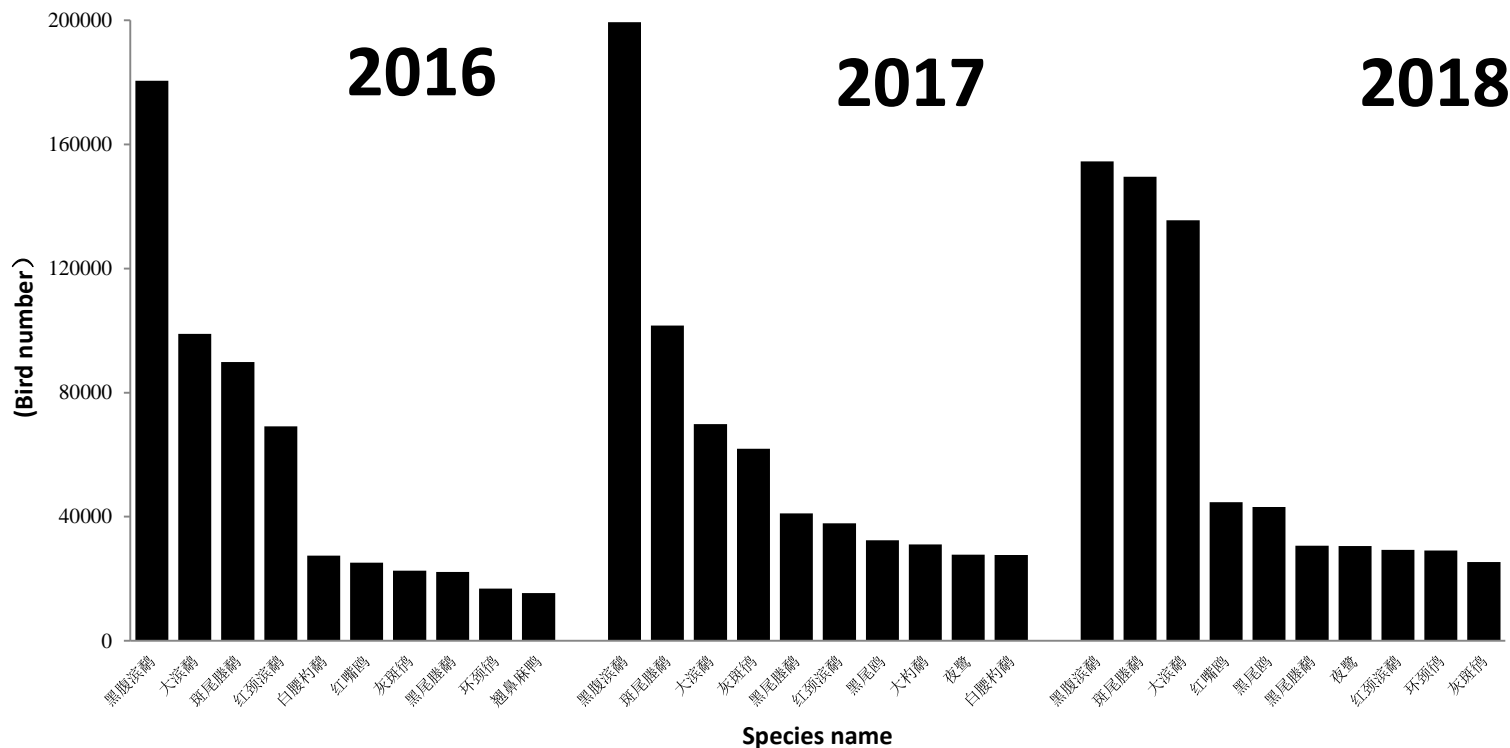


Fig. The number of top ten species of waterbirds in spring in the Yellow Sea-Bohai region from 2016 to 2018

# Survey Results ( Diversity of Waterbirds )



Among the survey areas, waterbirds are mainly distributed in Yalujiang Estuary Wetland in Liaoning, Yancheng Coastal Wetland in Jiangsu, Yellow River Delta Wetland in Shandong and Liaohe Estuary Wetland in Liaoning. In the spring of 2016, the diversity index of waterbird community in the Yalu Estuary Wetland was the largest, which was 0.829. In the spring of 2017 and 2018, the diversity index of waterbird communities in Yancheng Coastal Wetland was the largest, respectively 0.884 and 1.044. The maximum dominance index of waterbird communities in more than 80% of the surveyed areas was 0.999, and the range of change in spring of 2016, 2017 and 2018 was 0.978 ~ 0.999, 0.991 ~ 0.999 and 0.973 ~ 0.999, respectively.



