Annex C

# CONSERVATION ACTIONS OF ENDANGERED WATERBIRDS AND THEIR HABITATS IN THE YELLOW SEA ECOSYSTEM

## NARRATIVE REPORT

### Introduction

[Brief Introduction summarizing progress]

We had done a lot of work since the project agreement was signed. The report of first stage had been submitted. It includes the inception workshop was launched on June 21. The fishermen training report was conducted on June 22 in Qinghe River Estuary Wetland, Lianyungang, 10 fishermen were accepted about training. Waterbirds habitat quality report on Important Bird Areas(IBAs) in YSLME and along waterbird flyway had been done, We supplemented 14 new IBAs involved with four provinces or municipalities: Liaoning, Hebei, Tianjin, Jiangsu mainly along the coast of study area, the index of habitat suitability (HIS) of the habitats of the new IBAs reduced and have suffered serious natural wetland loss due to long-term coastal reclamation. 16 key flyways and stopover sites of 4 identified endangered species, Great knot, Relict, Black-faced Spoonbill, Oriental Stork were identified along the coasts of Yellow and Bohai seas in China in YSLME. 10 videos about protection actions, including locations, people, events, and results was created. WeChat public account of YSLME was created.

Since the previous reports had been submitted, project members start to prepare the mission of next stage. It includes that develop eBird APP for mobile phone in Hangu Coastal Wetland in Tianjin, develop database system for water bird and habitats in Yellow Sea Ecoregion, organize training workshops for NGOs and other stakeholders on knowledge about coastal wetland and endanger waterbirds conservation in YSLME, project cycle management, logic framework and fund-raising ability, and sharing of case studies, etc, and develop a model to balance sustainable fishery development in fish ponds and waterbirds conservation. The following is the specific task implementation and progress.

### Summary Activity Target vs. Progress

[What did you plan to do this quarter? What did you actually do]

| Activity | Planned<br>[What had you planned to do for each activity in the reporting period?] | Actual<br>[What did you actually do for each activity in the reporting period?] | Notes<br>[Add any relevant notes] |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Develop eBird APP for mobile phone in Hangu Coastal Wetland in Tianjin | Product of eBird APP for mobile phone in Hangu Coastal Wetland in Tianjin | Completed the App basic framework function building, registration, login, home page design and bird point management and other interface functions, database table structure design, spatial data storage scheme, and the crawler system development. | |
| Develop database system for waterbirds and habitats in Yellow Sea Ecoregion | Building a database system for water bird and habitats in Yellow Sea Ecoregion | Database platform have been completed. And discussed with the project team experts to demonstrate, modify, based on the improved design scheme, completed the prototype system research and development. | |
| Organize training workshops for NGOs and other stakeholders on knowledge about coastal wetland and endanger waterbirds conservation in YSLME | Organize training workshops for 25 trainees from 10 NGOs for better endangered waterbirds conservation | A preliminary training plan had been made, and 8 NGOs had been called. The training course will be started on 23 Sep. | |
| Develop a model to balance sustainable fishery development in fish ponds and waterbird conservation | Explore a model to balance sustainable fishery development in fish ponds and waterbird conservation | In order to draft a detailed and feasible sustainable fishery development in fish ponds and waterbird conservation report. We had made a survey plan of exploring the win-win model between sustainable fishery development in fish ponds and waterbird conservation. The survey will be conducted during southward migration of waterbirds. | |

**Comments**

[Add any additional comments / photos / explanations / information on Output, above.]

## 1. Develop eBird APP for mobile phone in Hangu Coastal Wetland in Tianjin

(1) The bird-watching database was created based on mysql, (1.0 basic version) according to the following database relational model.

