YSLME
UNDP/GEF Yellow Sea
Large Marine Ecosystem

YSLME MPA NETWORKING
WORKSHOP

14-16 January 2019 • Dalian, Liaoning, PR China

Proposals for designating or enlarging new MPAs for endangered mammals or habitats of endangered water birds

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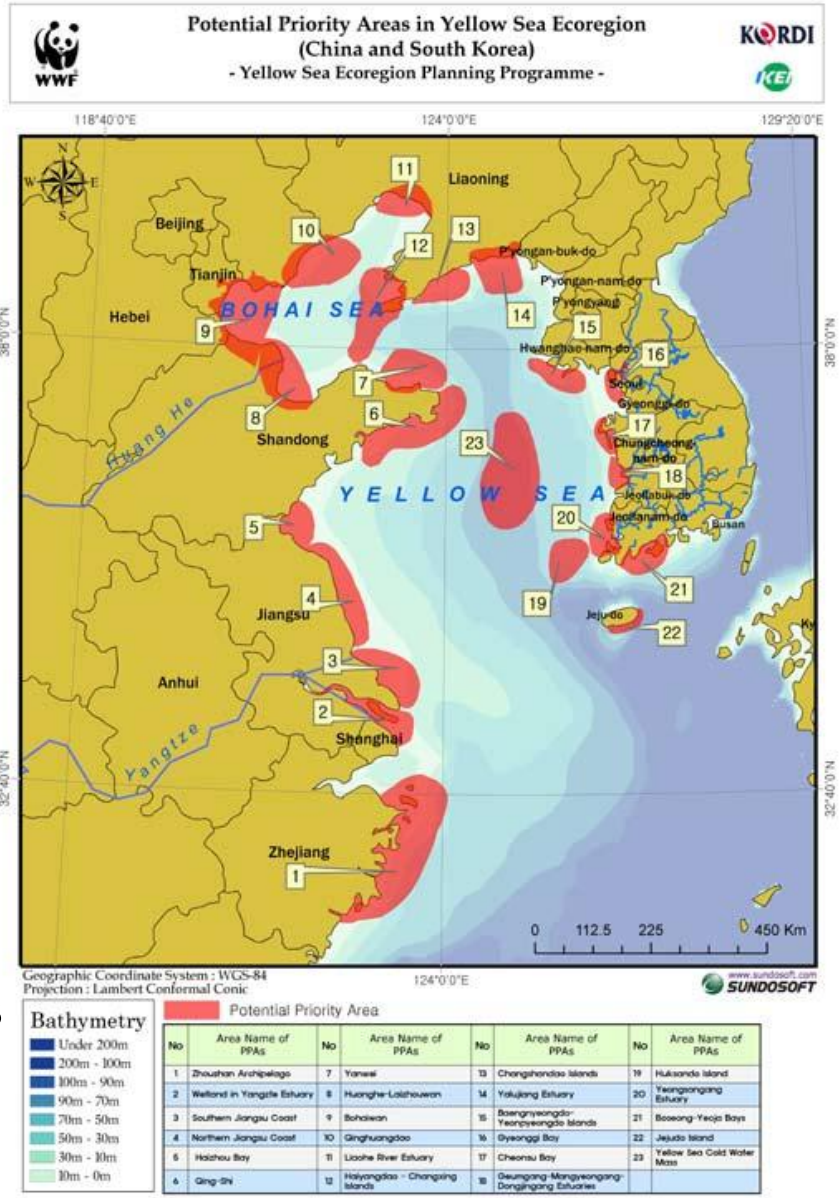
- **Objectives**
  - Strengthen the YSLME MPA network and effectiveness of their management.
- **Expected Outputs**
  - Technical proposals for designating MPAs for enhanced connectivity
- **Activities**

  The consultant under supervision of the Chief Technical Advisor and technical guidence of Regional Working Group on Habitat, in close collabration with the national project team, will conduct the following activities:
  - Based on the 23 PPAs, level of connectivity of zoning plans, identify the endangered species and important habitats where conservation gaps exits;
  - Conduct field survey, record the current status of critical species and analysis of ecological connectivity of potential MPAs focusing on endangered mammals species and coastal wetland habitats of critical endangered migratory waterbirds;
  - Collect the data of critical species/habitat conservation status;
  - Produce overlay results with existing MPAs, find out gaps and conservation needs and propose management measures to enhance connectivity;
  - According to the gaps, prepare technical proposals for new MPAs.

Backgrounds and introduction

- **23 PPAs in YSLME identified in 2006**
  - During YSLME project Phase I,close cooperation has been established with the World Wildlife Fund (WWF) Yellow Sea Ecoregion Planning Project.
  - Experts from China, RO Korea and Japan first identified indicator species from each of the groups based on six commonly agreed criteria. They then mapped the critical habitats of the indicator species.
  - By lumping all the EIAs (Ecologically Important Areas) together, a Map containing 23 PPAs (Potential Priority Areas) was produced.



Backgrounds and introduction

8 Mammal Indicator species identified in 23 PPAs in 2006.

17 endangered waterbird species identified in 23 PPAs in 2006.

Indicator Species		Criteria for habitat and vulnerable species of global significance		
Scientific names	**Common English names**	**Criterion 1: Endemism**	**Criterion 2: Vulnerable Species**	**Criterion 3: Commercially Important Species(not adopted)**
Neophocaena phocaenoides	Finless porpoise	C(assubspecies),K?(needDNA aynalysisto identify subspecies)	C(protected but victims bycatch), K (protected but consumed)	
Phoca largha	Largha seal	C K	C (1000 around Bohai sea), K (400-500 in indicated area during the summer)	
Eschrichtius robustus	Gray whale		C, K, IUCN CR (100 ind. remain)	
Lutra lutra	Eurasian otter		K, IUCN NT listed (no record in China)	
Balaenoptera borealis	Sei Whale		IUCN EN	
Balaenoptera musculus	Blue Whale		IUCN EN	
Balaenoptera physalus	Fin Whale		IUCN EN	
Eubalaena japonica	North Pacific Right Whale		IUCN EN	

