Baseline report of

Dandong coastal wetland, Dadingzi Village and Shanjiajing Village

1. Foreword
From June 23th to 25th, July 23th to 25th 2019, Wang Jing, Fan Min, Li Bohan from GEI and Shao Huishuang, Li Hongbo from National Marine Environment Monitoring Center conducted the RSP baseline survey at Dadingzi Village and Shanjiajing Village, Dandong City. People who from the local city and community had joined the interview are as following:

- Dandong Yalu Jiang National Nature Reserve: Zhang zhifeng(+86 139 4250 9456), Ma Li (+137 0018 7773), based at Dandong City
- Shanjiajing village: Wang Jun (+86 133 5217 7718), based at Shanjiajing Village
- Dadingzi village: Zhang Kai(+86 159 4255 9110), Wang Weidong(+86 132 1415 7978), Li Xincheng, based at Dadingzi Village

According to the firsthand and second hand materials, GEI finalized the baseline survey report.

Dandong is located at the southeast of Liaoning province with a total shoreline of 126 km. It has 122,500 hm² coastal wetland area, which account for 13.21% of the total coastal wetland areas in Liaoning. The Yalu Jiang wetland which as part of the Dandong coastal wetland is one of the seven largest wetlands in the East Asian-Australasian Flyway (EAAF) network. It is “The best refueling site for seabirds”, and it is regarded by international experts and researchers as one of the world’s biggest stop-over sites for migratory birds. Therefore, this wetland is extremely important to the protection of biological diversity across the world.

20% of the coastal wetlands along the Yalu Jiang is intertidal zone, which contains a
massive amount of nutrition and organic substances, providing plentiful food sources for all kinds of seabirds, such as the endangered Black-billed Gull (*Chroicocephalus bulleri*) and the Marsh Grassbird (*Locustella pyreri*). Moreover, the intertidal zone provides nutrients to all sorts of fish, shells and algae as well. However, according to research, the natural tidal flats and reeds at the Yalujiangkou have been reducing at a rate of 197 hm² and 228 hm² respectively each year from 1983 to 2007. Human activities caused reduction of wetlands as they converted the area into paddy fields and aquaculture farms, which are mainly affecting tidal flats, reed beds and shallow sea areas. This negatively affects the survival and reproduction of the migratory birds who depend on the wetlands to thrive.

Since 2010, Dandong Yalu Jiang National Nature Reserve has started ecological restoration in the core area. They are trying to build a suitable wetland habitat for the seabirds by converting intertidal-breeding to wetland, by managing river systems, and in other ecological ways to restore the foraging and resting area for the migratory birds. According to observations, the amount of medium-size and large-sized seabirds discovered in the core area has been increasing, including Whooper Swans, Black-faced Spoonbill, Eurasian Spoonbill, Cormorant and so on. Since 2013 the Nature Reserve utilizes community co-management to promote effective management of the natural resources in the Dandong wetland and to provide habitat for the wetland birds.

**2. Overview of Dandong’s biological diversity and natural resources**

This project site is located around the wetland of the Yalu Jiang in Donggang City, Dandong City, Liaoning Province, which is also the location of the Dandong Yalu Jiang National Nature Reserve. The Yalujiangkou wetland is the most significant wetland of Northeast Asia. Where in the East there is the China-North Korea sea border, in the South it neighbors the Yellow Sea and it shares a border with Zhuanghe, Dalian in the West.
Three ecosystems meet in the scope of the wetland at the Yalujiangkou: terrestrial, tidal and marine ecosystems. This forms various complex ecosystems, including reed wetland, marsh, lakes, tidal flat, estuary, shallow sea area and so on. The natural environment is special yet sensitive and fragile. The formation and evolution of the wetland ecosystem is slow and the process is complex; it not just retains the whole of the original coastal wetland in the Eastern Hemisphere, it also holds most of the species of the Liaodong peninsula, maintaining the richness and diversity of wild animals in the Southern part of Northeast China.

**Plant resources:** There are in total 365 species of vascular plants (including subspecies and variety) belonging to 234 genera in 83 families. The vascular plants constitute 51.9%, 29.3% and 17.0% of the total number of Liaoning vascular plant families, genera and species respectively. There are 4 families, 4 genera and 4 species of pteridophytes, 3 families, 5 genera and 6 species of gymnosperms. 76 families, 224 genera and 355 species of angiosperms, of which there are 57 families, 167 genera and 257 species of dicotyledones, and 19 families, 58 genera and 98 species of
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monocotyledones. Preliminary research shows that phytoplankton includes at least 6 phyla, of which there are 23 families, 36 genera and 55 species of algae. And amongst those algae, 3 families, 7 genera and 10 species are cyanobacteria, 7 families, 13 genera and 21 species are diatoms, 10 families, 12 genera and 16 species are green algae, 1 family, 1 genus and 1 species are dinoflagellates, 1 family, 1 genus and 4 species are yellow-green algae, 1 family, 2 genera and 3 species are euglenoids.