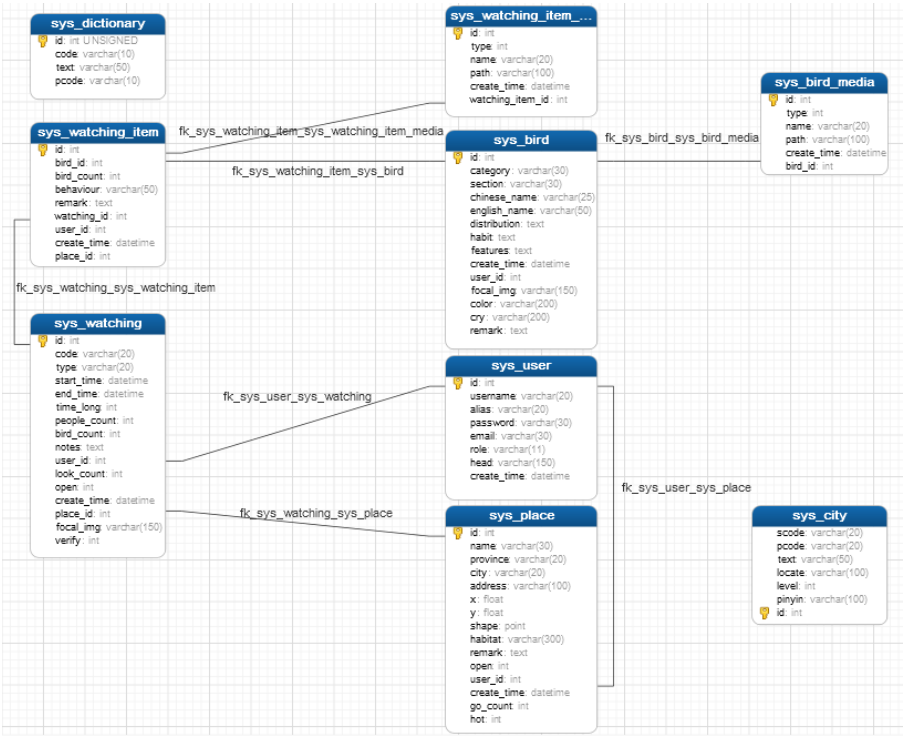


**Fig.1.1** Bird watching database

(2) Based on the view-bird database (1.0 basic edition), the main function modules of the app are developed, including the “a view of a bird” record management module, (bird species, bird point, view bird record) “quick check” module and the “travel” management module, and at the same time, the function of the pre-App bird point management sub-module is improved.

1) "Bird watching" module

To provide users with a variety of bird point selection methods (including the map click, the user has recently visited bird spots, nearby bird-watching hot spots, nearby individual bird points, etc.), so that users can edit and submit the corresponding bird watching records based on the selected bird points. Including bird species records, bird watching multimedia materials (pictures, audio and video) upload and so on.