Finless porpoise

Largha seal haul-out area in Korean DMZ

Eurasian otter

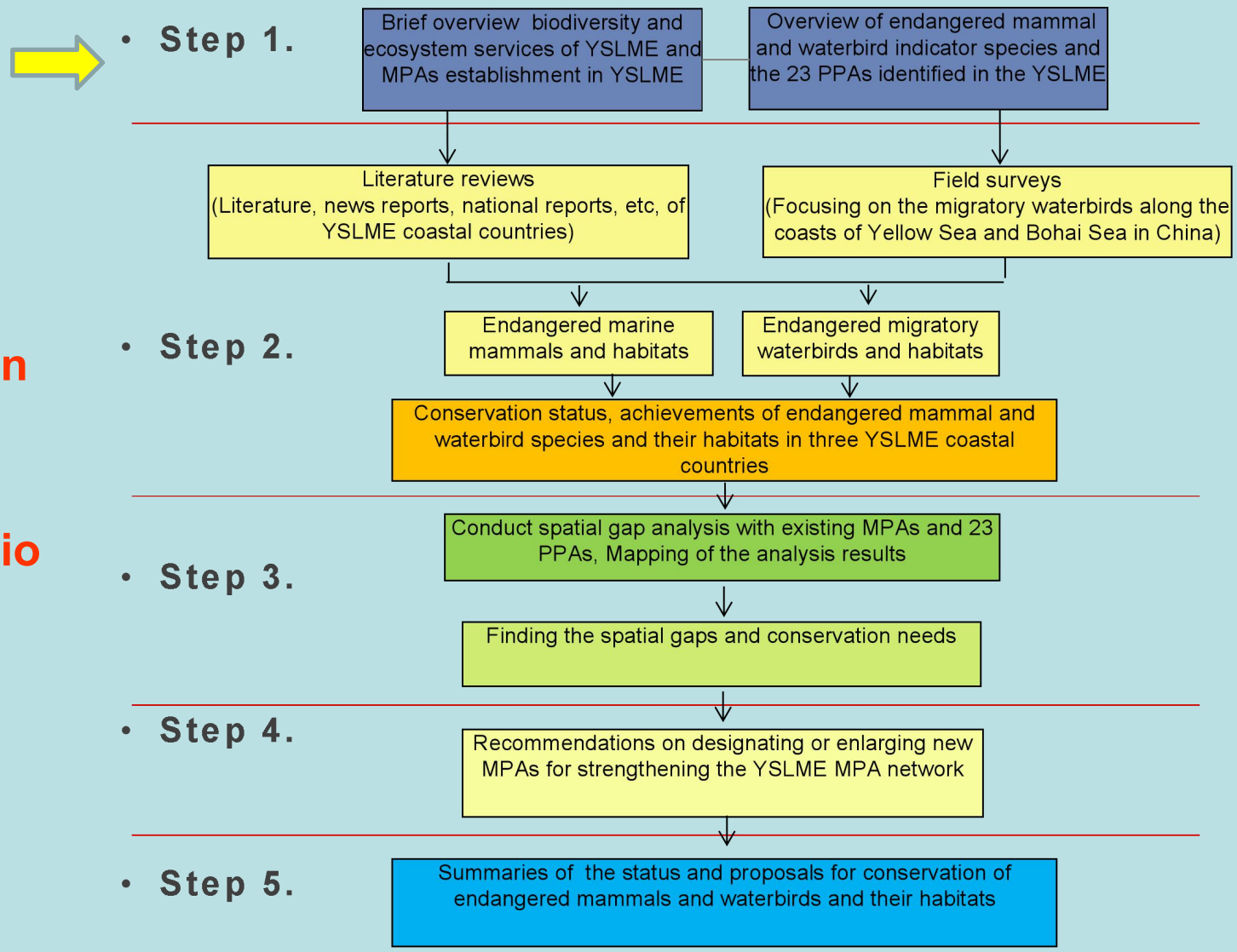
Indicator Species		Criteria for habitat and vulnerable species of global significance			
Scientific names	Common English names	Endemism (Definition: >50% of the population occurs in the Yellow Sea Ecoregion at some time of its life cycle.)	Criterion 2: Vulnerable Species	Criterion 3: Commercially Important Species (n/a: not applicable)	Criterion 4: Ramsar Criteria on Waterbird
Grus japonensis	Red-crowned crane	Yes	C K IUCN EN	n/a	Yes
Grus monacha	Hooded crane	Yes	C K IUCNVU	n/a	Yes
Grus vipio	White-naped crane	Yes	C K IUCNVU	n/a	Yes
Platalea minor	Black-faced spoonbill	Yes	C K IUCN EN	n/a	Yes
Egretta eulophotes	Chinese egret	Yes	C K IUCNVU	n/a	Yes
Ciconia boyciana	Oriental white stock	Yes	C K IUCN EN	n/a	Yes
Anas formosa	Baikal teal	Yes	C K IUCNVU	n/a	Yes
Cygnus cygnus	Whooper swan	Yes (10 000)	C K	n/a	Yes
Larus saundersi	Saunders's gull	Yes	C K IUCNVU	n/a	Yes
Haematopus ostralegus	Oystercatcher	Yes	K	n/a	Yes
Tringa guttifer	Nordmann's greenshank	Yes	IUCN EN	n/a	Yes
Eurynorhynchus pygmeus	Spoonbill sandpiper	Yes	IUCN EN	n/a	Yes
Numenius madagascariensis	Far eastern curlew	Yes	IUCN NT	n/a	Yes
Anser cygnoides	Swan Goose	Yes (Korean population. Among two populations, perhaps Russian FE birds migrate to Korea.)	IUCN EN	n/a	Yes
Grus leucogeranus	Siberian crane	Yes (Staging areas in Bohai Wan)	IUCN CR	n/a	Yes
Larus relictus	Relict Gull	Yes (Non-breeding migrant. Count data limited in Korea.)	IUCN VU	n/a	Yes

Red-crowned crane

Saunders's gull

2. Methodology

- **Overall research approach**
- **Data and information collection**
- **Conservation gaps analysis**



Task 2 (Activities 2 & 3)

Survey and review the current status and trends of endangered mammals species and coastal wetland habitats of critical endangered migratory waterbirds.

(2) Desk review of the current status and trends of endangered mammals species in the YSLME

Yangtze Fineless Porpoise
Spotted Seal
Whales
Others

Spotted Seal
(Photo taken at Panjin,Liaoning Province, China)

Yangtze Finless Porpoise
(Photo was from internet)

Whales
(Photo source: WWF website)

Task 2 (Activities 2 & 3)

Survey and review the current status and trends of endangered mammals species and coastal wetland habitats of critical endangered migratory waterbirds.

(1)Field survey of migratory waterbirds in coastal wetland

We took part in many field surveys of waterbird in Yellow Sea and Bohai Sea in 2016, 2017 and 2018.

