

# **Promote Sustainable Livelihoods Development in Fishery Communities and Protected Seabirds through Regional Cooperation and Community Co-management**

*Implementation report*

*June 2nd, 2019- January 31th, 2020*

## **I Background**

Among the 66 Large Marine Ecosystems in the world ocean, the Yellow Sea Large Marine Ecosystem covers an area of 400,000 km<sup>2</sup> along China, South Korea and North Korea. It serves as an important wintering and spawning ground for most fisheries, and an important corridor for migratory shorebirds along East Asian-Australasian Flyway (EAAF). Meanwhile, approximately 600 million people depend on the Yellow Sea for food, medicine, income etc. However, under the negative influence of human activities, climate change etc., Yellow Sea is now facing unprecedented threats including habitat loss and degradation, overfishing, unsustainable mariculture, pollution, making it one of the most heavily impacted Large Marine Ecosystems in the world. Dandong Yalujiangkou wetland, “the best refueling site for seabirds” as well as one of the world’s biggest stop-over sites for migratory birds, plays an important role in Yellow Sea Large Marine ecosystem.

In June 2019, GEI started cooperation with Dandong Yalujiangkou Wetland National Nature Reserve, Dadingzi Village in Donggang City, as well as Dandong citizens, and launched the project “Promoting Sustainable Livelihoods Development in Fishery Communities and Protected Seabirds through Regional Cooperation and Community Co-management” with the support from Yellow Sea Large Marine Ecosystem (YSLME) Phase II. GEI hopes to set a community-participated demonstration site (the most characteristic part of (YSLME) Phase II), aiming to promote effective protection of Dandong tidal flat wetlands with the involvement of communities.

Based on preliminary baseline survey and in-depth interactions with the Nature Reserve and local communities during the project, issues and challenges existing in the project site are summarized as follows: 1. Local communities are not intensively involved in seabirds protection actions, and

the Nature Reserve has never conducted co-management with communities before; 2. Currently, local tidal flats are contracted out to individuals or companies for unsustainable shellfish farming, magnifying the conflict between tidal flats' development and conservation; 3. Community members, even though fully aware of protecting birds, have little knowledge of protecting coastal wetlands and biodiversity; 4. Due to internal shortages and lack of manpower, the management effectiveness of the Nature Reserve is relatively backward, and the Reserve's awareness of managing needs to be enhanced.

## **II Project Duration and Objectives**

Duration of the project is from 2<sup>nd</sup>, June, 2019 to 31<sup>st</sup>, January, 2020. The project aims to enhance sustainable artisanal fishery as well as community livelihoods development, and protect seabirds along EAAF via community co-management model. Based on baseline survey and continuously slight adjustments during practice, the project was finally implemented from following aspects: community co-management, scientific citizen monitoring team building, public education, capacity-building training and China-Korea learning exchanges to improve management capability of Dandong NR, inspire a shift in conservation values and behaviors of local communities and public, and assist local authorities to monitor and manage tidal flat wetlands and seabirds in better ways. The project's sub-objectives include:

2.1 Promote regional cooperation to protect seabirds and coastal wetlands along EAAF based on current YSLME platform and YSLME network resources.

2.2 Conduct baseline survey to define the project scope and feasibility of approaches of the project.

2.3 Build community co-management mechanisms: 1) meet staffing challenges and assist local management bureau to better conserve coastal wetland resources; 2) develop sustainable livelihoods for local communities

2.4 Improve communities' understanding of seabird and coastal protection along EAAF and enhance communities' participation in conservation.

### III Project Details and Achievements

#### 3.1 Establish community co-management mechanism, and promote community-involved protection under CCCA Model

Community-led Conservation Concession Agreement (CCCA) is a conservation model introduced by GEI from abroad, and then demonstrated, improved and innovated in China through plenty of community-participated projects. The core concept of CCCA is making biodiversity protection as a viable choice for local resource users, that is, to provide direct incentives through a negotiated benefit package in return for effective protection of important areas and key species, so as to realize local community involved protection and set up a demonstrative guide. CCCA is firstly launched in 2005 by Conservation International for a protection and development project in Peru. Currently, CCCA model has been successfully implemented in over 15 countries and areas.

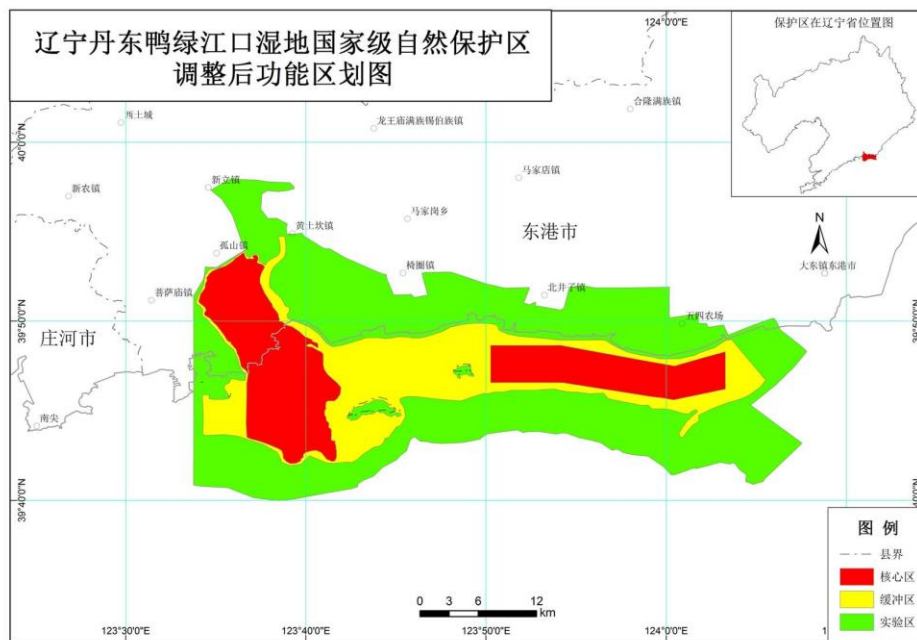


Figure 1: Dandong Yalujiangkou Wetland National Nature Reserve Scope and Functional Map

Dandong Yalujiangkou Wetland National Nature Reserve covers a total area of 81,430 hectares (Figure 1) in a strip shape. There are 6 towns and 4 farms distributed in the Nature Reserve, and more than 90,000 residents, in total 49 villages, live in the NR. Long-term frequent human activities, lack of manpower and insufficient preliminary funding jointly make it difficult for the Nature

Reserve to intensively work with communities to carry out co-management protection. Since 2013, the Nature Reserve tried to cooperate with communities under the mode of financial compensation to reduce damages caused by local communities to natural resources in the protected area. Due to limited practical cooperation between the Nature Reserve and the communities, this trial, aiming to get support from communities to conduct conservation work including monitoring and patrolling, did not actually realize community involved tidal flat wetland and bird protection. The Nature Reserve has 12 staff, but only 3 of them are managing protection and monitoring, far from enough to manage such a huge protected area. At the same time, Dandong Yalujiangkou Wetland, as a key area on EAAF, plays an important role in the sustainable reproduction of migratory birds, and in large-scale migration seasons, from April to May each year, more manpower is needed for effective monitoring. Therefore, a major objective of the project is to bridge the Nature Reserve and communities, promote cooperation between Nature Reserve's administrative bureau and communities, and assist the Nature Reserve to conduct better protection and monitoring of seabirds. Meanwhile, we aim to apply community co-management through signing conservation agreement and establishing community fund under CCCA model to make communities benefit from and proactively join in protection.

### [3.1.1 Co-management agreement centering on Dadingzi Village in Donggang City, Dandong](#)

#### 3.1.1.1 Conservation agreement drafting and signing

After negotiation based on preliminary baseline survey, stakeholders' needs as well as capabilities, GEI, Dandong Forestry and Grassland Development Service Center<sup>1</sup>, and Dadingzi Village signed a co-management and protection agreement (Figure 2). The agreement specifies management term, objectives and activities, as well as rights and obligations of the three parties (Annex I). The community assists the Nature Reserve to construct patrolling and monitoring forces, and conduct activities including bird monitoring as well as daily patrolling and protection work, which is the most common and yet the most important daily work for the Nature Reserve. While community

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<sup>1</sup> Administrative unit of Dandong Yalujiangkou Wetland National Nature Reserve, the Nature Reserve does not have independent legal person qualification after institutional reform.

offers patrolling and monitoring manpower, garbage cleaning and publicity activities should be conducted in the community. In return, the community receives strawberry and shrimp farming trainings, thus obtaining opportunities for capacity improvement and development.

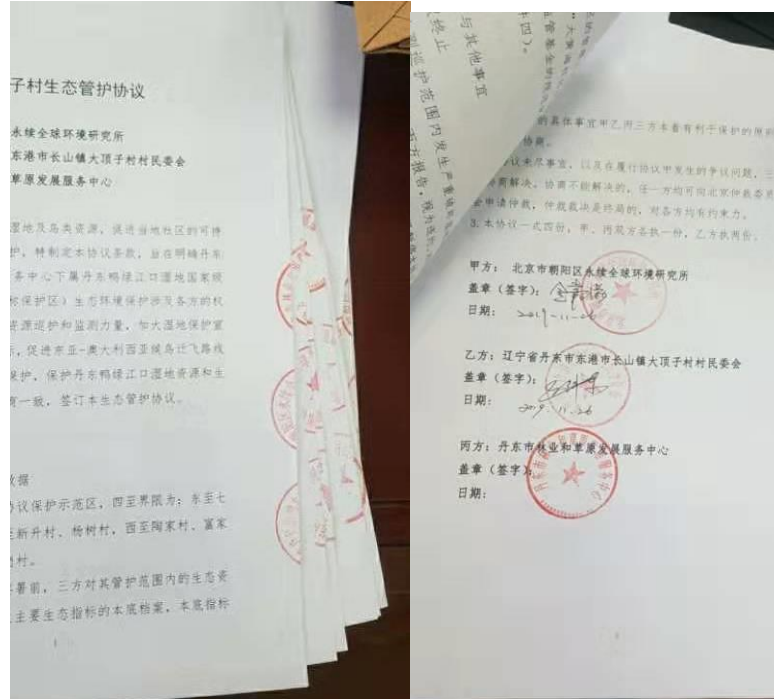


Figure 2: Dadingzi Village Ecological Management and Protection Agreement

### 3.1.1.2 Establish Community Development and Protection Fund

In order to promote the community to manage surrounding natural resources in a better and more sustainable manner, to enhance effective protection of tidal flat wetlands and seabirds, and to guide the community to proactively participate in the protection while improving itself, the three parties, under the co-management agreement, jointly set up “the Yellow Sea community development and protection Fund”. Specifications regarding requirements and scope of the use of fund are cited. 55% of the fund is used as subsidies for community’s patrolling rangers, and 45% as support to community’s construction and development after the community conducts collective protection actions. The fund will be given to the community in four phases. Currently, initial part of the fund has been transferred to the community as signed in the agreement. Daily monitoring and patrolling work will begin in February 2020 (Due to government reform, the agreement was signed later than planned time, therefore, community’s daily monitoring and patrolling work will

be carried out in later stage as signed in the agreement). According to community's internal discussion, fund for community's collective construction and development will be used to construct street lights beside village roads to reduce local residents' safety issues when going out at night.