Animal resources: Currently, 518 animal species have been recorded, of which 347 species of vertebrates (including fish, amphibians, birds and mammals) and 171 species of invertebrates (including benthos and zooplankton). Mammals present include 5 orders, 9 families and 31 species; reptiles have 2 orders, 4 families and 8 species; amphibians have 1 order, 3 families and 4 species; fish have 10 orders, 23 families and 54 species (including Cyclostomes that have 1 order, 1 family and 2 species). 103 species of bentthic organisms, of which 5 species of Cnidaria, 2 species of Platyhelminthes, 6 species of Annelida, 1 species of Brachiopoda, 49 species of Mollusca, 35 species of Arthropoda and 5 species of Echinodermata. There are 68 species of zooplankton, of which 12 species of Protozoa, 6 species of Cnidaria, 47 species of Crustaceans, 1 species of pelagic mollusk, 1 species of Tunicates, and 1 Echinoderm species.

Bird resources: Due to the special geographical position and ecological environment, Yalujiangkou wetland is one of the main passage ways for the Northeastern Asian mainland migratory bird to migrate North and South. Every year in spring and autumn, hundreds of thousands of birds migrate through this passage way, stopping for a rest. Moreover, this wetland is praised as “The inn for birds” because of its varied bird species and quantity. Also, here there have the most seabirds in the Yellow Sea region. Currently having 5 orders, 43 families and 250 species of birds, of which 6 orders, 17 families and 123 species are waterfowl and 9 orders, 26 families and 127 species are land birds. 9 species are first-class nationally protected birds (of which 7 species of
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waterfowl) and 31 species are second-class nationally protected birds (of which 9 species of waterfowl). Most of the species belong to the Palae-arctic Realm, where 101 species are summer residents (43 species of waterfowl), 22 species are winter residents (14 species of waterfowl), 26 species are resident (none waterfowl), 103 species are migrant bird (66 species of waterfowl). 114 out of 227 species, which is half of the total, are birds inscribed onto the China-Japan Migratory Birds Conservation Agreement. They also discovered 43 species out of 81 species inscribed onto the China-Australia Migratory Birds Conservation Agreement, which is 53% of the total. There is an enormous amount of bird species in the wetland at the Yalujiangkou and through continuous investigation from 1999 until 2017, with 11 species of waders it reached the international standard of becoming an important wetland and 5 species of waders have reached the stop-over standard. Through the estimation by domestic and foreign experts, Yalujiangkou wetland supports the migration of over 500,000 of waders every year, which makes it not only the most significant passage way and supply station on the EAAF but also the last stop-over of the EAAF.

3. Natural and social conditions of Dadingzi Village

Dadingzi Village is located at Changshan Town, Donggang City, Dandong City with an area of 12 km², and with 12 village groups, 980 households and 3,180 villagers living there. It is one of the 228 villages that need poverty alleviation in Donggang City.
Dadingzi has 490.4 ha of arable land, most of it (436 ha) paddy fields. 115.6 ha of the arable land is used for dry land farming and has no tidal flat at all. Main crops are rice and corn, and farmers also practice freshwater aquaculture and raise livestock.

There is no collective economy within the village. The per caput income of the village is 10,000 RMB, and the main source of income for the villagers is earned as migrant worker or from agriculture (they can get 15 RMB per hour working on farmland rented by others), by polytunnel farming (such as strawberries and tomatoes), or land/aquaculture farming (cattle, chicken, sheep or shrimp). Annually the village produces approximately 200,000 chickens and 300-400 pigs. There are in total 20 strawberry polytunnels, and 20-30 households cultivate shrimp.

Birds are often seen foraging in the paddy fields in the village, and there is a bird watching garden at Changshan Town where the Dadingliz is located. Shore birds, gulls, herons and cranes migrate through this area each year. Most people from the community are aware of the necessity to protect birds, therefore there is barely any bird catching activity.

The village pays annually 50,000 RMB for garbage disposal, including collection and transportation costs, and the main disposal method is landfill. Yet there is still behavior of throwing garbage away and finally the garbage flows with the river directly into the sea, which may causes tidal flats pollution and may have negative impacts for the seabirds as well as for the tidal flats that the seabirds rely on for food and rest.