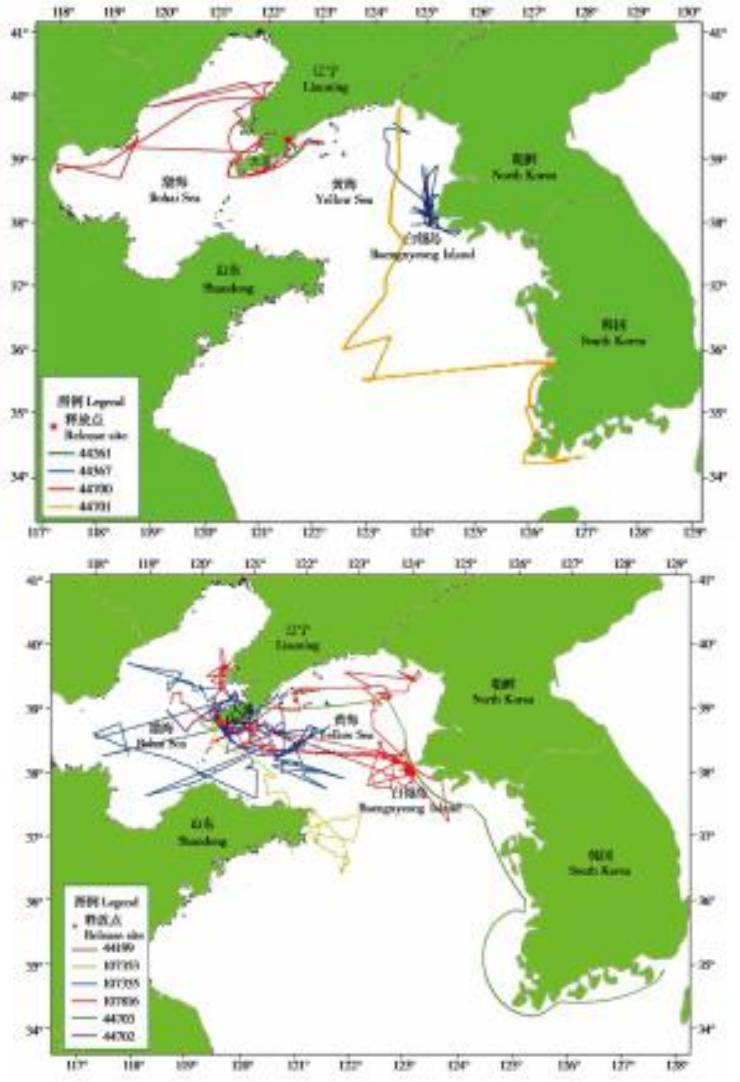
The data can be further used for analysis of the current status of endangered waterbird species.

Many threatened (or endangered) species were recorded in these surveys, including those threatened status are “Critically endangered (CR)”, “Endangered (EN)” or “Vulnerable (VU)” on the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species.

3 Status, gaps and recommendations for conservation of endangered mammals

- **3.1 Overall status of endangered marine mammals (Population and habitats)**
  - Spotted seal
  - Finless porpoise (focusing on the CR endangered Yangtze Finless Porpoise)
  - Gray whale
  - Sei Whale
  - Blue whale
  - Fin whale
  - North right whale
  - Minke whale
  - Humpback whale

The status of a total of 9 species of marine mammals were reviewed.



Movement routes of spotted seal released in 2010 and 2011 (Source: Han et al., 2013)

3.1 Overall status of endangered marine mammals

- **Spotted seal**
  - The population of spotted seal in China coastal waters was **estimated to 2000 individuals** according to the recent survey conducted in 2006 and 2007 (**China Ministry of Agriculture 2017**).
  - In RO Korea, **a maximum of 343 individuals** was observed at **Bak-ryoung island in 2002** (Song 2014) and **a total of 316 individuals** of spotted seals were surveyed in four habitat investigations **from May to October 2018** (unpublished data provided by Prof. Keun-Hyung CHOI of Chungnam National University of RO Korea).

  - **China has designated three MPAs** (two national and one provincial MPAs) for conservation of spotted seals, covering a total area of about **1064.08 km^2**, and **RO Korea recently designated a marine life protected area with an area about 90.23 km^2 in 2016**, in which spotted seal is one of the protected marine species.
  - In addition, some actions for conservation of spotted seal, such as the monitoring and surveys, raising public awareness, should be strengthened both in China and RO Korea.

3.1 Overall status of endangered marine mammals

- **Finless porpoise**
  - **In China, the population of Yangtze finless porpoise were about 1800 individuals in 2006, 1040 individuals in 2012 and 1012 individuals in 2017.** The Yangtze River estuary (a PPA in Yellow Sea Eco-region) is also one of the important habitats for finless porpoise. **Recent studies showed that the finless porpoise population was estimated to 61 individuals in 2012 (Yao et al. 2014).**
  - **China has designated three MPAs and defined the ecological red-line** (see Fig.3.2-2 in Chapter 3) in the regions where finless porpoises are usually being observed, although these MPAs are mainly designated for conservation of migratory waterbirds and coastal wetlands and Chinese sturgeons, but they could be used as important habitats for conservation of the endangered finless porpoises.

  - In RO Korea, it was estimated to be **about 36,000 finless porpoises distributed in Korean waters (Park et al. 2007).** However, **Park et al. (2015) stated that in 2011, the number had decreased by 63%, at 13,000 individuals in the west coast, possibly due to bycatch**. Thus, in Korea, finless porpoise has been designated as **Protected Marine Species in 2016.**

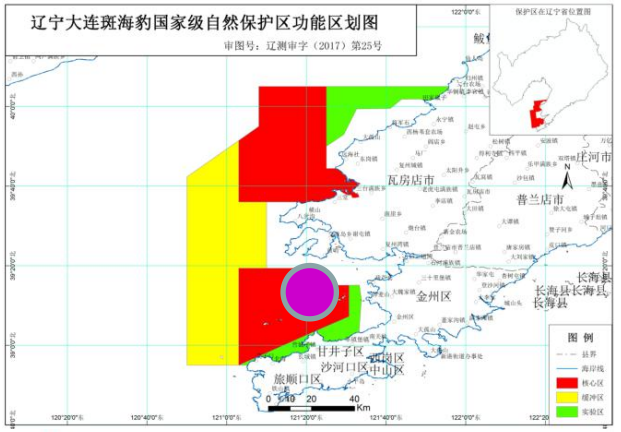
3.1 Overall status of endangered marine mammals

- **7 species of whales**
  - It shows that the populations of whales were historically abundant in YSLME, however the populations declined dramatically due to the whaling and the changes of marine biological resources and environments. For example, 921 fin whales were captured in Korean waters from 1911 to 1982. Almost none have been observed near the Korean coasts recently, although one mature fin whale, 9.8 m long, was stranded at Songdo, Incheon, in 1996 (Park et al. 2016). Since the ban of whaling in 1986, the overall status of population of whales were not clear due to limited data (Song 2014).