During implementation of the project, three parties were constantly exploring better and more effective ways to promote sustainable operation of the fund. Finally, combining with Dadingzi's production and living characteristics, this project helps the community to optimize strawberry planting ability and expand strawberry sales market. According to final negotiation, the community extracts 7% of every 1.5kg strawberry sales into the Fund. An independent bank account is opened for strawberry protection fund (Figure 3), and each sale is recorded (Figure 4). Till 30<sup>th</sup> January, 2020, strawberry sales in the community exceeded 50kg by five strawberry farmers from the community, and a total of CNY 225 has been deposited into the fund (uncounted amount will be settled after the Spring Festival). While strawberry farmers' profits are boosting, the amount in protection fund is also increasing. In the future, the community will continue to explore better ways to operate fund to make the fund better support conservation actions (Figure 5).

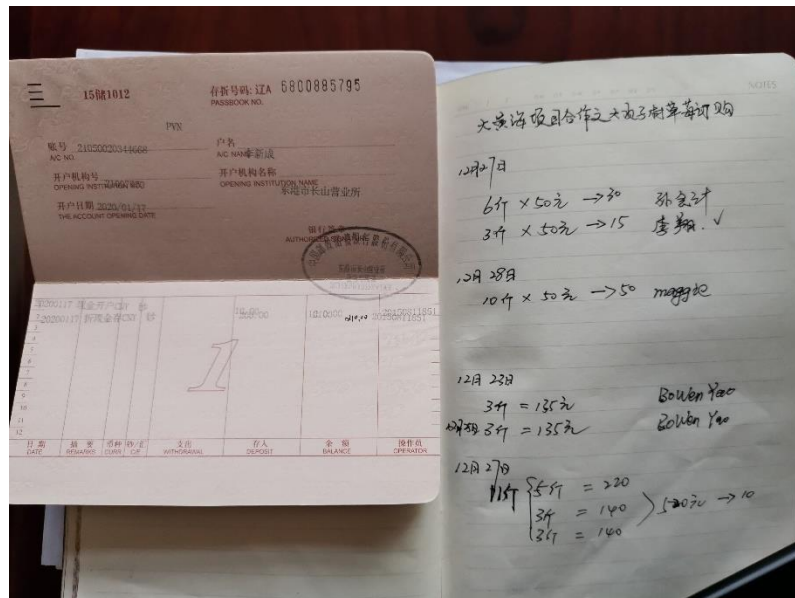


Figure 3: The strawberry protection fund account is opened in the name of the first secretary of the village, managed by the village leader, and supervised by the first residential secretary of the village.

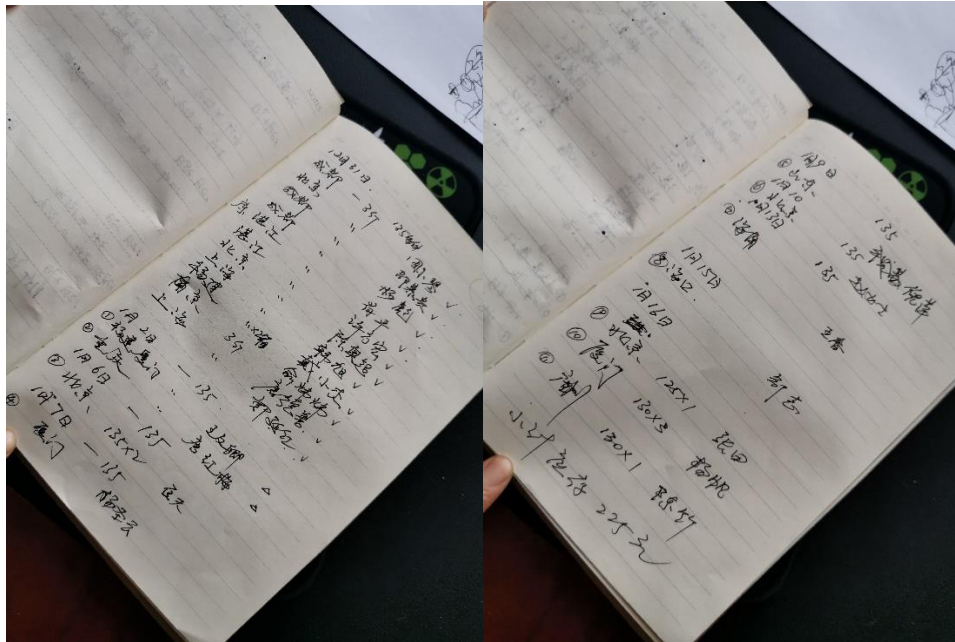


Figure 4: Record strawberry sales and extraction quota

**GEI** 社区保护行动  
for marine conservation  
海洋生态产品

草莓

2019年, 通过“黄海大海洋生态项目二期”的支持, 我们在丹东与鸭绿江口湿地国家级自然保护区和大顶子村合作开展滩涂湿地及鸟类保护。通过社区协议保护的的模式, 推动当地社区自主参与滩涂湿地和鸟类的保护。与此同时, 我们也在探索社区发展之路, 让社区在保护中受益, 激励当地社区更大的保护主动性。

大顶子村所在的东港位于北纬40度, 是国际公认的草莓生长黄金地带, 这里的草莓闻名海内外, 阳光、空气、温度、水和土壤赋予了草莓最完美的生长环境。我们在帮助大顶子村发展草莓产业, 大顶子村在协助保护区开展日常的巡护监测和保护工作。我们希望向您呈现这一份香甜, 保护虽任重道远, 但有趣的支持, 我们倍感暖心。

Figure 5: Posters designed to help local community sell strawberries, helping community to explore local marine ecological products and develop local strawberry industries

### 3.2 Scientific citizen monitoring team construction

Tidal flat wetlands are important habitats for a variety of seabirds. However, at present, all tidal flats collectively owned by local village are contracted out to individuals or companies for shellfish farming (mainly sand clams), and the contractors are managing the tidal flats in a unsustainable

way, which has caused the productivity and biodiversity of tidal flats to decrease, and there are less food sources to feed seabirds. We planned to promote effective protection through a sustainable tidal flat farming experiment. However, it's impossible due to the contracting mode and fund shortage. While Fishermen are the main group of farming and fishing, and it's worth exploring ways to call on fishermen to participate in tidal flat wetland and seabirds protection. We can use fishermen's interactions, their internal communications and mutual influences, to encourage more of them to have the awareness of environmental protection and thus reduce destructive fishing activities on the tidal flats and in the ocean.

In this light, we signed a monitoring and patrolling agreement with two fishermen who are fishing in the waters and tidal flats near Dandong (Annexes 2-1, 2-2). Dandong Yalujiangkou Wetland National Nature Reserve acts as supervisor and supporter to jointly build citizen patrolling and monitoring forces, and to promote seabirds' protection at key stops on the EAAF migration route. At the same time, we assisted the Nature Reserve to establish monitoring system and supplement monitoring forces. A monitoring mechanism that reports monitoring data (including images) regularly to identify bird shootings, and severe human activities as well as other emergency activities has been formed.

According to the agreement, the two citizens, also two fishermen who have been fishing in the Yellow Sea for decades, carry out monitoring and patrolling (including seabirds monitoring) in flat tidal wetlands and offshore areas where exist frequent human activities (Figure 6). The monitoring can provide the Nature Reserve and research institutes with elementary scientific data, supporting the Nature Reserve to set management plans and conduct protection activities. It also provides basic data support for climate change and Blue Bay construction.



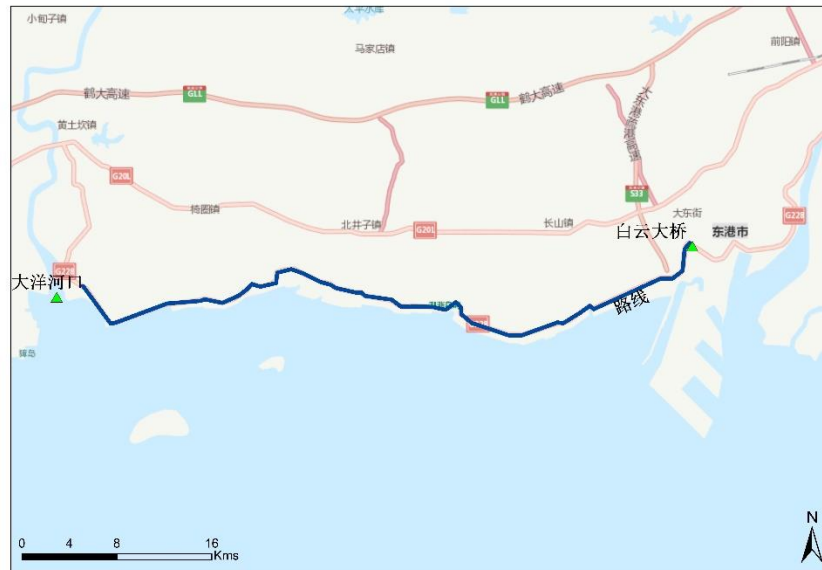


Figure 6: Tidal flat wetland patrolling route as negotiated with citizens

So far, the two fishermen have completed 24 times patrolling, including one offshore patrol, with total miles of 1316.7 km (Table 1). At present, a patrol mechanism has been formed (Attachment 3), and patrolling rangers should report to the Nature Reserve after each patrolling (Figure 7). Emergencies such as serious human damage to the seabirds and illegal reclamation in tidal flat wetlands should also be reported in a timely manner. On 11<sup>th</sup> November, 2019, a patrolman rescued an injured bird. At that time, he thought it was a protected bird and reported it immediately. The Bird was later identified as *Cairina moschata*, a domestic duck species introduced from western world, and its flying skill usually makes people confused. In the case, the fisherman reported in time and the Nature Reserve checked immediately, both sides' prompt response formed a positive mechanism. According to overall records, garbage is currently the main issue found during patrolling.