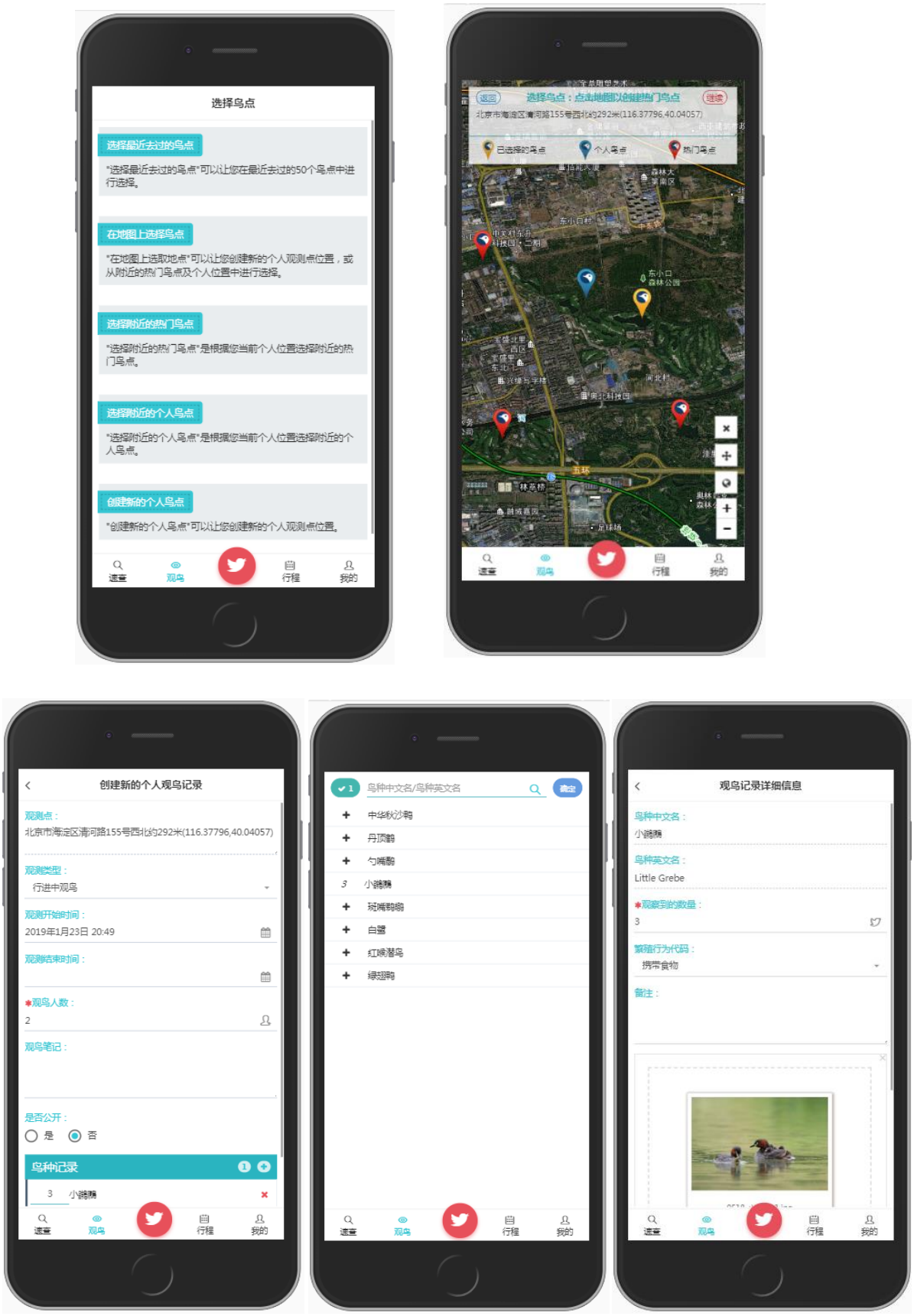


**Fig.1.2** "Bird watching" module

2) "Quick check" module

Providing users with Chinese and English name, bird spot name, bird watching record number and other retrieval conditions to realize fast fuzzy query of bird species, bird spot and bird watching record information and display of bird species multimedia (picture, audio and video) information; At the same time, it supports more advanced query functions such as bird species, family, feature, color, habit and so on.