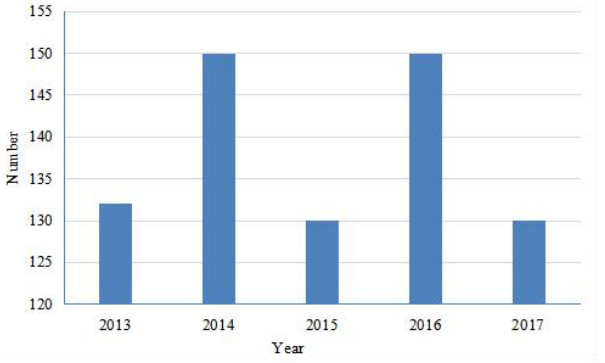
  - Without sufficient scientific evidences for determining the habitats of whales, there are no MPAs designated specifically for conservation of the above 7 species in both China and RO Korea.

3.2 Status of endangered mammals in critical habitats - Mayi Island, Dalian,China

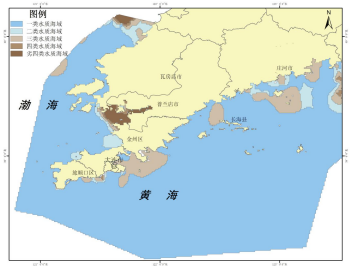
- **1)Location:** Spotted Seals in Mayi Island (which locates in the core zone of National Nature Resrve), Dalian China.

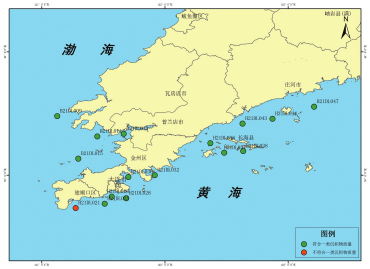


- **Population:** The population is in a stable status, maintaining ***130-150 individuals*** over the last five years.



- **Habitat:** The water quality, sediment quality and biological status were at a stable status from 2013 to 2017.



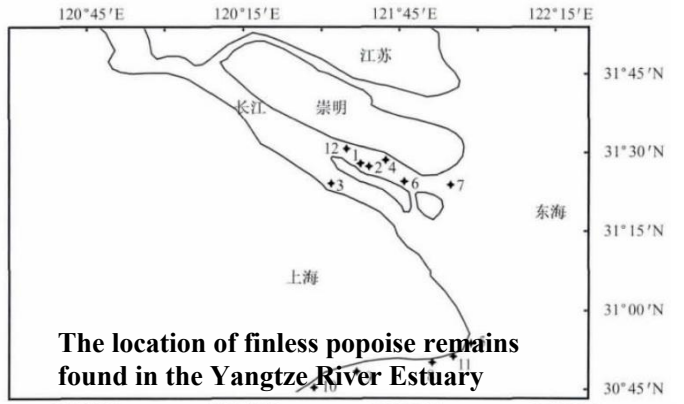


3.2 Status of endangered mammals in critical habitats - Yangtze River Estuary, China

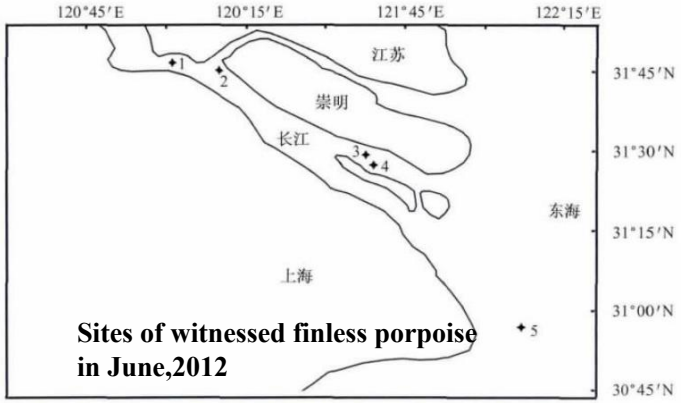
- **2) Location:** Finless porpoise in Yangtze River Estuary, China.

- **Population:** *61 individuals* of Yangtze finless porpoise were estimated in June 2012.

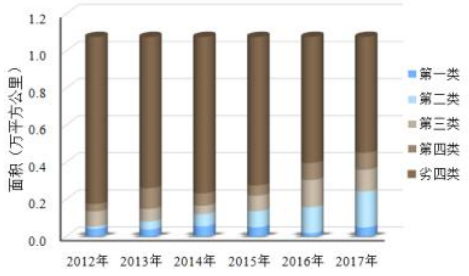
- **Habitat:** the overall status of *water quality was continuous improved* compared with 2015 and 2016; A total of 72 netkton species were identified. Of which, there are 42 species of fish, 26 species of crustaceans and 4 species of cephalopods

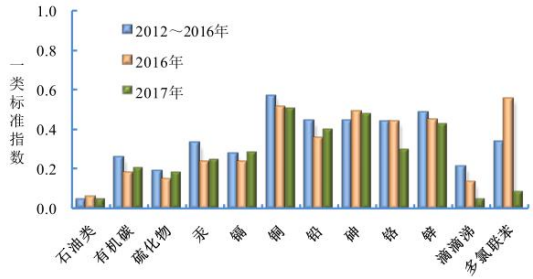


The location of finless popoise remains found in the Yangtze River Estuary



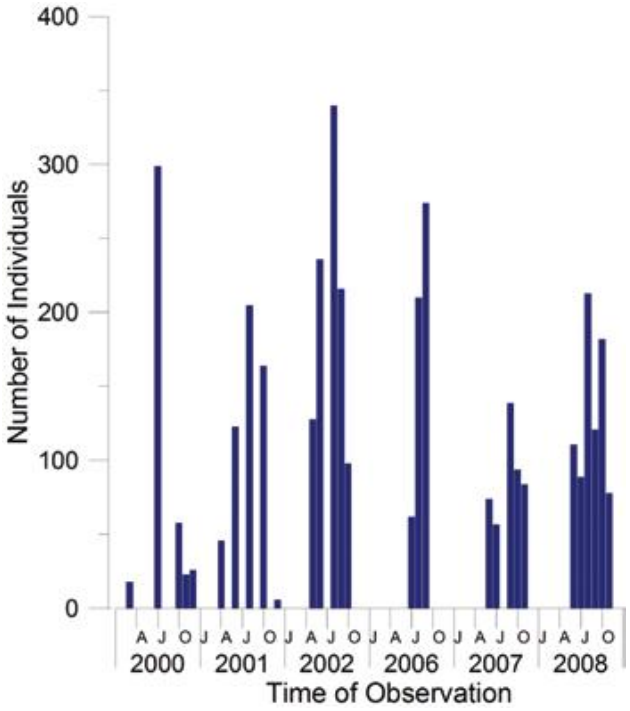
Sites of witnessed finless porpoise in June,2012