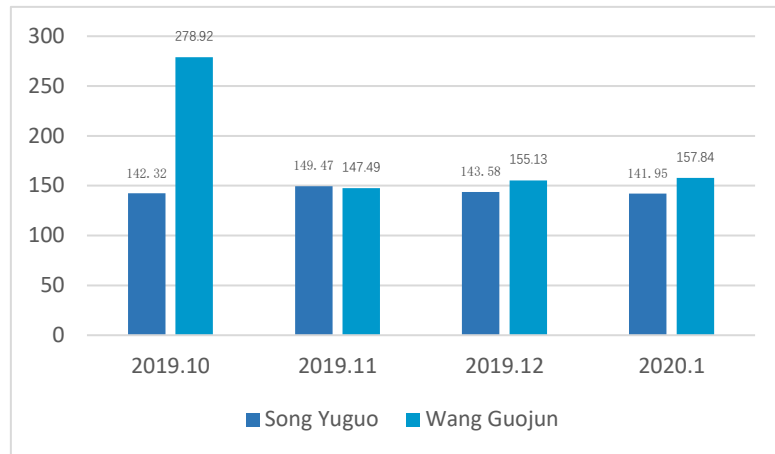


Table 1: Records of patrol miles of Song Yuguo and Wang Guojun

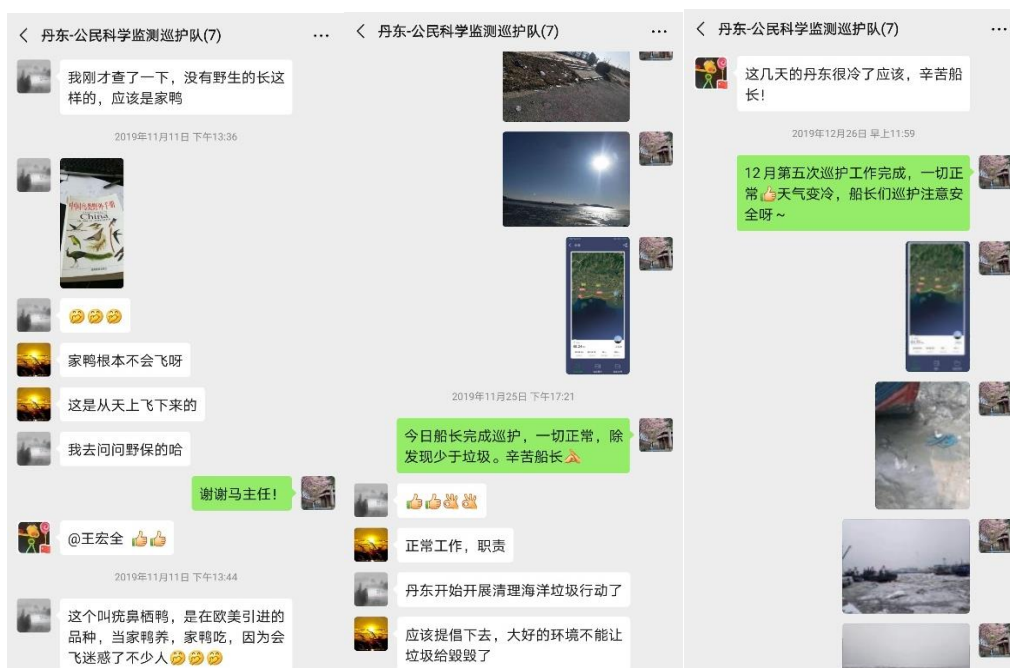


Figure 7: Report to the Nature Reserve after each patrol

### 3.3 Capacity building training

During the project, in order to improve the community's coastal wetland and seabird protection monitoring capability, enhance the community's sustainable livelihood development skills, and promote the community's co-management actions in accordance with CCCA model, so that the community can manage surrounding natural resources sustainably, adopt sustainable fishing, and participate in conservation work to reduce negative impacts on seabirds and other marine species, and improve conservation effectiveness, we conducted two comprehensive knowledge training

sessions, one community livelihood training, and one field visit. Attendance totaled up to 102, including 28 females.

### 3.3.1 Comprehensive knowledge training

Comprehensive knowledge trainings were conducted in Dandong and Weihai respectively, in hoping that with basic theoretical knowledge, the Nature Reserve, communities, fishermen and other NGOs can have a deeper understanding of why to participate in conservation project, and why we need to protect seabirds, coastal wetlands, as well as the ocean (Figure 8-1, 8-2). The content of knowledge training includes the knowledge of CCCA, marine litter (ghost gear), marine benthos, common coastal wetland birds and related protection, the impact of climate change, the management of fishing gear and fishing law in China, rescue of marine species, etc. <sup>2</sup>



Figure 8-1: Training course in Dandong

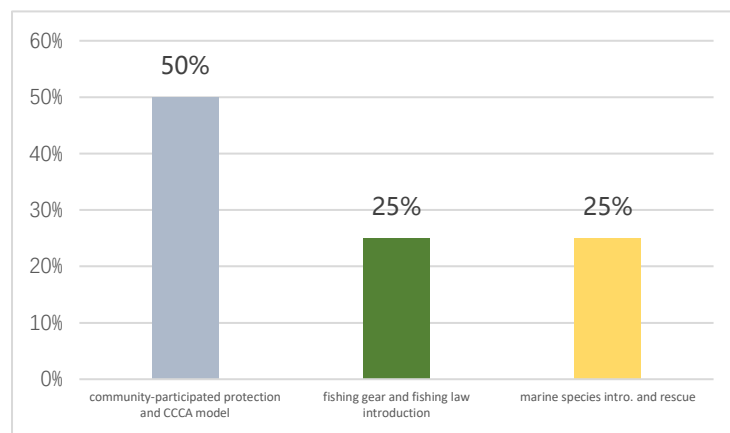


Figure 8-2: Training course in Weihai and cap-giving ceremony

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<sup>2</sup> CCCA community participatory conservation and coastal wetland bird training content has been translated into Korean language, hoping to help with community projects in the Great Yellow Sea project.

We set training feedback in the form of questionnaires to assess the effectiveness of the training, and a total of 21 training feedbacks were collected. The questionnaires include: The most useful training content, extra content should be included in further training, further understanding of fishing gear management, and awareness of ghost fishing gear's damages (Annex 4). Regarding the most useful knowledge offered in the training, 50% of feedbacks answered that community-participated protection and CCCA model was most helpful for future work, and communities, management departments and NGOs can start to pay more attention to local fisherman communities in future protection work (Table 2).



*Table 2: Percentage of most useful training content*

Unsustainable fishing is also one of the threats faced by the Yellow Sea. The training also introduced China's existing fishery and fishing law management, so that all stakeholders can have an understanding of China's current and future management direction on fishing gear. 62% of feedbacks show they have learned that the fishery law is currently under revise. More than 71% of the trainees have learned about the fishing gear regulation and fishing gear identification (Table 3).

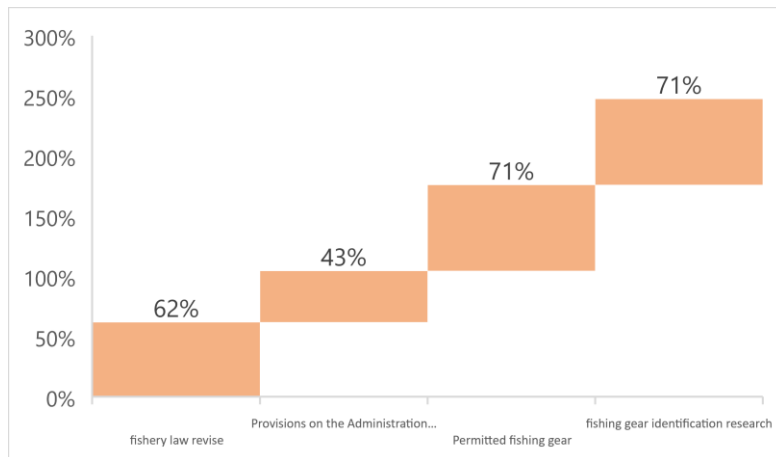


Table 3: percentage of acquisitions on China's future fishing gear management direction

Ghost fishing gear, the most fatal threat to marine lives among marine litter, affects not only the survival of marine lives but also the fishery economy. Regarding the understanding of damages brought by ghost fishing gear, 100% of the questionnaire feedbacks show that they realized ghost fishing gear would threaten marine lives. 81% recognized that ghost fishing gear negatively affects the fishery economy (Table 4).

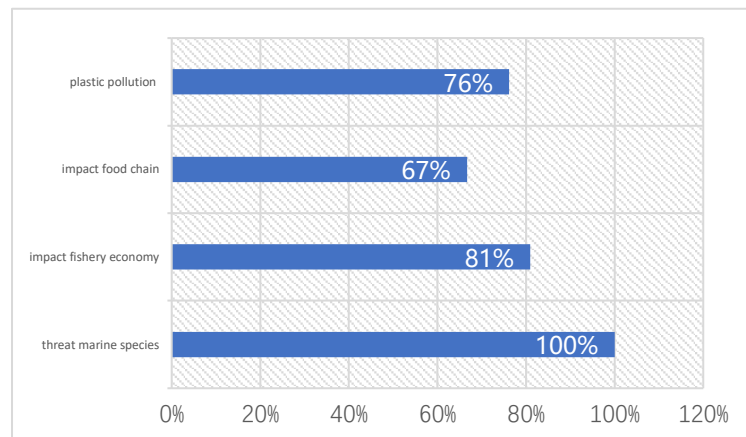


Table 4: percentage of understandings of ghost fishing gear's damages

### 3.3.2 Community livelihood training

We hope that while encouraging the community's active participation in protection through community co-management, we can also promote sustainable development of the community. This is the core of CCCA model: giving incentives according to agreement in return for community's protection support. The community provides protection and, at the same time, they can get benefits. Thereafter, based on baseline survey, we designed two livelihood trainings: strawberry

planting training and shrimp culture training. Currently, one strawberry planting training has been conducted (Figure 9). It provides community strawberry farmers with scientific guide to strawberry seedlings and pest control. The farmers built a strawberry planting experience communication online group after the training.



*Figure 9: Based on local community' s need, strawberry planting training in Dadingzi Village to help develop strawberry industry. Its strongly recognized by the local villagers as they supported the Fund' s establishment.*

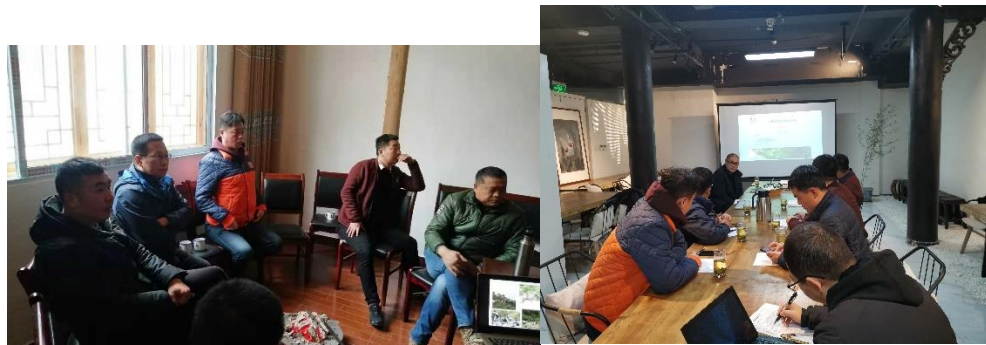
According to the feedback on site, local strawberry farmers rarely communicate with each other, strawberry farming is mainly managed as family business, and women are more involved in strawberry planting. This strawberry training, for the first time in Dadingzi Village, brought strawberry planting experts into the community to conduct field training.

### 3.3.3 Field Investigation

Both Dandong Yalujingkou Wetland National Nature Reserve and the community have backward knowledge of community involved conservation and effective management of the Nature Reserve. Field visits are beneficial to the project's implementation and future effective management of the Nature Reserve. In this light, we brought representatives from the Nature Reserve and the community to visit a community involved protection site in Sichuan.

In Sichuan, we organized field visit to Guanba, a community with 10 years of co-management experience with local government and NGOs. Representatives made experience exchanges with Sichuan Forestry and Grassland Bureau, NGOs and foundations regarding community co-management and protected area management. This visit helped the representatives better understand joint protection led by government, community and NGOs, which helps with future

Dandong community co-management project and World Natural Heritage application. (Figure 10). After the visit, community representatives said that during the visit to Guanba, they realized protection is not a one-time effort, and it requires long and strenuous efforts. They should keep communicating with the government to know each other's needs, but if governmental planning or activity contradicts community's protection concept, community should have the courage to point it out and make negotiation with local management departments.