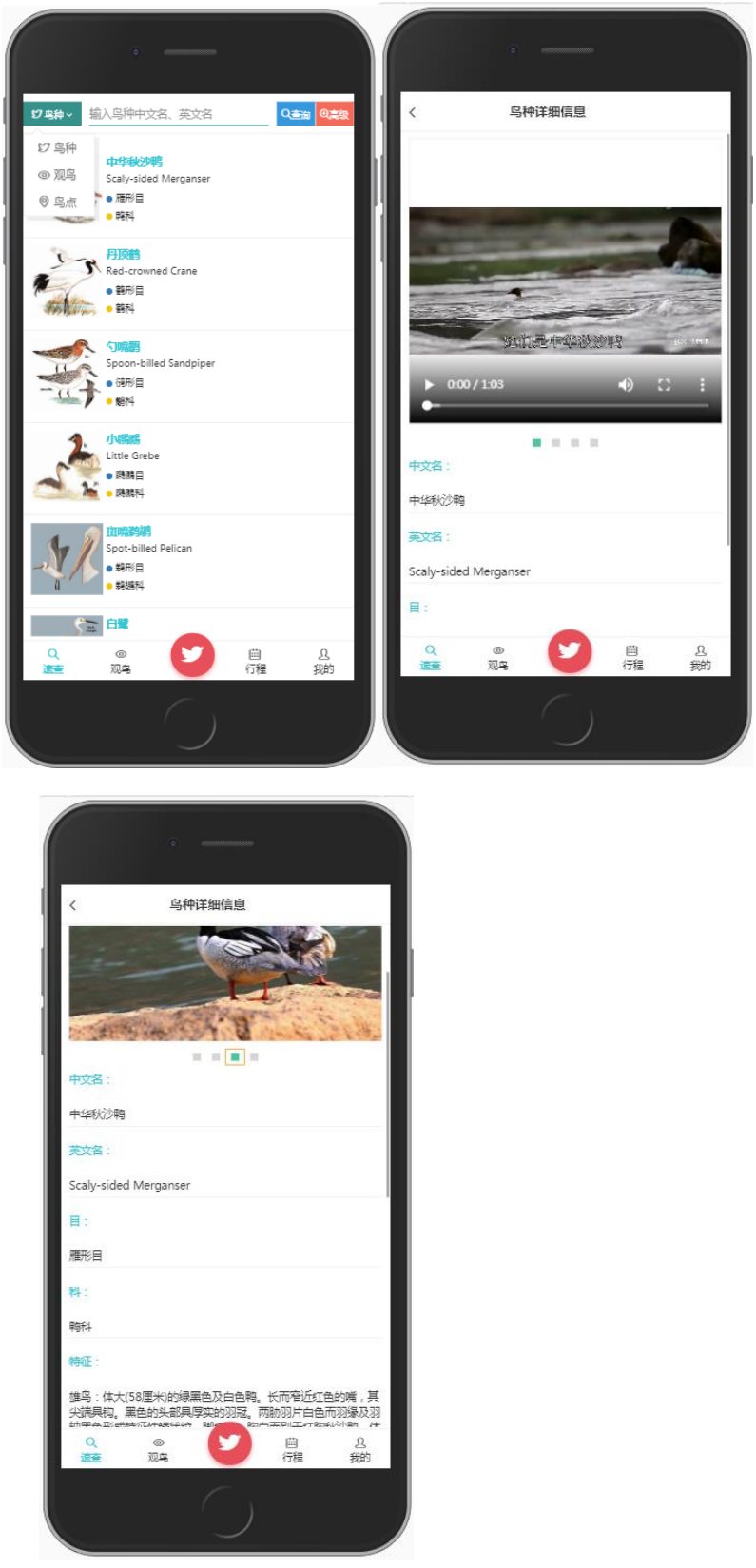





**Fig.1.3** "Quick check" module

3) "itinerary" module

To achieve the user's own statistical summary of all bird watching records and itinerary summary (including bird watching records, bird species, career bird species, etc.).


**Fig.1.4** "itinerary" module

## 2. Develop database system for water bird and habitats in Yellow Sea Ecoregion

(1) Database platform construction

Build waterfowl and wetland database. It mainly involves the storage of public use data, such as bird watching record, waterbird photos, bird spot information, waterfowl, wetland location information, flight path and other professional geographic information, such as waterfowl and coastal wetland, and geographical information of nature reserve type. So far, the database framework has been designed and completed, including the detailed public database module and the preliminary waterfowl, wetland and nature reserve spatial database module. Among them, bird watching record, waterbird photos, bird information and other public database modules have been completed.

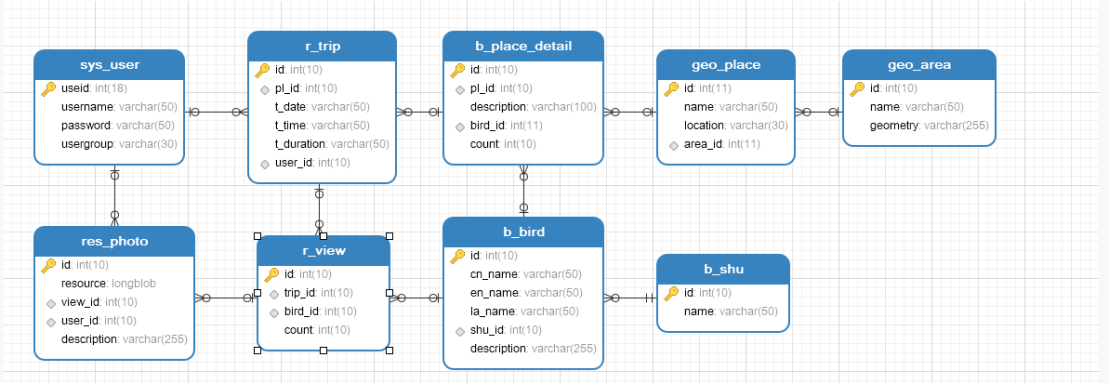


**Fig.2.1** Database overall framework

The development of the public birdwatching website was mainly completed in December and mid-January. The background of the site is built with node.js. The front desk is built with html + JQuery+vue.js. The style of website reference ebird and domestic several mainstream bird-watching website to develop. Up to now, it mainly realizes the page and background functions of home page, personal data, news dynamic, resource statistics list, personal information, bird watching record submission and bird watching record query.


**Fig.2.2** Waterbird and wetland database

Below the title are the user's own list of resources, as well as the Quick Channel button. Users can view submitted bird watching records, bird photos, click on the number to see the details. Through the right button, you can upload search for resources and other operations.