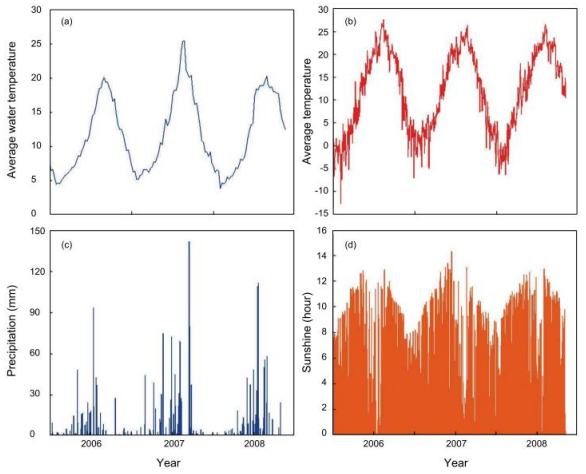


3.2 Status of endangered mammals in critical habitats - Bak-ryoung Island, RO Korea

- **Population:** ***A maximum of 343 individuals was observed in 2002***. **The monthly maximum number of observed seals was 274 in September 2006, 139 in September 2007, and *213 in August 2008. A* total of 316 individuals of spotted seals were surveyed in four habitat investigations from May to October 2018 (unpublished data provided by Prof. Keun-Hyung CHOI of Chungnam National University of RO Korea).**



- **Habitat:** **During the survey of spotted seals around Bak-ryoung island from 2006 to 2008, the monitoring of *marine environmental factors (water temperature, salinity, tide, etc.)* and *meteorological factors (sunshine, precipitation, temperature, humidity, etc.)* that affecting the habitats were also conducted.**



3.3 Conservation achievements and gaps

- **3.3.1 Conservation achievements in China**
  - Domestic laws/regulations and international conventions
    - the Wildlife Protection Law entered into force on March 1, 1989
    - the State Council approved the Key Protection List of Wildlife of China on December 10 1988, and it was published by Ministry of Forestry and Ministry of Agriculture on January 14 1989.

Tab. 3.3-1 Key Protection List of marine mammals in China

Chinese Name	Scientific Name	Protection Level	
		Grade I	Grade II
鳍足目（所有种）	PINNIPEDIA		II
海牛目	SIRENIA		
儒艮科	Dugongidae		
儒艮	*Dugong dugon*	I	
鲸目	CETACEA		
喙豚科	Platanistidae		
白鳖豚	*Lipotes vexillifer*	I	
海豚科	Delphinidae		
中华白海豚	*Sousa chinensis*	I	
其它鲸类	(Cetacea)		II

Tab. 3.3-2 International conventions that China joined

Convention name	Time to join/ enter into force
International Whaling Commission (IWC)	1980
Convention on International Trade in Endangered Species of Wild Fauna and Flora(CITES)	1981
Convention on Biological Diversity (CBD)	1993
Convention on Wetlands (Ramsar Convention)	1992

3.3 Conservation achievements and gaps

- **3.3.2 Conservation achievements in RO Korea**
  - Domestic laws/regulations and international conventions
    - e.g. The Natural Environment Conservation Act of 1992
    - The endangered species list was updated in 2005 and 2012.
      There were 15 species of marine mammals listed as endangered in 2007 and a revision in 2012 increased the list to 16 species (Table 3.2-3) (Jo 2015).

Table 3.3-3 Protected marine mammals of Korean mammals listed by the Ministry of Oceans and Fisheries. MOE= Ministry of Environment. (adapted from Jo 2015)

Order/Family/Species	Evaluation year		Note
	2007	2012	
Order Carnivora			
Family Otariidae	√	√	Vulnerable by MOE
Callorhinus ursinus	√	√	Vulnerable by MOE
Zalophus japonicus	√	√	IUCN regards *Z. japonicus* as extinct
Family Phocidae	√	√	
Histriophoca fasciata	√	√	
Phoca largha	√	√	Natural Monument
Phoca vitulina	√		Harbor Seal removed from list due to rarity in Korean coast
Pusa hispida	√	√	
Order Cetacea			
Family Balaenidae			
Eubalaena japonica	√	√	
Family Balaenopteridae			
Balaenoptera borealis	√	√	
Balaenoptera edeni	√	√	
Balaenoptera musculus	√	√	
Balaenoptera physalus	√	√	
Megaptera novaeangliae	√	√	
Family Eschrichtiidae			
Eschrichtius robustus	√	√	
Family Delphinidae			
Tursiops aduncus		√	Jeju population was once regarded as *T. truncatus*
Family Physeteridae			
Physeter catodon	√	√	

Tab. 3.3-4 Laws system for MPA designation and management (adapted from personal presentation of Lee Su-Jeong, 2017)

MPA category name	Ministry	Acts
Marine Life Protected Area	MOF	Conservation & Management of Marine Ecosystem Act
Marine Ecological Protected Area	MOF	
Wetland Protected Area	MOF	Wetland Protection Act
Marine Environment Conservation	MOF	Marine Environment Conservation Act
Fisheries Resource Protection	MOF	National Land Planning and Utilization Act
National/Province/Country Park	MOE	Natural Park Law
Natural Heritage	CHPA	Cultural Heritage Protection Act

Note: MOF=Ministry of Oceans and Fisheries; MOE=Ministry of Environment.