*Figure 10: Visit Guanba and local government, communicate with NGOs*

### **3.4 China-Korea learning exchange**

GEI organized the Nature Reserve to visit Marine protected areas in South Korea. Representatives from the Nature Reserve visited Suncheon Bay Marine Protected Area and Gochang Tidal Flat Marine Protected Area (Figure 11). They exchanged experience in how to promote the establishment of protected areas through cooperation with NGOs, governments and scientific research institutions, how to encourage communities to convert farmlands back to wetlands to provide habitat for migratory birds, how to cooperate with communities to carry out public nature education so as to promote the concept of conservation, and how to have communities proactively participate in marine debris removal. NR representatives also introduced the community co-management project currently conducted in Dandong Nature Reserve, exchanged their experience in community-participated model. After the visit, NR representatives said that the management model of marine protected areas in South Korea is different. It's difficult for Chinese government to directly purchase community's land to carry out protection work. However, information regarding better cooperation between protected area and the community, especially the

implementation of nature education and community tasks, gave them new inspirations. They hope that in the future, they can establish a cooperative relationship with Gochang Tidal Flat Marine Protected Area for scientific advices, especially in nature education.



*Figure 11: Visit marine protected areas in South Korea and communicate with local community*

### **3.5 Public Education**

We carried out publicity and education activities centering on marine conservation in Dadingzi Middle School. We hope that, through pictures, videos and interactions that emphasizes the importance of coastal wetlands and seabirds, teenagers can be equipped with environmental protection awareness, and influence their families, so that to improve the awareness of the entire community. At the event (Figure 12), we presented to 35 students the complexity of the marine ecosystems and the close connection among different species. Every life is of great value. In fact, the students are familiar to the food web, but through this interactive experience, they remembered the ocean, the coastal wetlands, and the seabirds. We hope it is just a beginning.



*Figure 12: Through the web of lives, students can better understand the ocean, coastal wetlands and birds, and they can bring the knowledge to their families*



## IV Experience and Challenges

The project has been implemented for more than half a year. For the Nature Reserve and the community, it's a process of knowing about community involved protection. At the same time, the participation of the two fishermen also encouraged more manpower to support and explore the first trial of joint protection by government, community, citizens and NGOs, guard thousands of seabirds on EAAF, experiment a sustainable co-management model that involves community's participation, and promote citizens to join frontline protection. Through the project, we met challenges, but also gained achievements.

### 4.1 Obstacles in exploring sustainable tidal flat farming

In the initial stage of implementation, we thought about cooperating with local tidal flat community to explore sustainable tidal flat farming under community co-management model. However, after baseline survey, we found that local community's tidal flats have been contracted out for more than ten years. Individuals or companies rented the tidal flats for extensive shellfish farming, renting acreage ranging from 66.7 hectares to 1333,3 hectares with rent price varying from CNY 45,000 to 60,000 per hectare. Yearly shellfish production from one hectare of tidal flats is about 30-45 tons. In general, contractors' annual income can reach at least one million yuan. Community involved tidal flat farming requires large amount of financial support, which goes beyond our capability. With existing fund, and based on the current status of the Nature Reserve and the community, we chose Dadingzi Village, a village surrounding the Nature Reserve, as our project site. In the future, if the government have the ability to reclaim part of tidal flats to conduct sustainable mariculture and monitoring on seabirds, it can provide useful experience for the protection of the Yellow Sea.

### 4.2 Weak conservation awareness, requiring more time and efforts

Previously, although Dandong is a coastal city, no non-profit organization has ever stepped in this area. GEI, as the first non-profit organization to carry out environmental protection work in Dandong, has been continuously strengthening its connection with stakeholders through various

ways. We paid frequent site visits to strengthen communication with the Nature Reserve and the community. We implemented the project on the premise that locals' awareness of NGO was raised. For more than half a year, key persons of the Nature Reserve have gained in-depth understanding of environmental NGOs. Environmental NGOs, relatively a marginalized group in the entire society, play an important role in serving as a link between the government and the community, promoting cooperation between resource protectors and resource users, guiding the community to make use of its advantage to mend the deficiencies of the Nature Reserve. At the same time, the Nature Reserve, regards the community as best protectors instead of resource destroyers. After half a year of implementation, the Nature Reserve highly recognized this project, which provided reference for its future management work. The Nature Reserve is considering bringing the protection model into its work plan to encourage more communities to participate in future conservation work, which not only makes up for the Reserve's manpower shortage on monitoring and patrolling, but also promotes communities' development. At the same time, the implementation of the project has also provided community's highlights for the Nature Reserve to apply for World Natural Heritage.

#### 4.3 Women's participation and women's role in protection

In many rural communities around the world, women play a very important role in protection work. Their ways of act and mode of thinking are different from men. During the implementation of the project, we paid particular attention to women's participation. Women's family status cannot be ignored, and it also unites the entire community. From frontline patrol to strawberry planting trainings, we emphasized women's participation. The participation allows women to feel valued and they use their influence to further promote the implementation of conservation actions.

#### 4.4 Strict project supervising and financial management

Community-based environmental protection projects, especially community co-management projects, require plenty of time and efforts to positively affect stakeholders, and make them aware that protection can also bring benefits to the whole community. In this process, changing

conditions of the community may affect the implementation of the project. Therefore, during the implementation, we have to made fine adjustments according to stakeholders' actual conditions on the premise of maintaining the overall frame of the project, and also invite experts to give professional suggestions and advices to make sure the project been carried out smoothly(Figure 13). At the same time, the project budget must be strictly supervised to ensure a standard financial management.



*Figure 13: invite expert from the Regional Working Group of Yellow Sea to provide professional advices*

#### 4.5 Wastewater recycle and community involved wastewater treatment exploration

As one of the 228 poverty villages in Donggang City, Dadingzi Village still maintains direct drainage of sewage. Ash water and black water in the village is discharged into surrounding tidal creek without any treatment, and finally flow into the Yellow Sea (Figure 13). This is a common phenomenon of all rural communities in Donggang City. Direct discharge of sewage can be seen in 68 natural villages within the Nature Reserve. The Nature Reserve does not conduct regular water quality monitoring, so it is difficult to obtain pollution data. There is also no scientific data regarding impacts on local tidal flats and seabirds. We are also thinking about the possibility to carry out sustainable wastewater utilization in Dadingzi Village, and integrate it into local

strawberry planting industry, turning waste into treasure, reducing planting costs, and further improving strawberry quality. We designed a low-cost and easily manageable wastewater recycling system (Annex 5), in hoping to provide reference for future sewage treatment work in Dadingzi Village and the Nature Reserve. Integration of wastewater treatment with community's industrial development helps the community to know the benefits of protection. With a change of awareness and attitude, they are more willing to participate in protection.



*Figure 13: Untreated sewage from the community flow into Yellow Sea directly*

## *Appendix 1*

### *CCCA agreement with Dadingzi Village and Dandong Yalujiangkou Wetland National Nature Reserve*

#### Dadingzi Village Ecological Management and Protection Agreement

**Party A: Beijing Chaoyang District Sustainable Global Environmental Institute**

**Party B: Dadingzi Village Committee, Dandong**

**Party C: Dandong Forestry and Grassland Development Service Center**

With the aim to guard Dandong coastal wetlands and birds resources, promote the sustainable development of the local community and protection of ecological environment, the terms of this agreement are made to clarify the rights and obligations of the parties involved in the ecological environment protection of Dandong Yalu River Wetland National Nature Reserve (hereinafter referred to as the reserve), which is affiliated with Dandong Forestry and Grassland Development Service Center. To help build resource patrolling and monitoring capability, strengthen wetland conservation and education efforts, achieve conservation goals, promote the protection of water birds at key stops along the East Asia- bird migration route Australia, and protect wetland resources and biodiversity at Dandong Yalu River , the three parties has reached the agreement through consultation to sign this ecological management and conservation agreement.

#### **Part One: Basic Terms**

##### **I. Scope and Baseline Data**

1.Dadingzi Village is designed as agreement protection demonstration area, and the four boundaries are: east to Qiguding Village and Xuancheng Vllage, south to Xinsheng Village and Yangshu Village, west to Taojia Village and Fujia Village, north to Jinma Village and Xiagang Village.

2.Baseline Data: Prior to the signing of this agreement, the three parties shall conduct mutual recognition of the status of ecological resources within the scope of their management and protection, and establish background files of major ecological indicators, including:

- 1) Biodiversity: There is a rich biodiversity. Bird species include egret, grey heron, wild duck, seagull, oriole and other birds; there are also rabbits, wild boars, squirrels and other animals; Plant species include ginkgo, sycamore, cherry, red pine, larch and other plants;
- 2) There are currently no bird hunting in this area;
- 3) Current basic production and living conditions of the village: domestic sewage is discharged into the ditch nearby and domestic garbage is centrally disposed at the storage point;
- 4) Water quality: there are two ditches in the village, Biangou and Qiantanggou, whose water quality are of Level III. These two ditches flow directly into the estuary.

## II. Duration of the Management and Protection

Party B shall perform the wetland resource patrol and monitoring, as well as the responsibility of management and protection from October 1, 2019 for at least one year.

## III. Objective of the Management and Protection

Through the cooperation of the government, communities and non-governmental public welfare organizations, the community will be encouraged to participate in conservation activities independently and actively participate in the resource patrol and monitoring. The awareness of environmental protection among community residents will be enhanced.

## IV. Activities of the management and protection

1. Resource patrol: Resource patrol shall be carried out on a week basis within the demonstration area of this protection agreement and the scope of Changshan Town. Party B shall organize the monitoring patrol team and formulate the patrol mechanism. Party C shall be responsible for providing necessary technical training, and Party A shall participate in the supervision and assistance to provide technical support.
2. Garbage cleaning and community environment maintenance: One garbage cleaning activity shall be done in Dadingzi Village including the area around the village and on both sides of the main road Meng-Da Line. Keep the community clean and tidy after the big cleanup.
3. Emergency rescue and reporting: during patrol or at ordinary times, if anyone reports bird hunting or the need to rescue wild animals, he/she shall report to Party C immediately and go to the report site to perform rescue within his/her capacity.

4. Education on environmental protection: One education event about wetland conservation shall be conducted with Dadingzi Middle School. Party C shall assist in inviting relevant provincial, municipal and county media to participate in the education event, so as to raise public awareness of wetland and water bird protection through media influence

5. Management training: Two management trainings shall be carried out to ensure that at least 2 staff are qualified for conduct management and protection activities and at least one of them is female. (Annex II).

6. Resource monitoring: Party C shall carry out resource monitoring (including the counting and capture of water birds and water quality monitoring) within the reserve, and Party B shall provide personal to help.

## Part Two: Parties' Rights and Obligations

### V. Party A's Rights and Obligations

1. Party A shall have the right to provide guidance and suggestions on the design of activities in agreement, including protection objectives, protection means and work plans.