(2) My data section

**Fig.2.3** My data section


(3) Latest dynamic plates

Follow, you can click on the title to go to a separate page for details. The bird species category will be updated with the date to inform the public about bird species resources. Click on more graphic and text options to see more bird species information. By clicking on the name link, we can find out the distribution and bird watching record of the species.


**Fig.2.4** Latest dynamic plates

(4) Resource statistics section

Resource statistics module, at the top of the bird point, bird species and bird watching record total is the total number of entries recorded on the site. The three statistical lists below record the top 10 most popular bird-watching types, bird-watching sites, and regional bird-watching numbers.


**Fig.2.5** Resource statistics section

The latest photo section is used to show the latest bird photos taken by users. Click on the big picture.

**My resources:** It can select the statistical range, from the national statistics of my bird watching records, can also select the area, statistics users in the area of bird watching records and the number of photos.

(5) User login interface

On the left side of the resource page are the user's avatar, login name, location, last login time and mode. On the right, there are recently uploaded photos of birds, as well as recent bird watching records. Click on bird-watching number, you can see the number of different birds in the change data detailed information.

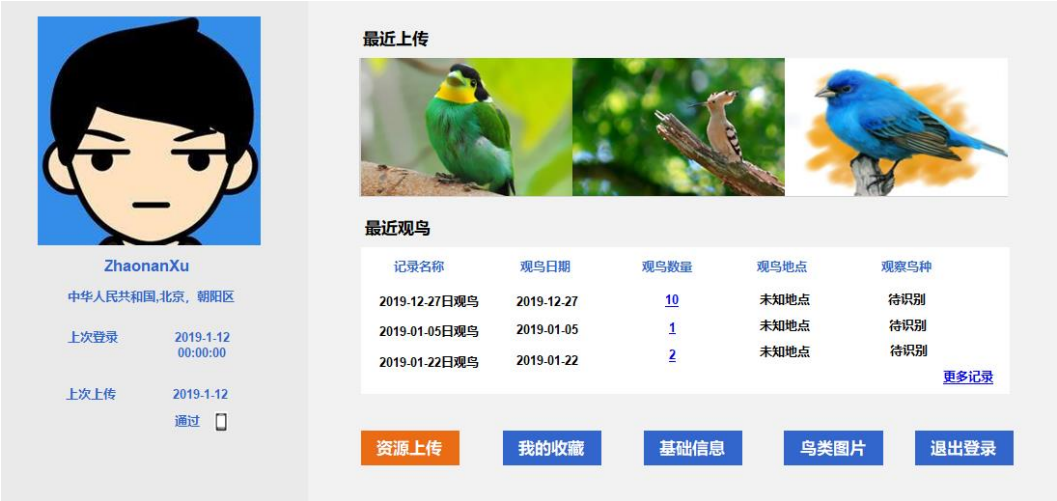


**Fig.2.6** User login interface

(6) View bird record uploading interface

Bird watching record upload page, mainly responsible for uploading the user's bird watching record. By selecting the bird-watching place, the bird-watching date, the duration of bird-watching activities, input the time and place of bird-watching record. Bird-watching sites can support a variety of input methods, currently can be selected from historical records and cities. Enter the bird-watching time and place, start entering the bird-watching category and the number observed in that category. Each bird is entered into the bird watching record as a single record. And can be accompanied by uploading multiple photos. Below:


**Fig.2.7** View bird record uploading interface

The number and photos of each bird are uploaded into the bird-watching record list. When all the bird observation information is inputted, click the upload bird watching record button, upload bird watching record to personal resource database.

(7) Bird watching record management

Users can manage their own bird watching records. Includes viewing bird-watching records, editing single-entry bird-watching records, deleting, and viewing details. It also supports the sharing of bird-watching records as a public resource. When all operations are complete, click on the synchronization record to save the operation results.


**Fig.2.8** My birdwatching record list module

### 3. Organize training workshops for NGOs and other stakeholders on knowledge about coastal wetland and endanger waterbirds conservation in YSLME.

Citizen scientists is playing an increasingly important role in wetland and waterbirds conservation. However, few citizen scientists participate in the conservation action in China, lack the experience of waterbirds conservation and the ability of waterbirds identification is the key reason. For this problem, project member will organize a training workshops for NGOs and other stakeholders on knowledge about coastal wetland and endanger waterbirds conservation. We had made the training plan, include training time, training location, trainer, participant and main training content and aim.