# Survey Results

## ( Distribution of key and rare species )



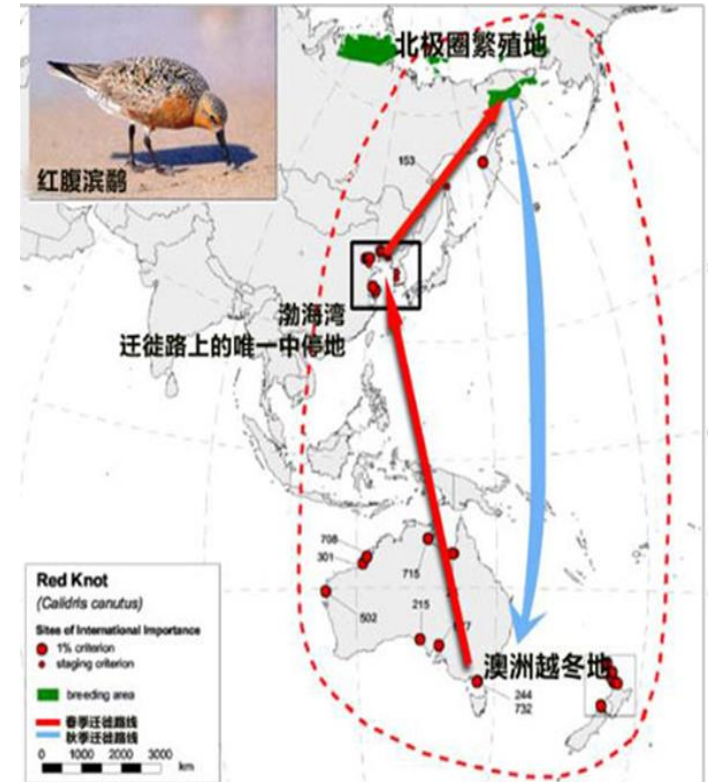
There are 4 species of waterbirds under the first class of China National Protected Bird, including Oriental White Stork, Red-crowned Crane, Siberian Crane and Relict Gulls. There are 17 species of waterbirds under the second class of China National Protected Bird. Among the waterbirds listed as endangered by the IUCN Red list, there are three critically endangered species, namely Siberian Crane, Baer's Pochard and Spoon-billed Sandpiper. There are six endangered species, 6 vulnerable species and 13 endangered species recorded. Within the survey areas, 40 species of waterbird represent 1 % or more of their global population. In spring 2017, the largest amount of Bar-tailed Godwit species was recorded in Yalujiang Estuary Wetland, with 107480 species (72%). Fourteen Spoon-billed sandpipers, a globally endangered species, have been found in the Yancheng Coastal Wetland of Jiangsu Province. In the spring of 2018, 29 Spoon-billed Sandpipers were recorded in the wetland (10%). In Liaohe Estuary wetland, 6 922 Saunders's Gulls were recorded (81.4%).



# Survey Results(Protection Value of Survey Areas)



1. According to the survey results, eight, eight and ten wetlands have been found in the spring of 2016, 2017 and 2018 respectively to meet the criteria of Wetlands of International Importance in accordance of the Ramsar Convention on Wetlands Criterion 5 that states: "if a wetland regularly supports 20,000 or more waterbirds, the site can be listed as a Ramsar wetland".
2. Accordance of the Ramsar Covention on Wetlands Criterion 6, the number of wetlands meet the Criterion is 11, 13 and 17 respectively.
3. The number of wetlands that meet both Criterion 5 and 6 is 8, 8 and 10 respectively.
4. In the spring of 2018, for example, among the 23 wetlands surveyed, there were 4 wetlands listed as International Importance Wetland (Ramsar site) , 9 national nature reserves and 2 national wetland parks. In addition, there were 8 wetlands that were not included in the national wetland conservation system or not protected at all.





# Discussions

- A total of 137 species of waterbirds with 2,588, 603 were recorded in 3 three year- survey. Among them, 74 species of waterbirds are the charadriformes, which accounted for 91.7% of the total number of waterbirds recorded. There are 40 species of waterbirds 1% or more of their global population.
- This further indicates that the wetlands surrounding the Yellow Sea and Bohai Sea are in East Asia-Australasian Flyway are of great value. For the north migration of waterbirds and some rare bird species, especially shorebirds provides vital habitats for resting, feeding and stopover.
- The carrying capacity of waterbirds in each surveyed wetland is different and there are also differences in the state of protection for waterbird and wetland. For example, Species diversity of waterbird communities in Yancheng Coastal wetland is at a high level in spring 2016, 2017 and 2018. In Spring 2018, seventeen surveyed wetlands meet Criterion 6 of Ramsar convention and support large numbers of waterbirds or rare waterbirds.
- However, there are only four wetlands that are actually included in wetlands of international importance (Ramsar site),
- Therefore, the protection of wetlands around the Yellow-Bohai sea is of great significance to strengthen.



# Suggestion and Comments

- I. Expand the scope of survey to obtain long-term, detailed and comprehensive data on waterbirds;
- II. Priority should be given to promoting the establishment of nature reserves in areas meeting international importance wetlands (Ramsar site);
- III. Strengthening the conservation of coastal mudflats;
- IV. Guide relevant departments and agencies to make wise use of wetland resources;
- V. Promote information exchange and sharing through existing mechanisms and platforms;
- VI. Encourage and support international cooperation in the conservation and research of water birds in the Yellow-Bohai seas;
- VII. Regular seminars and training on wetlands and waterbirds;
- VIII. To conduct public awareness campaigns on waterbird protection.

# Thanks for your attention!