2. Party A shall be obliged to cooperate with Party B and Party C, provide necessary support, and complete the formulation of the monitoring and patrol plan, and the training of the monitoring patrol design.

3. Party A shall have the obligation to cooperate with Party C to conduct regular supervision and evaluation of the protection results of the agreed protection demonstration site.

4. Party A shall be obliged to help coordinate and contact Party C and relevant experts to provide assistance to Party B in fulfilling its protection obligations, such as: assisting Party B in formulating patrol monitoring plan and providing necessary training for daily monitoring; According to the evaluation results, Party B shall provide technical training on strawberry planting and prawn cultivation for Party B after the its qualified performance of this agreement.

5. Party A shall be obliged to assist Party B in carrying out an environmental education and training together with the school.

6. Party A shall be obliged to help set up the "Great Yellow Sea Community Development and Conservation Fund", support the capacity building of Party B's monitors and the monitoring and patrol work, and accept the supervision of Party C.

## VI. Party B's Rights and Obligations

1. Party B shall carry out monitoring and patrol according to the protection plan formulated by Party C.
2. Party B shall, in accordance with the protection plan, carry out management and protection activities in the demonstration site of the protection agreement, including resource and environment protection, monitoring (see Annex II for details), garbage cleaning, environmental damage prevention, etc., and keep monitoring records; Party B shall be obliged to promptly report to Party C any illegal acts that damage the environment found within the protection monitoring scope of Changshan Town (see Annex I).
3. Party B shall be obliged to cooperate with Party C and give feedback to the guidance and suggestions given by Party C; Party B shall be obliged to cooperate with Party A and Party C to complete the inspection and assessment work within the scope of management and protection.
4. Party B shall have the right to receive technical training on planting and cultivation provided by Party A to meet the needs of Party B's community economic development after completing staged tasks and passing the assessment (see Annex III for Party B's assessment indicators).
5. Party B shall cooperate with Party A and Party C to carry out public environmental education for the community.
6. Party B shall have the duty to designate monitors and their patrolling activities according to Party C's requirements. After passing the assessment (see Annex III), relevant monitoring rangers have the right to obtain the corresponding subsidy (1400 yuan before tax/person/month and 200 yuan before tax for additional transportation subsidy). The monitoring and patrol personnel shall be designated and managed by Party B with no labor relations with Party A or Party C. During the monitoring and patrol, all personal safety and accidents shall be at their own risk, and neither Party A nor Party C shall be responsible. If the monitoring patrol personnel do not meet the requirements of Party A and Party C, Party B shall designate other suitable candidates.
7. Party B shall purchase personal accident insurance for monitoring rangers.

## VII. Party C's Rights and Obligations

1. Party C shall provide technical guidance to Party B to establish a monitoring and patrol plan of the reserve (hereinafter referred to as the "protection plan") to meet Party C's needs of monitoring and protecting relevant areas of the Yalu river estuary wetland;



2. Party C shall have the obligation to guide Party B to conduct regular supervision and evaluation of conservation results of the agreed protected area;
3. Party C shall provide Party B with support in fulfilling its protection obligations, including training in monitoring patrol equipment, water bird circulation, routine patrol and beach sampling.
4. Party C shall have the right to obtain the support from Party B and Party A for the protection of the wetland at the Yalu River Estuary, obtain the monitoring data required by Party C from Party B's monitoring and patrol, and assist Party C in the management of the wetland reserve.
5. Party C is obliged to help set up the "Great Yellow Sea Community Development and Protection Fund" (see Annex IV), and jointly supervise the appropriate use of the fund with Party A. The seed fund will be supported by Party A to the amount of USD 10,000 (Annex IV).

### Part Three: Liability and Other Matters

#### VIII. Liability for Breach of Contract and Termination of the Agreement

1. If Party B fails to report to Party C within 24 hours of serious damage to the wetland or birds in the protected area and within the monitoring and patrol area, it shall be deemed as a breach of contract. Within two breaches, Party A and Party C may give warnings and have the right to suspend the performance of this agreement. Party A and Party C shall have the right to terminate this agreement with Party B if Party B breaches this agreement three times or more.
2. If Party B fails to meet the protection requirements due to the failure of Party A and Party C to perform the agreed obligations on time, Party B shall not be deemed to breach the contract.
3. If Party C deems that Party B fails to perform the protection obligation in the supervision and evaluation of the protected area and the scope of the monitoring patrol by Party C, Party B shall be deemed to have seriously breached the contract. In case of serious breach by Party B, Party A and Party C may terminate this agreement and all support shall be terminated at the same time. Party B may make corrections and reapply for the right of restoration of protection. Party C shall carry out the evaluation. If Party B is found to be able to perform its protection obligations, Party A and Party C may restart the agreement upon mutual agreement; If Party B fails to re-apply or re-evaluate and finds that Party B is still unable to perform the protection agreement, the agreement shall be completely terminated.

#### IX. Others

1. Party a, Party b and Party c shall conduct friendly consultations on specific matters not covered in the agreement based on the principle of being conducive to conservation.
2. Matters not covered herein and disputes arising from the performance hereof shall be settled by the three parties through negotiation. If no settlement can be reached through negotiation, either Party may apply to Beijing Arbitration Commission for Arbitration. The arbitrament shall be final and binding upon all parties.
3. This agreement is made in quadruplicate, with Party A and Party C holding one copy and Party B holding two copies.

**Party A: Beijing Chaoyang District Sustainable Global Environmental Institute**

**Seal (Signature) :**

**Date:**

**Party B: Dadingzi Village Committee, Dandong, Liaoning**

**Seal (Signature) :**

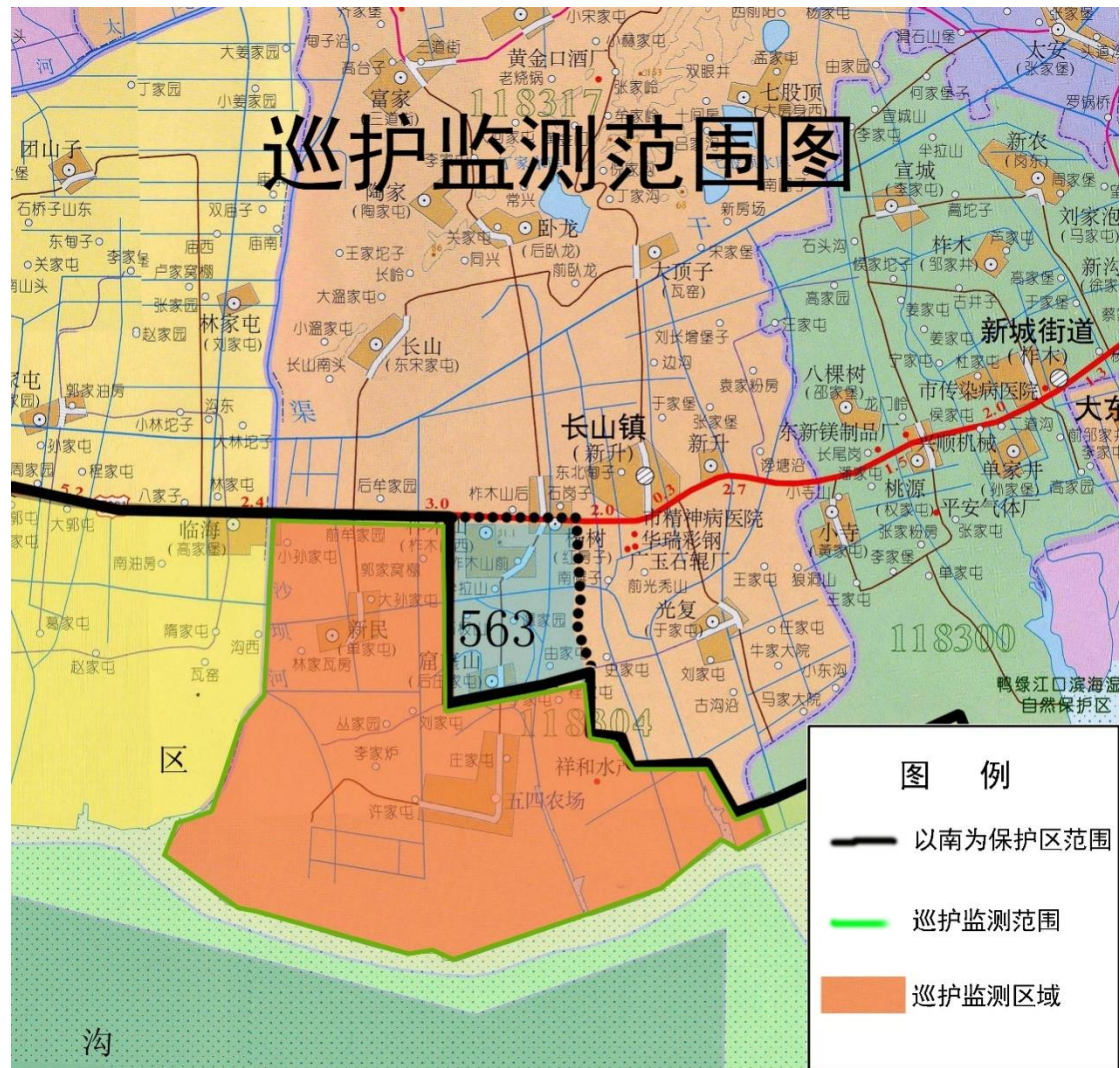
**Date:**

**Party C: Dandong Forestry and Grassland Development Service Center**

**Seal (Signature) :**

**Date:**

Annex I. Scope map of monitoring and patrol



Annex II. The duties and information of monitoring and patrol personnel of Dadingzi Village

1. Monitoring and patrol area covers the scope of Changshan Town;
2. Complete the monitoring and patrol twice a week (eight times a month);
3. Monitor and record water quality in patrol area;
4. If any wetland damage is found during the monitoring and patrol, take photos and report to the reserve in time;
5. If any bird hunting or catching behavior is found during the monitoring and patrol, take photos and record and report to the reserve in time;
6. If any littering or dumping behavior is found during the monitoring and patrol, it shall be discouraged and reported to the reserve in time;
7. The monitoring and management station of Changshan town in the reserve can be used as a rest point for monitoring and patrol personnel;
8. Each patrol should fill in the patrol record form as required and the form should be submitted to the village committee. The village committee should submit all the forms to the reserve every month;
9. Party B shall purchase personal accident insurance for the monitoring patrol;
10. If the monitoring patrol cannot be completed with quality and quantity guaranteed due to other reasons, the subsidy shall be deducted according to the standard of 200 yuan/time (based on 1400 yuan/month before tax);
11. If the monitoring and patrol work is completed according to the quantity in a given month, the total subsidy before tax is 1400 yuan and the additional bonus is 200 yuan before tax.