Tab. 3.3-5 International conventions that RO Korea joined

Convention name	Time to join/ enter into force
International Whaling Commission (IWC)	1978
Convention on International Trade in Endangered Species of Wild Fauna and Flora(CITES)	1993
Convention on Biological Diversity (CBD)	1995
Convention on Wetlands (Ramsar Convention)	1997

3.3 Conservation achievements and gaps

- **3.3.3 Conservation achievements in DPR Korea**
  - According to the Action Plan for Biodiversity Conservation in 2012 and the latest news reports on RAMSAR convention website, DPR Korea has signed many international conventions/protocols, and designated two RAMSAR sites based on the filed survey results with the great supports from many international NGOs.

Conventions/Protocols	Date
United Nations Convention on Biodiversity	26 Oct. 1994
United Nations Framework Convention on Climate Change	05 Dec. 1994
Vienna Convention on the Protection of Ozone Layer	05 May 1995
Montreal Protocol on Substances that Deplete the Ozone Layer	06 May 1995
Stockholm Convention on Persistent Organic Pollutants	19 Aug. 2002
Cartagena Protocol on Biosafety	29 July 2003
United Nations Convention on Combating Desertification	28 Mar. 2004
Kyoto Protocol to the United Nations Framework Convention on Climate Change	27 Apr. 2005
Basel Convention on Trans-boundary Movements of Hazardous Wastes and their Disposal	2008.7.10
Nagoya Protocol on access to genetic resources and the fair and equitable sharing of benefits arising from their utilization	2012

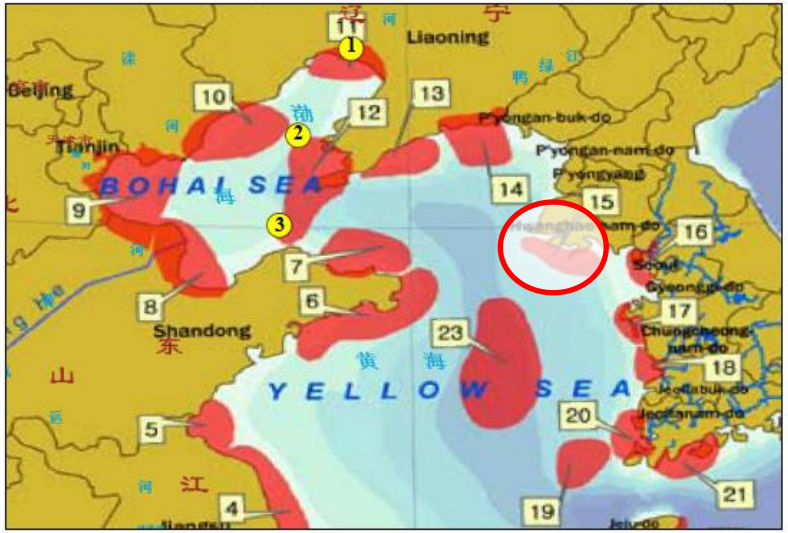
Conservation gaps analysis

- **Using the 23 PPAs distribution map as the background, we overlaid the locations of MPAs for conservation of spotted seals and Yangtze finless porpoises with the ArcGIS software tool, and then drew the resultant spatial gap analysis map.**

1) Spotted Seal

In China, 3 national MPAs of rather large scale have been established, covering the major breeding grounds and habitats.

- Liaohe Red Beach National Mark Park, 2013 established and ajusted in 2017, ~329 km^2
- Dalian Spotted Seal National Nature Resrve, 5619.75 km^2;
- Miao Islands Spotted Seal Provincial Nature Reserve, ~1731 km^2



(a)Overlay of MPAs with 23 PPAs

In RO Korea, the **Bak-ryoung Island** and its surrounding waters is not being designated as MPA yet.

In DPR Korea, there are limited data or information on the marine mammals, the spatial gaps couldn't be analyzed.

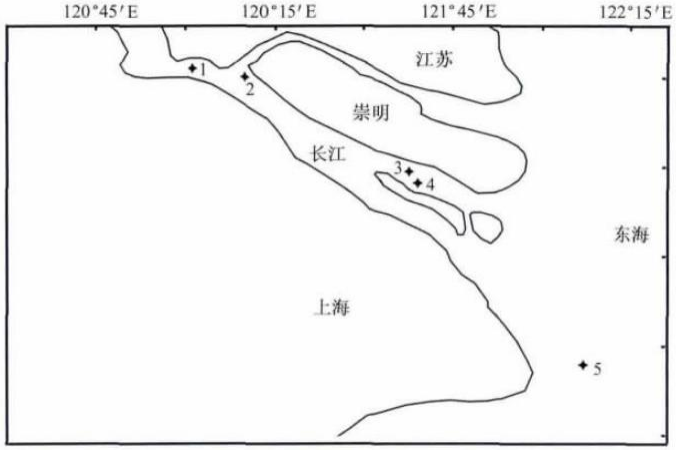
Conservation gaps analysis

- **2) Yangtze Finless Porpoise**

In China, 2 national MPAs and **1 Provincial MPA** have been established.

Shanghai Government published the ecological red line in 2018, in which many important sea areas in the Yangtze River Estuary are being included.

Overlaying the sites of witnessed finless porpoise in June,2012 with the No.2 PPA and the ecological red line, it can be found that most of the important habitats for the Yangtze Finless Porpoise are protected in different ways.



4 Status, gaps and recommendations on conservation of endangered waterbirds

- **4.1 Overall status of endangered waterbirds**

Based on the results of coordinated surveys in 2016 and 2017, and the complementary data sources, a total of 10 globally endangered birds were identified and listed in Tab. 4.1-5.

Table 4.1-1 The protected birds recorded in 2016

Chinese National Important Protected Wildlife List	I	**4 species**: Oriental Stork, Relict Gull, Siberian Crane and Red-crowned Crane
	II	**10 species**: Dalmatian Pelican, Pelagic Cormorant, Chinese Egret, Eurasian Spoonbill, Black-faced Spoonbill, Mute Swan, Mandarin Duck, White-naped Crane, Little Curlew and Spotted Greenshank
IUCN Red List of Threatened Species	CR	**3 species**: Baer's Pochard, Siberian Crane and Spoon-billed Sandpiper
	EN	**6 species**: Oriental Stork, Black-faced Spoonbill, Red-crowned Crane, Far Eastern Curlew, Spotted Greenshank and Great Knot
	VU	**7 species**: Dalmatian Pelican, Chinese Egret, Swan Goose, Common Pochard, White-naped Crane, Relict Gull and Saunders's Gull