However, the untreated sewage from the village has a more direct impact on the tidal flat. It is instantly released into the shoal ditch and later into the sea through the paddy fields and tidal ditch. The sewage gets filtered in the wetland before flowing into the sea, but there is no specific scientific research on the impact of water pollution on the birds and the tidal flat.

4. Natural and social conditions Shanjiajing Village
Shanjianging Village has a total area of 5 km², with a population of 3,322 where the male to female ratio is almost 5:5. The main source of income is farming, fishing, work away for job (constructors, sales clerks, fishing), etc. and per caput annual income is about 11,000 RMB. Around 100 people are fishing in Shanjianging Village, which is around 3.3% of the total population. Each year, from 1st of May until 1st of September the fishing season is closed, from September until December the fishing season re-opens, and from January until April most fishermen would rest due to the weather. The annual income of a fishing captain is around 100,000 RMB.

The village has collective tidal flats covering 87 ha. Since 2000, the village contracted for personal farming for corbicula cultivation. The construction period is usually 10 years with a price of 4,500-6,000 RMB per ha, and the rent is shared equally with the villagers. The contract method was changed to bidding last year. Villagers were aware that they could rent the tidal flats out and earn money from it after 2000, before that, the tidal flats were at a natural state.

There is no activity of bird catching because the residents are conscious of bird protection. In the past, some people gathered bird eggs for food or for fun, but now it rarely happens.

The fishery resources are constantly reducing, leading to fewer fish each fisher can
catch. At the same time, destructive fishing practices with the use of equipment like dianpa led to a massive reduction in clam (Potamocorbula laevis) numbers. Most of the seabirds are feeding on other clams that are still widely distributed in the high tide area, as the result of the decrease in the seabirds’ food source.

5. Baseline investigation and research analysis

Existing problem

- The community did participate in bird and wetland protection, but never have had an intensive action: since 2013, Dandong Yalu Jiang National Nature Reserve has been trying to promote community co-management through eco-compensation. 10 million RMB per year is distributed as subsidies by the finance to 68 villages located in the nature reserve, and villages cannot exploit surrounding natural resources. The funds are mainly used to build infrastructure, provide minimum social security benefits and so on by the villages. There is no intensive action from the villagers on protection.

- Conflict between development and conservation of the tidal flats: tidal flats are valuable resting places for various seabirds, but so far, the tidal flats that are owned by the Dandong village collectively are all contracted for individual or company farming for shellfish cultivation (mainly corbicula). Nevertheless, the contractors do not practice sustainable farming management. The productivity of the tidal flats and the biological diversity have decreased, negatively impacting the food source of wetland birds.

- Villagers are fully aware of the bird protection, but have a lack of understanding about the protection of coastal wetlands and the diversity of marine life: coastal residents have always had awareness of bird protection, there have rarely been incidents of bird catching or bird harming. However, most of the villagers only have superficial knowledge about protection. Therefore, some of the fishermen
suggested that provision of training, and education on sustainable fisheries would both make a living for the fisherman and protect the environment.

**Solution and implementation plan**

- Combining the need of Dadingzi Village and Yalu Jiang National Nature Reserve, GEI, the Nature Reserve and the villagers plan to sign a Community Co-management agreement, forming a bond between the non-governmental organization, the community and the government. This will create a chain reaction that promotes the community to participate in bird protection and in garbage reduction. The village will carry out garbage collection activities, environmental education activities and nominate volunteers to join in the wetland and bird protection monitoring and patrolling activity together with the nature reserve. The village will get livelihood training and capacity building, as well as funds for village development.

- Establish a citizen monitoring team of fishermen and villagers from Shanjiajing village. The team will not only be monitoring the ecology (including wetland birds) of the tidal flats and community, but also help to provide scientific data to the nature reserve and the Academy of Sciences, and provide basic support for decision makers (nature reserve etc.). Furthermore, they will be providing data on climate change and support the Blue Bay construction.

- Establish seed funding as well as fund management under GEI, in order to support the Dadingzi village co-management action and citizen monitoring team and supply capacity training. Promote the citizen protection monitoring system, to help improving the monitoring system within the nature reserve.

- Carry out capacity training, to improve villagers’ ability to have a sustainable livelihood, enlarge villagers’ knowledge on marine protection and support the community further where individuals are willing to participate in the protection program.
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- Develop training curriculum. The curriculum is easy to understand and explains industrial development, waste monitoring, bird populations, ecology, marine chemistry, climate change, the benthic zone, bird volunteer’s management and usage of fishing tackle to the villagers.