(1) Training time
    24 Sep 2019
(2) Training location
    Jiangbei Wetland Protection Center in Tianjin Binhai New Area
(3) Trainer
    Jianmin Wang
(4) Participant
(5) China biodiversity conservation and the representative of green development foundation, tianjin volunteer team, tianjin binhai new area protection volunteer association representatives, tianjin eco-city soud social education center of the earth, tangshan big qinghe saltworks wildlife shelter ambulance station on behalf of, the wild animal protection association of tianjin represents, caofeidian wild animal protection association, the tianjin binhai new area north xinjiang wetland protection center, dongying city bird watching club, caofeidian district tangshang city-institute of wetland ecology on the water side, tianjin ninghe district wildlife conservation association. .
(6) Training content and aim

The training content include the identification ability of waterbirds, especially for 4 identified endangered species, Great knot, Relict, Black-faced Spoonbill, Oriental Stork, and wetland waterbirds conservation experience. Mobilize more citizen scientists participant in wetland and waterbirds conservation in YSLME.


Figure 3.1 Training workshops for NGOs and other stakeholders on knowledge about coastal wetland and endanger waterbirds conservation

(7) Training outputs

The organizations for NGO acquired the experience of the identification ability of waterbirds, especially for 4 identified endangered species, Great knot, Relict, Black-faced Spoonbill, Oriental Stork, and wetland waterbirds conservation experience. They will organize more activities of waterbirds monitoring.

## 4. Develop a model to balance sustainable fishery development in fish ponds and waterbird conservation

The Qingkou River Estuary of Lianyungang are the migration routes of East Asian-Australian birds and an important supply station and habitat for the Yellow Sea in China. In May 2019, the Waterbird Joint Investigation Team in China, in the Qingkou River Estuary-Linhong River Estuary, recorded 100,000 species of waterbirds, of which 18,000 were more than 80% of the global population.

Over the recent years, the conflict between the growth of fishery resources and waterbird conservation in Qinghe River Estuary Wetland has become more and more intense. Fish ponds,

as key alternative habitats for waterbirds in their migration, play an important role in providing staging and foraging sites for waterbirds. Unfortunately, the unsustainable, intensive aquaculture practice has severely polluted the environment of nearshore fish ponds. A large number of benthic organisms in the fish ponds were killed by pollutants, leading to the reduced food resources of waders. On the other hand, pollution also poses a threat to the survival and safety of waterbirds, and is considered a key factor behind the reduced population of endangered waterbirds in the area.

Therefore, it is urgently needed to address how to balance sustainable management of fishery resources and protection of endangered migratory waterbirds in the area, and develop a model to balance sustainable fishery development in fish ponds and waterbird conservation. In order to complet this aim, a survey of win-win model is necessary to promote waterbirds conservation for local fishermen and sustainable fishery development. The purpose is to improve the fishermen's understanding of waterbird protection, and minimizing the disruption of endangered waterbirds by human activities in the presence of endangered waterbirds.

The project member draft a survey plan for balancing sustainable fishery development in fish ponds and waterbird conservation in Qingkou River Estuary of Lianyungang. It includes three aspects, sustainable fishery development, waterbirds biodiversity monitoring in fish pond and win-win model advice of sustainable fishery development in fish ponds and waterbird conservation.

(1) Survey time

20 oct. 2019

(2) Survey location

Qingkou River Estuary of Lianyungang

(3) Survey content

1.1 Sustainable fishery development

Select 10 villages along the coastal wetland in Qingkou River Estuary of Lianyungang, visit 3 fish families each village. The survey mainly includes the management of fishpond, aquaculture species, catch dates, fishing methods, fishing frequency, benefits and disturbance factors around the fishpond.

1.2 Waterbirds biodiversity monitoring in fish pond

The monitoring items mainly include waterbird species, count, the time period and time of stopover and foraging behavior in fishpond.

1.3 Win-win model advice of sustainable fishery development in fish ponds and waterbird conservation

Summarize the previous survey, draft the win-win model advice of sustainable fishery development in fish ponds and waterbird conservation, include how to manage the fishpond,

how to conduct eco-compensation for fishpond to creat a good habitat environment for waterbirds.

**Appendix:**

**Tab 4.1** The sign-in sheet of model survey to balance sustainable fishery development in fish ponds and waterbird conservation

| Survey time | Survey location | Interviewee | Investigator |
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