Tab. 4.1-2 Survey sites in 2016 found to meet the *Criterion 5* and/or *6*

Survey site name	Province	Criterion 5	Criterion 6
Yalu River Estuary, Dandong	Liaoning	√	√
Laotie Mountain Coast, Dalian	Liaoning		√
Yingkou-Dalian Coast	Liaoning	√	√
Liao River Estuary, Panjin	Liaoning	√	√
Beidaihe Coast, Qinhuangdao	Hebei		√
Luannan Coast, Tangshan	Hebei	√	√
Beidagang Coast, Tianjin	Tianjin	√	√
Nandagang Coast, Cangzhou	Hebei		√
Shell-dyke Island, Binzhou	Shandong		√
Yellow River Delta, Dongying	Shandong	√	√
Changdao Island, Yantai	Shandong		√
Yancheng Coast	Jiangsu	√	√
Dafeng Coast	Jiangsu		√

Tab. 4.1-4 Survey sites in 2017 found to meet the *Criterion 5* and/or *6*

Survey site name	Province	Criterion 5	Criterion 6
Yalu River Estuary, Dandong	Liaoning	√	√
Zhuanghe Coast, Dalian	Liaoning	√	√
Laotie Mountain Coast, Dalian	Liaoning		√
Yingkou-Dalian Coast	Liaoning		√
Liao River Estuary, Panjin	Liaoning	√	√
Laoting Coast, Tangshan	Hebei	√	√
Luannan Coast, Tangshan	Hebei		√
Hangu Coast, Tianjin	Tianjin		√
Beidagang Coast, Tianjin	Tianjin		√
Nandagang Coast, Cangzhou	Hebei	√	√
Shell-dyke Island, Binzhou	Shandong	√	√
Yellow River Delta, Dongying	Shandong	√	√
Jiaozhou Bay, Qingdao	Shandong		√
Yancheng Coast	Jiangsu	√	√
Jiuduansha, Shanghai	Shanghai		√

Tab. 4.1-5 Ten globally endangered birds identified in the Yellow Sea-Bohai coast

English name	Latin name	IUCN category	Highest count	Percentage (%)	Record sites	Province
Spoon-billed Sandpiper	*Eurynorhynchus pygmeus*	CR	143	30	Xiaoyangkou (Rudong Coast)	Jiangsu
Black-faced Spoonbill	*Platalea minor*	EN	65	3.5	Zhuanghe Bay	Liaoning
			120	6.5	Yancheng NNR	Jiangsu
Red-crowned Crane	*Grus japonensis*	EN	300	75	Liaohe Estuary NNR	Liaoning
Spotted Greenshank	*Tringa guttifer*	EN	1117	>100	Xiaoyangkou (Rudong Coast)	Jiangsu
Far Eastern Curlew	*Numenius madagascariensis*	EN	5289	17	Yalujiang Estuary NNR	Liaoning
Great Knot	*Calidris tenuirostris*	EN	80000	28	Liaohe Estuary NNR	Liaoning
Chinese Egret	*Egretta eulophotes*	VU	350	10.9	Zhuanghe Bay	Liaoning
Relict Gull	*Larus relictus*	VU	8230	69	Tanggu Coast	Tianjin
			123	1	Luannan Coast	Heibei
Saunders's Gull	*Larus saundersi*	VU	6000	85	Liaohe Estuary NNR	Liaoning
			1295	18.3	Yingkou-Dalian Coast	
Dalmatian Pelican	*Pelecanus crispus*	VU	112	>100	Dongtai Qianggang Coast (Tiaozini)	Jiangsu

Note: The percentage denotes the peak count in relation to the most recently published global or EAAF population.

4.2 Current status of endangered waterbirds in critical habitats

Overall status analysis (Population and habitats)

- Spoon-billed Sandpiper
- Black-faced Spoonbill
- Spotted Greenshank
- Far Eastern Curlew
- Great Knot
- Chinese Egret
- Relict Gull
- Saunders's Gull
- Whooper Swan

The status of a total of 9 species of waterbirds were reviewed.

Spoonbilled sandpipper

Siberian Crane

Red-crowned Crane

Black-faced Spoonbill

Oriental Stork

Saunders's Gull

Some critical waterbirds reviewed

4.3 Spatial gap analysis and recommendations

- **4.3.1 China**
  - Based on the preliminary identified seven sites, we further identified four sites.
  - The four unprotected priority waterbird habitats, Zhuanghe Coast, Yinkou-Dalian Coast, Luannan Coast, and Rudong Coast, should be protected through the creation and management of new coastal wetland protected areas and/or expanding the scope of existing protected areas.

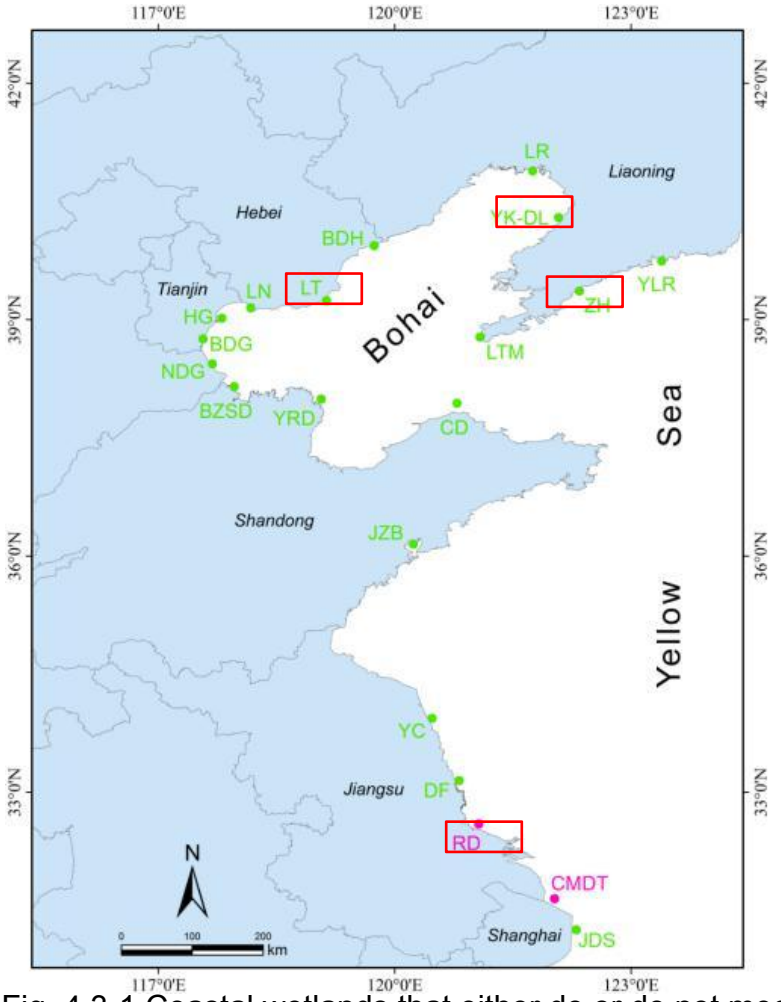


Fig. 4.3-1 Coastal wetlands that either do or do not meet Criterion 5 and/or Criterion 6. The green solid circles show the wetlands meet Criterion 5 and/or Criterion 6, while pink ones show the wetlands do not meet Criterion 5 and/or Criterion 6.