Monitor patrol 1: LI Guozhi, male, ID number XXX

Monitor patrol 2: ZHU Mingzhu, female, ID number XXX

Annex III Assessment indicators of Party B

	Assessment indication	Rewards
Phase one 2019.10.1- 2019.10.31	<ol style="list-style-type: none"> <li>1. Party B shall cooperate with Party A and Party C to establish the community co-management mechanism;</li> <li>2. Select monitoring patrolmen (two persons, at least 1 female);</li> <li>3. Party B shall cooperate with Party A and Party C in formulating the monitoring plan.</li> </ol>	<ol style="list-style-type: none"> <li>1. One training opportunity for monitoring patrol personnel;</li> <li>2. First payment of \$2,500 from the Great Yellow Sea Community Development and Conservation Fund.</li> </ol>
Phase two 2019.11.1- 2019.12.31	<ol style="list-style-type: none"> <li>1. Party B shall participate in the training organized by Party A and Party C;</li> <li>2. Party B shall clean up the garbage in the area around the village and on both sides of the main road of Menggan Road, and keep the community's environment clean;</li> <li>3. Party B shall complete the monitoring and patrol work for 24 times.</li> </ol>	<ol style="list-style-type: none"> <li>1. The community shall get industrial training once;</li> <li>2. The second payment of \$2,500 from the Great Yellow Sea Community Development and Conservation Fund;</li> <li>3. The chance for external exchange.</li> </ol>
Phase three 2020.1.1- 2020.6.30	<ol style="list-style-type: none"> <li>1. Party B shall cooperate with Party A and Party C to complete one wetland protection education activity in a community school;</li> <li>2. Party B shall complete the monitoring and patrol work for 48 times.</li> </ol>	<ol style="list-style-type: none"> <li>1. One training opportunity for monitoring patrol personnel;</li> <li>2. \$3,500 for the third tranche of the Great Yellow Sea Community Development and Conservation Fund;</li> </ol>
Phase four 2020.7.1- 2020.9.30	<ol style="list-style-type: none"> <li>1. Party B shall complete the monitoring and patrol work for 24 times.</li> </ol>	<ol style="list-style-type: none"> <li>1. \$1,500 for the fourth tranche of the Greater Yellow Sea Community Development and Conservation Fund;</li> <li>2. One industrial training for the community.</li> </ol>

#### Annex IV: Use requirements of the Greater Yellow Sea Community Development and Conservation Fund

In order to promote the community's better and sustainable management of natural resources around, and to promote effective protection of mudflat wetland and birds, guide the community's independent participation in conservation and promote community development, Party A and Party C help to set up the "Big Yellow Sea Community Development and Conservation Fund" (hereinafter referred to as the Fund). The requirements and scope of the use of the Fund by the three parties are as follows:

1. The seed fund of USD 10,000 will be used to support the conservation work of the ecological agreement of Dadingzi Village, which will be supported by Party A;
2. The the Fund is mainly used to support the capacity building of Party B's monitors and the implementation of monitoring and patrol work, as well as the collective construction and development of the village;
3. 55% of the total fund will be used to subsidize two monitoring rangers;
4. 45% of the total fund is mainly used as compensation for village collective conservation actions and to support village's collective construction.
5. The establishment and use of the fund shall be subject to the supervision of Party A and Party C.
6. The account receiving the fund is:

Bank name: Donggang Rural and Commercial Bank, Changshan Sub-branch

Account name: Donggang Changshan Town Dadingzi Village committee

Account number: 3347201104605

*Appendix 2-1*

*Patrol agreement with Song Yuguo*

**Ecological Monitoring and Patrol Agreement**

**Party A: Beijing Chaoyang District Sustainable Global Environmental Institute**

**Address: Room 032, Unit 1, Diplomatic Office Building, Tayuan 14, Liangmahenanroad, Chaoyang District, Beijing**

**Party B: SONG Yuguo (ID number:xxx)**

**Address: 39, No.33 Zhanbei Road, Dadong Administration District, Donggang city, Liaoning Province**

**Contact: 13842591054**

With the aim to guard Dandong coastal wetlands and birds resources, promote the sustainable development of the local fishery community and protection of ecological environment, the terms of this agreement are made to build a citizen resource patrol and monitoring force, promote the protection of water birds at key stops along the East Asia- bird migration route Australia, and protect wetland resources and biodiversity at Dandong Yalu River Estuary. Under the guidance of the management center of the Dandong Yalujiangkou Wetland National Nature Reserve in Dandong, Party A and Party B have signed this monitoring and patrol agreement upon mutual agreement.

**Part One: Basic Terms**

**Article 1. Nature of the agreement**

Party A is a nonprofit public welfare institution. Party B is a villager near the Yalu River Estuary Wetland. Party B is willing to participate in the environmental protection public welfare activities agreed in this agreement to serve and contribute to the society voluntarily. There is no labor relationship between Party A and Party B. Party A shall pay a certain amount of patrol subsidies and fuel subsidies to Party B to compensate Party B's costs.

Party a will purchase personal accident insurance for Party B.

**Article 2. Duration of the patrol**

Upon mutual agreement, Party B shall participate in the monitoring and patrol work from October 1st, 2019 to September 30th, 2020.

### **Article 3. Scope of patrolling**

1. Coastal waters 40 kilometers east to the estuary of Dayang (including Zhangdao area) (see Annex I);
2. Wetland and mudflat wetland areas from Baiyun Bridge of Donggang to the east side of the estuary of Dayang (see Annex II ).

### **Article 4. Monitoring and patrol contents**

1. Major monitoring and patrol contents in offshore waters include but are limited to: the situation of garbage in the estuary; whether there is red tide, the growth of Enteromorpha, bycatch of animals, discarded fishing gear and destructive fishing methods ;
2. Major monitoring and patrol contents in wetland waters include but are limited to: whether there are bird catching behaviors, bird dying behavior, littering behavior, abandoned fishing gears, destructive methods of sea fishing, etc.;

## **Part Two: Rights and Obligations of Both Parties**

### **Article 5. Rights and obligations of Party A**

1. Party A shall have the right to guide the contents and work of the monitoring patrol;
2. Party A shall have the right to regularly supervise and evaluate Party B's work results;
3. Party A shall be obliged to cooperate with Party b in the monitoring and patrol work and provide necessary skill training based on the case situation;
4. Party A shall have the obligation to contact relevant experts to provide assistance for Party B's performance of conservation obligations.

### **Article 6. Rights and obligations of Party B**

1. Party B shall carry out relevant monitoring and patrol work within the scope of the patrol. The patrol of offshore waters is mainly in April, July and September, three times in a year;
2. Wetland and tidal flat wetland regional patrol is mainly from January to December with at least 3 times a month to complete the patrol (at least one in the upper middle and one in the latter half of each month);
3. During the patrol, Party B shall carry out the monitoring and patrol work according to the



monitoring and patrol contents stipulated in Article 3 and complete the patrol record sheet; Any improper behaviors (such as catching birds, destructive fishing methods, dumping of a large amount of garbage, etc.) found during the monitoring and patrol shall be reported to Party A and Dandong Yalujiangkou Wetland National Nature Reserve in a timely manner. In addition, within the scope of monitoring and patrol, Party B shall be obliged to cooperate with Dandong Forestry and Grassland Development Service Center to complete the monitoring and patrol work related to conservation of other birds and tidal flat wetland;

4. During the patrol period, Party B shall record the patrol route through the "Two-step Outdoor Assistant" APP, and submit it to Party A together with the Patrol Record Sheet (Annex III), and submit the monthly patrol record (Annex IV) on the last day of each month;
5. Party B shall be obliged to complete the monitoring and patrol work in accordance with Party a's needs and requirements, and shall have the right to obtain a monthly pre-tax patrol subsidy of 750 yuan and a monthly pre-tax fuel subsidy of 200 yuan (say two hundred yuan only); Party B shall pay individual income tax in accordance with national regulations, and Party A shall have the right to withhold and pay it.

#### **Article 7. Liability for breach of contract**

1. During the performance of the agreement, if the monitoring and patrol work is affected by unforeseen factors of both parties, both parties shall communicate in time and propose solutions within five working days.
2. If Party B fails to submit the monitoring and patrol work on time for one consecutive month, it shall be deemed as a serious breach of contract; If the monitoring and patrol work is not submitted on time for a total of two months, it shall be deemed as a serious breach of contract twice, and Party A shall have the right to unilaterally suspend or terminate this agreement.

#### **Article 8. Others**

1. Patrol personnel shall be responsible for his or her own safety and accidents during the term of this agreement;
2. Matters not covered herein and disputes arising from the performance hereof shall be

settled by both parties through negotiation based on the principle of being conducive to conservation;

3. If no settlement can be reached through negotiation, either Party may apply to Beijing Arbitration Commission for Arbitration. The arbitrament shall be final and binding upon all parties;
4. This agreement is made in duplicate, with each Party holding one copy.

**Party A: Beijing Chaoyang District Sustainable Global Environmental Institute**

**Seal (Signature) :**

**Date:**

**Party B: SONG Yuguo (ID number: XXX)**

**Seal (Signature) :**

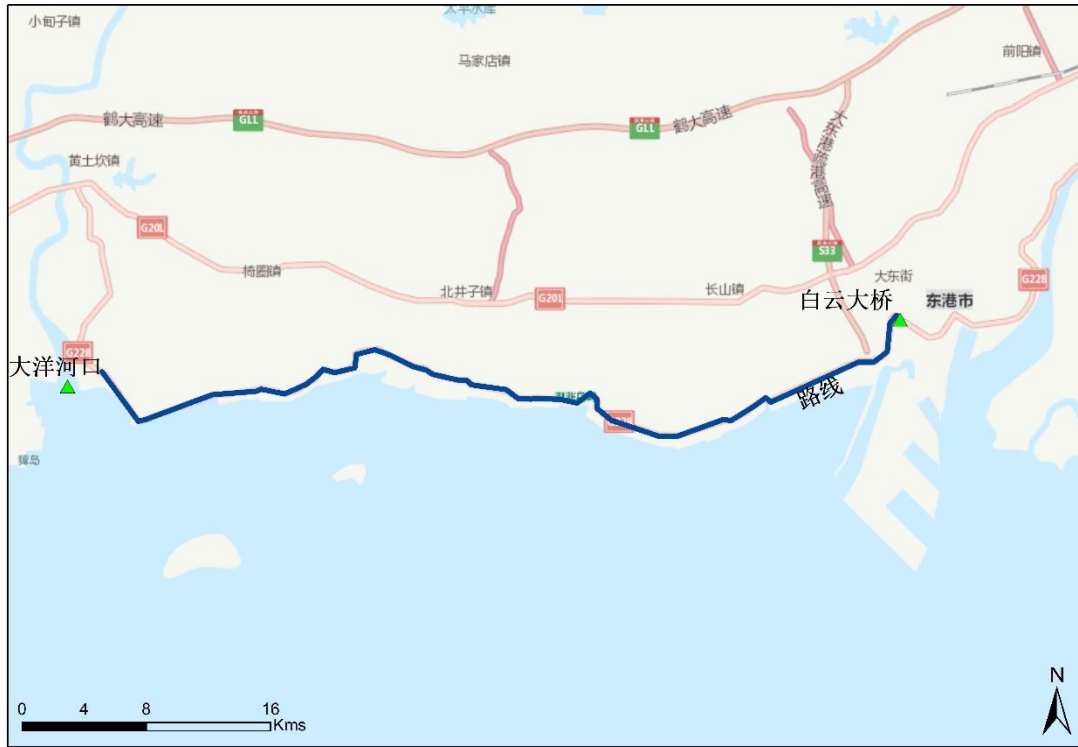
**Date:**

Annex I.