Zhuanghe Coast

- There is an urgent need to expand the scope of existing Dalian Black-faced Spoonbill Municipal Nature Reserve.

- The municipal nature reserve should be upgraded to the national nature reserve that covers breeding, feeding, roosting and resting areas for endangered waterbirds as soon as possible.

Fig.4.4-1 The location and range of Dalian Black-faced Spoonbill Municipal Nature Reserve

Fig.4.4-2 Black-faced Spoonbill and Chinese Egret roosting at Zhuanghe estuary

Fig. 4.4-3 Fishing business for leisure around Zhuanghe estuary

Luannan Coast

- It is said that the local government is planning to establish a provincial nature reserve to protect migrant waterbirds
- a new national nature reserve, with high protection, is strongly recommended to be established as soon as possible
- there is an urgent need to strengthen the management of existing reserve

Fig.x A provincial nature reserve is said to be established

Rudong Coast

- there is an urgent need to designate a new national nature reserve based on the existing protected plot
- other action that is now urgently required to prevent the extinction of Spoon-billed Sandpiper is to set up the Conservation Alliance of local governments, mainly including Jiangsu, Liaoning, Shandong, Fujian, and Guangdong, for protecting stopover and wintering sites of this species

Fig.4.4-6 Spoon-billed Sandpiper found in Binzhou, Shandong Province in 2017

4.3.2 RO Korea

- The area of intertidal wetlands in South Korea has decreased by more than 50% in the past 25 years, with extensive reclamation at Yeongjong Island, almost complete reclamation of Asan Bay and inner parts of Namyang Bay, and complete reclamation of Saemangeum.

- Given the more favourable conditions of adjacent areas, sites in Saemangeum and the Geum Estuary no longer provide the habitat conditions necessary for long-distance migratory shorebirds.

- To maintain present numbers of shorebirds within Saemangeum and to fulfil even in part existing conservation obligations, the sea-gates at Saemangeum need to be kept open, allowing regular tides

Fig.4.4-7 Saemangeum of RO Korea, degraded but still internationally important

(Source: http://www.birdskorea.org)

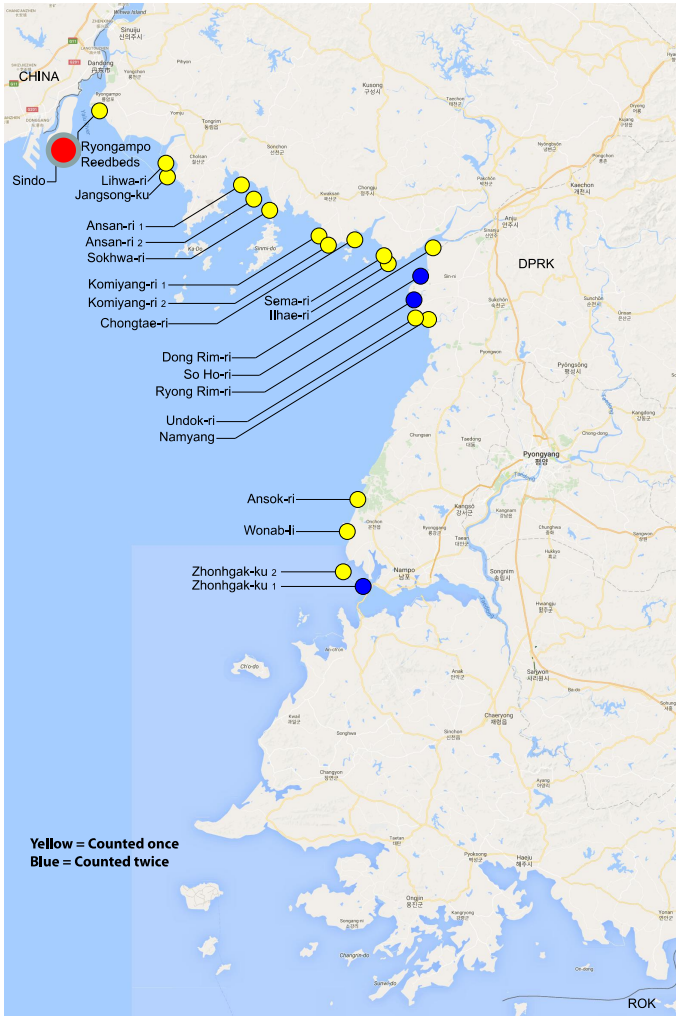
4.3.3 DPR Korea

- According to survey conducted by the Yellow Sea-Bohai Region Coordinated Waterbirds Survey Group in DPR Korea from 18 to 22 April 2018, Sindo is internationally important for at least three species of shorebirds, Far-eastern Curlew, Eurasian Curlew and Bar-tailed Godwit.

- It is hoped that by highlighting these sites both locally and internationally they may continue to be protected well into the future

Fig.4.4-9 Large population of waterbirds found in Sindo, DPR Korea

(Source: Yellow Sea-Bohai region coordinated waterbird survey 2018 (Chen et al. 2018))



5. Summary

- In 2009 , a MPA network was established covering an area of about 70,000 ha (Source:YSLME Project document).

Spatial distribution of marine protected areas in China and RO Korea in 2009

- In 2017, both China and RO Korea have established many new MPAs to conserve the ecology and environment of YSLME.

Spatial distribution of marine protected areas in China and RO Korea in 2017

5. Summary

- **Proposals for designating or enlarging new MPAs**
  - Six sites (i.e. Rudong Coast, Luannan Coast, Yingkou Coast, Zhuanghe Coast in China, Sindo Island in DPR Korea, Saemangeum Coast in RO Korea) were identified as spatial gaps for conservation of endangered waterbirds and their habitats.
  - One site (i.e. Bak-ryoung Island) was identified as spatial gap for conservation of spotted seals and their habitat.

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