Patrol areas of offshore waters

Annex II.



Patrol areas of tidal flat wetland

Annex III: Patrol Record Sheet (sub-table)

Ecological Patrol Record Sheet
Patrol Data:    Year    Month    Day
Scope of Patrol:
Patrol Contents (shown as followings) :
<p>1. Whether any bird catching behavior has been detected (Please check the brackets, and describe if yes)</p> <p>Yes: ( ) _____</p> <p>No: ( ) _____</p>
<p>2. Whether any dead bird detected (Please tick the brackets, and if yes, please specify the general situation of dead birds)</p> <p>Yes: ( ) _____</p> <p>No: ( ) _____</p>
<p>3. Whether there is any abnormal situation in seawater (Such as the growth of red tide and Enteromorpha) (Please check the brackets, and describe if yes)</p> <p>Yes: ( ) _____</p> <p>No: ( ) _____</p>
<p>4. Whether any littering behavior is detected (Please check the brackets, and describe if yes)</p> <p>Yes: ( ) _____</p> <p>No: ( ) _____</p>
<p>5. Whether any abandoned fishing gear has been found (Please check the brackets, and describe the quantity and type of fishing gear if yes)</p> <p>Yes: ( ) _____</p> <p>No: ( ) _____</p>
<p>6. Other findings (Such as the use of destructive tidal flats is found or not. Please check the brackets, and if yes, please describe the general situation in detail)</p> <p>Yes: ( ) _____</p> <p>No: ( ) _____</p>



*Appendix 2-2*

*Patrol agreement with Wang Guojun*

**Ecological Monitoring and Patrol Agreement**

**Party A: Beijing Chaoyang District Sustainable Global Environmental Institute**

**Address: Room 032, Unit 1, Diplomatic Office Building, Tayuan 14, Liangmahenanroad, Chaoyang District, Beijing**

**Party B: WANG Guojun (ID number: xxx)**

**Address: Shanjiaying Group 4, Xincheng Administration District, Donggang city, Liaoning Province, China, 081081**

**Contact: 13352177718**

With the aim to guard Dandong coastal wetlands and birds resources, promote the sustainable development of the local fishery community and protection of ecological environment, the terms of this agreement are made to build a citizen resource patrol and monitoring force, promote the protection of water birds at key stops along the East Asia- bird migration route Australia, and protect wetland resources and biodiversity at Dandong Yalu River Estuary. Under the guidance of the management center of the Dandong Yalujiangkou Wetland National Nature Reserve in Dandong, Party A and Party B have signed this monitoring and patrol agreement upon mutual agreement.

**Part One: Basic Terms**

**Article 1. Nature of the agreement**

Party A is a nonprofit public welfare institution. Party B is a villager near the Yalu River Estuary Wetland. Party B is willing to participate in the environmental protection public welfare activities agreed in this agreement to serve and contribute to the society voluntarily. There is no labor relationship between Party A and Party B. Party A shall pay a certain amount of patrol subsidies and fuel subsidies to Party B to compensate Party B's costs.

Party a will purchase personal accident insurance for Party B.

**Article 2. Duration of the patrol**

Upon mutual agreement, Party B shall participate in the monitoring and patrol work from October 1st, 2019 to September 30th, 2020.

### **Article 3. Scope of patrolling**

3. Coastal waters 40 kilometers east to the estuary of Dayang (including Zhangdao area) (see Annex I);
4. Wetland and mudflat wetland areas from Baiyun Bridge of Donggang to the east side of the estuary of Dayang (see Annex II ).

### **Article 4. Monitoring and patrol contents**

6. Major monitoring and patrol contents in offshore waters include but are limited to: the situation of garbage in the estuary; whether there is red tide, the growth of Enteromorpha, bycatch of animals, discarded fishing gear and destructive fishing methods ;
7. Major monitoring and patrol contents in wetland waters include but are limited to: whether there are bird catching behaviors, bird dying behavior, littering behavior, abandoned fishing gears, destructive methods of sea fishing, etc.;

## **Part Two: Rights and Obligations of Both Parties**

### **Article 5. Rights and obligations of Party A**

5. Party A shall have the right to guide the contents and work of the monitoring patrol;
6. Party A shall have the right to regularly supervise and evaluate Party B's work results;
7. Party A shall be obliged to cooperate with Party b in the monitoring and patrol work and provide necessary skill training based on the case situation;
8. Party A shall have the obligation to contact relevant experts to provide assistance for Party B's performance of conservation obligations.

### **Article 6. Rights and obligations of Party B**

3. Party B shall carry out relevant monitoring and patrol work within the scope of the patrol. The patrol of offshore waters is mainly in April, July and September, three times in a year;
4. Wetland and tidal flat wetland regional patrol is mainly from January to December with at least 3 times a month to complete the patrol (at least one in the upper middle and one in the latter half of each month);
8. During the patrol, Party B shall carry out the monitoring and patrol work according to the



monitoring and patrol contents stipulated in Article 3 and complete the patrol record sheet; Any improper behaviors (such as catching birds, destructive fishing methods, dumping of a large amount of garbage, etc.) found during the monitoring and patrol shall be reported to Party A and Dandong Yalujiangkou Wetland National Nature Reserve in a timely manner. In addition, within the scope of monitoring and patrol, Party B shall be obliged to cooperate with Dandong Forestry and Grassland Development Service Center to complete the monitoring and patrol work related to conservation of other birds and tidal flat wetland;

9. During the patrol period, Party B shall record the patrol route through the "Two-step Outdoor Assistant" APP, and submit it to Party A together with the Patrol Record Sheet (Annex III), and submit the monthly patrol record (Annex IV) on the last day of each month;
10. Party B shall be obliged to complete the monitoring and patrol work in accordance with Party a's needs and requirements, and shall have the right to obtain a monthly pre-tax patrol subsidy of 750 yuan and a monthly pre-tax fuel subsidy of 200 yuan (say two hundred yuan only); Party B shall pay individual income tax in accordance with national regulations, and Party A shall have the right to withhold and pay it.

#### **Article 7. Liability for breach of contract**

3. During the performance of the agreement, if the monitoring and patrol work is affected by unforeseen factors of both parties, both parties shall communicate in time and propose solutions within five working days.
4. If Party B fails to submit the monitoring and patrol work on time for one consecutive month, it shall be deemed as a serious breach of contract; If the monitoring and patrol work is not submitted on time for a total of two months, it shall be deemed as a serious breach of contract twice, and Party A shall have the right to unilaterally suspend or terminate this agreement.

#### **Article 8. Others**

5. Patrol personnel shall be responsible for his or her own safety and accidents during the term of this agreement;
6. Matters not covered herein and disputes arising from the performance hereof shall be

settled by both parties through negotiation based on the principle of being conducive to conservation;

7. If no settlement can be reached through negotiation, either Party may apply to Beijing Arbitration Commission for Arbitration. The arbitrament shall be final and binding upon all parties;
8. This agreement is made in duplicate, with each Party holding one copy.

**Party A: Beijing Chaoyang District Sustainable Global Environmental Institute**

**Seal (Signature) :**

**Date:**

**Party B: SONG Yuguo (ID number:xxx)**

**Seal (Signature) :**

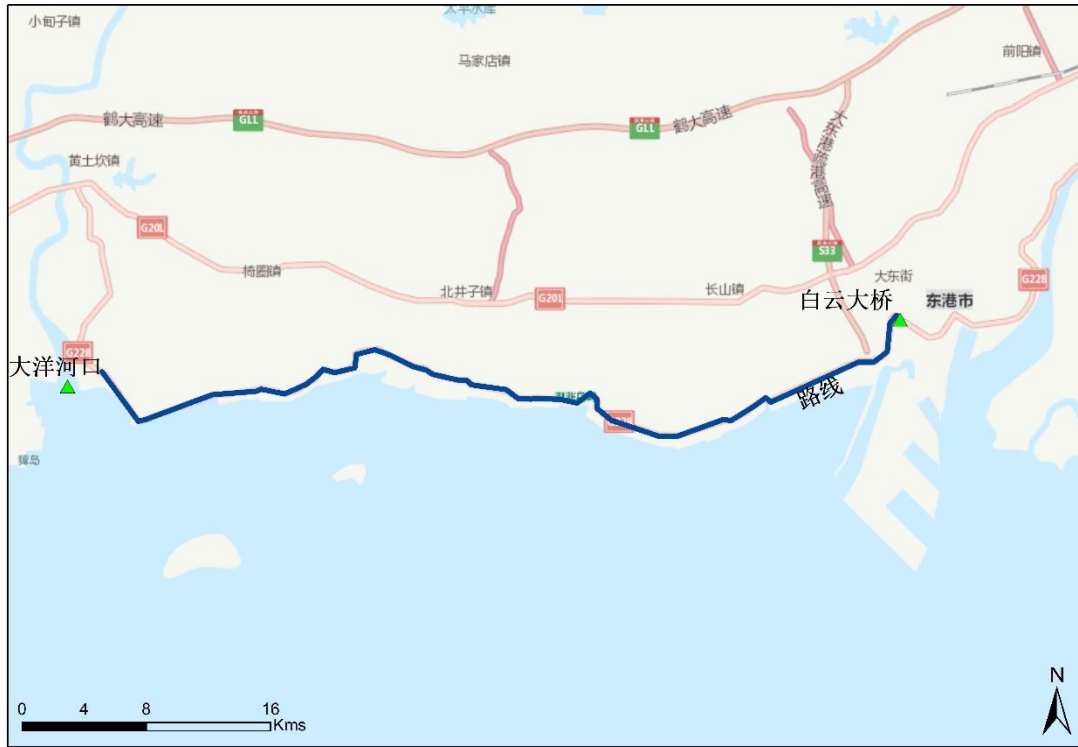
**Date:**

Annex I.



Patrol areas of offshore waters

Annex II.



Patrol areas of tidal flat wetland

Annex III: Patrol Record Sheet (sub-table)

Ecological Patrol Record Sheet
Patrol Data:    Year    Month    Day
Scope of Patrol:
Patrol Contents (shown as followings) :
<p>7. Whether any bird catching behavior has been detected (Please check the brackets, and describe if yes)</p> <p>Yes: ( ) _____</p> <p>No: ( ) _____</p>
<p>8. Whether any dead bird detected (Please tick the brackets, and if yes, please specify the general situation of dead birds)</p> <p>Yes: ( ) _____</p> <p>No: ( ) _____</p>
<p>9. Whether there is any abnormal situation in seawater (Such as the growth of red tide and Enteromorpha) (Please check the brackets, and describe if yes)</p> <p>Yes: ( ) _____</p> <p>No: ( ) _____</p>
<p>4. Whether any littering behavior is detected (Please check the brackets, and describe if yes)</p> <p>Yes: ( ) _____</p> <p>No: ( ) _____</p>
<p>5. Whether any abandoned fishing gear has been found (Please check the brackets, and describe the quantity and type of fishing gear if yes)</p> <p>Yes: ( ) _____</p> <p>No: ( ) _____</p>
<p>6. Other findings (Such as the use of destructive tidal flats is found or not. Please check the brackets, and if yes, please describe the general situation in detail)</p> <p>Yes: ( ) _____</p> <p>No: ( ) _____</p>

Annex IV. Patrol Record (month table)

Ecological Patrol Record Sheet
Patrol month period:    Year    Month    Day— —    Year    Month    Day
Scope of Patrol :
Year    Month    Monitoring Patrol Record Summary Statistics (as followings)
5. ( ) case(s) of bird catching found this month
6. ( ) case(s) of dead birds found this month
7. ( ) case(s) of red tide found this month
8. ( ) photos taken to record Enteromorpha this month
10. ( ) case(s) of littering found this month
11. ( ) wasted fishing gears found this month; the types include _____
12. Other findings in this month _____
Summary thoughts of this month's monitoring and patrol:

Appendix 3

Song Yuguo and Wang Guojun Patrol records

Dandong Citizen Science Patrol team records						
No.	Name	Date	Patrol area	Comment	Patrol mileage	Remark
1	Song Yuguo	2019.10.11	Costal wetland	Normal	51.76 km	patrol track + records
2	Wang Guojun	2019.10.11	Costal wetland	Normal	51.76 km	patrol track + records
3	Wang Guojun	2019.10.18	Offshore area	Found a sewage discharge outlet in the port	178.89 km	patrol track + records
4	Song Yuguo	2019.10.20	Costal wetland	Found a dead bird	46.75 km	patrol track + records
5	Song Yuguo	2019.10.27	Costal wetland	Normal	43.81 km	patrol track + records
6	Wang Guojun	2019.10.27	Costal wetland	Normal	48.27 km	patrol track + records
7	Wang Guojun	2019.11.5	Costal wetland	Normal	48.17 km	patrol track + records
8	Song Yuguo	2019.11.6	Costal wetland	found lots of birds in the tidal flat	47.07 km	patrol track + records
9	Wang Guojun	2019.11.11	Costal wetland	Few pollutions in Yalujang Rescue a fake-bird and reported immediately, finally identified it's an introduced duck from western	51.08 km	patrol track + records
10	Song Yuguo	2019.11.15	Costal wetland	Normal	53.31 km	
11	Wang Guojun	2019.11.25	Costal wetland	Found few litters	48.24 km	patrol track + records
12	Song Yuguo	2019.11.29	Costal wetland	Normal	49.09 km	patrol track + records
13	Wang Guojun	2019.12.3	Costal wetland	Found litter and oil pollutions in the river	53.12 km	patrol track + records
14	Song Yuguo	2019.12.6	Costal wetland	Found few litters	48 km	patrol track + records
15	Song Yuguo	2019.12.13	Costal wetland	Normal	51 km	patrol track + records

16	Wang Guojun	2019.12.15	Costal wetland	Found few litters	50.24 km	patrol track + records
17	Song Yuguo	2019.12.20	Costal wetland	Found litters on the shore, river ice	44.58 km	patrol track + records
18	Wang Guojun	2019.12.22	Costal wetland	Found few litters	51.77 km	patrol track + records
19	Wang Guojun	2020.1.1	Costal wetland	Found litters	54.28 km	patrol track + records
20	Song Yuguo	2020.1.8	Costal wetland	Found few letters in the river	51.15 km	patrol track + records
21	Wang Guojun	2020.1.14	Costal wetland	Normal	51.78 km	patrol track + records
22	Song Yuguo	2020.1.15	Costal wetland	Found litters	45.4 km	patrol track + records
23	Wang Guojun	2020.1.20	Costal wetland	Found a sewage discharge exit	51.78 km	patrol track + records
24	Song Yuguo	2020.1.20	Costal wetland	Found a sewage discharge exit	45.4 km	patrol track + records



*Appendix 4 Training questionnaire*

<p>You from</p> <p>1) Management bureau 2) NGO 3) Community 4)Research units</p>
<p>Which part you think is more useful for you?</p>
<p>What else of knowledge or information you think should be included in the training? Any other suggestions or advices?</p>
<p>What you have learned about fishing management through this training?</p>
<p>What negative impact of ghost gear you have learned from this training?</p>
<p>What new way you have learned to reduce sea turtle by catch issues through this training?</p>
<p>Any suggestions you think would be helpful to encourage fishmen to join in collecting sea turtle, dolphin , whale bycatch information and to form a report mechanism.</p>

**The plan of sewage treatment system  
for Dadingzi Viilage, Changshan Twon, Dongang City**

**1 Current water pollutant sources**

**1.1 Piggeries**

Pig excreta, through direct drainage and random dumping, becomes the village's major pollutant, as well as its major water pollution source. According to the investigation, only a small portion of pig excrement is "utilized by farmers for plantation", such as planting corn and strawberry. It is because farmlands are far away from piggeries, and the excrement is heavy due to its high-water content, which makes the utilization inconvenient and ineffective. Pig excrement is rarely seen in farmlands.

During slack season, smelly excreta from piggeries is exposed in unsuitable areas. When rains come, the excreta, under rain wash, directly enters tidal creeks, and thus pollutes water.

Pig urine and washing water from piggeries is directly discharged into a simple mud-made water pool outside. The pool overflows when rains come.



Piggery and its uncovered sewage pool

Pig excrement



Uncovered excrement dumping site

### **1.2 Chicken farms**

In Chicken farms, treatments to the waste are similar to the methods in piggeries: untreated drainage and ineffective waste utilization.

### **1.3 Shrimp ponds**

The color of bottom sediment in shrimp ponds shows that there exists small amount of pollutants. Here, major water pollutants stem from the remains of shrimp feed.



Shrimp pond and its bottom sediment color

#### 1.4 Other pollutions

Dry latrines are generally used in the village, producing low volume of black water. The output of kitchen and washing sewage in this village is also small.

#### 2 Conclusion

- Farming excreta is the major water pollutant, mainly including excreta from piggeries and chicken farms.
- Utilization ratio of excreta resources is low in this village.
- Villagers and village leaders have weak awareness of farming excreta utilization.
- Villagers are in lack of knowledge, demands, and awareness of “beautiful countryside and courtyard” policy.

#### 3 Suggestions

3.1 Strengthen “beautiful countryside and courtyard” policy publicity, and increase lectures regarding health knowledge in rural areas.

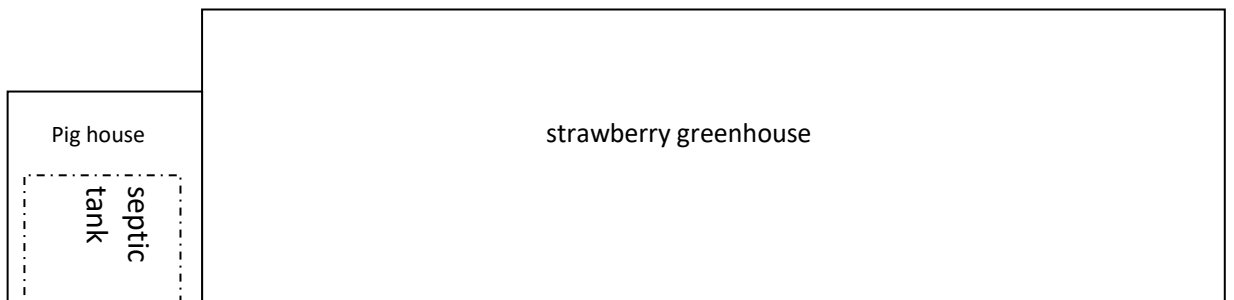
3.2 Enhance utilization of farming excreta, and integrate cultivation with farming.

There are large scale of farmlands and strawberry greenhouses in Dadingzi village, which can be used to utilize cultivation excreta and waste through following methods:

- Promote the benefits of utilizing farming excreta to crop raising, and enhance villagers' awareness of protecting food security.
- Integrate farming with strawberry plantation.

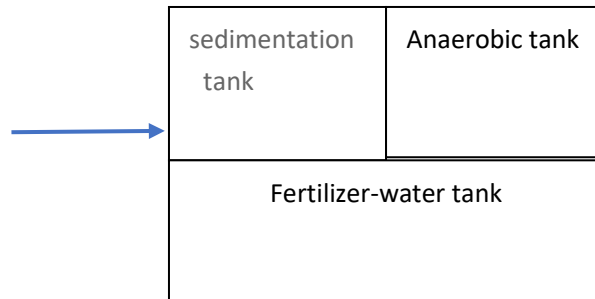


Strawberry plantation greenhouse

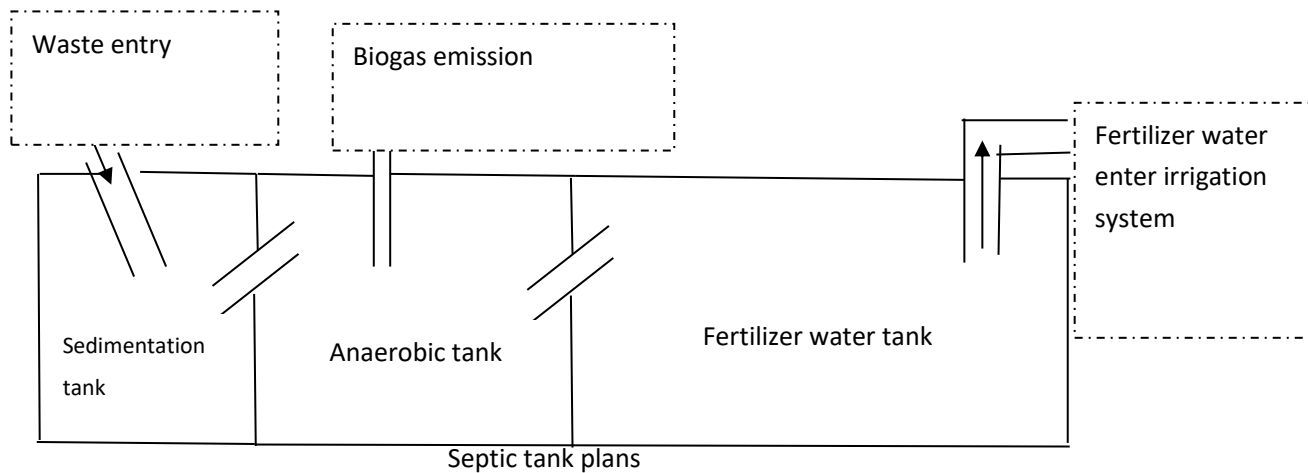


Combined farming model drawing: Greenhouse+ Pig house+ Septic tank

(greenhouse + septic tank for form “plantation and farming model”, septic tank is under the pig house, and placed 50cm beneath the surface)



Model drawing: Three parts of septic tank (Excreta and washing water directly diverts to sedimentation tank, fertilizer water tank directly links to irrigation system of strawberry plantation)



please note that biogas can be burned in the greenhouse to increase CO<sub>2</sub> intensity and temperature, both beneficial to the growth of strawberries. However, safe use of biogas and methane’s poisonous nature must be noticed.

This sewage treatment system requires the cost of CNY 11000-13000 with the area of strawberry greenhouse is 0.17ha and the septic tank’s area is 20 m<sup>3</sup>. This system only needs to clean up the

garbage in the sedimentation tank once a year, and no more manpower need for managing this system. If possible, water monitoring for before and after treated water can be conducted to collect the basic data to know the effectiveness of the system.