
THE RAMSAR SITES IN CHINA AND IMPORTANCE OF INTERNATIONAL COOPERATION

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1. General Introduction to the Wetlands in China

China has over 63 million hectares of wetlands, including 11 million ha of marshes and bogs, 12 million ha of lakes, 2.1 million ha of coastal salt mudflats and 38 million ha of paddy field, some of which are among the most important and unique wetlands of the world. Because of the extremely wide range of altitudes, latitudes and climatic zones, the diversity of wetland habitats in China is un-paralleled worldwide. They support a large number of rare and endemic species and China is one of the key countries on both the East Asian-Australasian and the Central Asian-Indian flyways for migratory waterbirds. These two globally significant migration routes involve millions of birds each year belonging to approximately two hundred species, of which China's wetland sites provide crucial staging and breeding areas for many waterbirds. In addition, thirty-one of the 57 endangered waterfowl species for Asia are found in China while 10.8% of amphibians and 15.5% of fish are endemic to China.

Wetlands in China have come under increasing pressure and threats due to the large population and rapidly developing economy. Reclamation for agriculture, urban encroachment and siltation have sharply reduced the wetland area; large amount of industrial and agricultural waste water and sewage have caused serious pollution and destruction to wetland ecosystems; over-fishing has seriously affected their natural processes and irrational water conservancy projects have led to unfavorable ecological change in the lower reaches of many river basins. According to a recent study, China has over 40% of all wetlands of international importance now under moderate to severe threats. All of these have greatly reduced the supportability of wetlands for the national economy and resulted in serious environmental problems e.g. the reduction of wetland biodiversity.

In spite of these, China's economy continues to grow annually at between 7- 8% in the long term with a resulting substantial increase in the consumption of natural resources and discharges of pollutants. China's population grows by 13 million annually increasing the pressure on resources and creating conflicts between the people, the resources and the environment. In view of this situation, China has been firmly complying with the sustainable development strategy. China has developed and is implementing China Agenda 21, the broad objectives of which are to ensure the

conservation of natural resources and improvement of environment while the national economy reaches its goal. It's also a contribution to global environmental protection. The conservation and wise use of wetlands are listed into the priorities of China Agenda 21 as an important component for China to implement the sustainable development strategy.

2. Ramsar Sites in China

Since China joined the Ramsar Convention in 1992, total 7 sites have been designated for the List of Wetlands of International Importance, covering a total area of **588,380** ha. By the end of Jan of 2002, another 14 sites were listed into the Wetlands of International Importance. Situated in different parts of China, these sites have covered different types of wetlands, including permanent freshwater and brackish or saline lakes, riverine floodplains, permanent and seasonal freshwater marshes and inter tidal mudflats. The general information of the 21 Ramsar Sites is indicated in Table 1.

Following is the detailed information about these sites.

Dong Dongtinghu is a global biodiversity hotspot for freshwater aquatic biodiversity (about 200 fish spp; including Chinese Sturgeon *Acipenser sinensis* and White Sturgeon *Psephurus gladius* and critically endangered Yangtze River Dolphin or Baiji *Lipotes vexillifer*). It's a very important wintering area for at least 120 spp. of migratory birds, including Dalmatian Pelican *Pelecanus crispus*, Oriental White Stork *Ciconia boyciana*, Swan Goose *Anser cygnoides*, Baer's Pochard *Aythya baeri*, Scaly-sided Merganser *Mergus squamatus*, Great Bustard *Otis tarda*, Hooded Crane *Grus monacha*, White-naped Crane *grus vipio* and Siberian Crane *Grus leucogeranus*. It's also a wintering area for more than 30% of the world population of Lesser White-fronted Goose *Anser erythropus* and probable wintering area for Asian Yellow Rail *Coturnicops exquisitus* and Japanese Marsh Warbler *Megalurus pryeri*.

Main threats:

Siltation deposits in important areas of the Lake (particularly on the Western side) and associated dredging works; over-fishing and poor management of breeding areas of endemic and endangered fish species; pollution

Conservation measures:

It has been designated as a National Nature Reserve.

Table 1. General Information of the 7 Ramsar Sites in China

Site	Date of designation	Province	Area	Coordinates
Dong Dongtinghu	31/03/92	Hunan	190,000 ha	29°20'N 112°55'E
Dongzhaigang	31/03/92	Hainan	5,400 ha	20°00'N 110°35'E
Mai Po Marshes & Inner Deep Bay	04/09/95	Hong Kong	1,513 ha	22°30'N 114°02'E
Niaodao	31/03/92	Qinghai	60,600 ha	36°50'N 100°10'E
Poyanghu	31/03/92	Jiangxi	22,400 ha	29°06'N 116°16'E
Xianghai	31/03/92	Jilin	105,467 ha	44°52'N 122°30'E
Zhalong	31/03/92	Heilongjiang	210,000ha	47°15'N 124°15'E
Chongming Dao	11/01/02	Shanghai	32,600ha	31°38'N 121°58'E
Dafeng	11/01/02	Jiangsu	78,000ha	33°05'N 120°49'E
Dalian Spotted Seal	11/01/02	Liaoning	11,700ha	39°15'N 121°05'E
Dailaihu lake	11/01/02	Inner Mongolia	740,000ha	48°33'N 117°30'E
Errdousi	11/01/02	Inner Mongolia	7,680ha	39°48'N 109°35'E
Honghe	11/01/02	Helongjiang	21,836ha	47°49'N 133°40'E
Xingkaihu lake	11/01/02	Helongjiang	222,488ha	45 17'N 132 32'E
Sanjiang	11/01/02	Helongjiang	164,400haa	47°56'N 134°20'E
Huidong Harbor	11/01/02	Guangdong	400ha	22°33'N 114°54'E
Nan Dongting	11/01/02	Hunan	168,000ha	28°50'N 112°40'E
Xi Dongting	11/01/02	Hunan	35,000ha	29°01'N 112°05E
Shankou	11/01/02	Guangxi	4,000ha	21°28N 109°43'E
Yancheng	11/01/02	Jiangsu	453,000	33°31'N 120°22'E
Zhangjiang	11/01/02	Guangdong	20,279	20°54'N 110°08'E

Dongzhaigang

- Geographic location: It is located in the northeast Hainan Province, 20 km east to Haikou City. Altitude is 0 meter.
- Wetland type: Intertidal mudflats and marine waters.
- Site Description: Extensive intertidal mudflats and mangrove swamp along winding coastline.
- Climatic conditions: Tropical monsoon climate with an average annual rainfall of 1,700 mm and a mean annual temperature of 23.8 °C.
- Biodiversity: The main vegetation is mangrove, including 29 species and 15 families. It also supports rich waterfowl species, mainly including herons, egrets, spoonbills and shorebirds.
- Main threats: overfishing and land use projects.
- Conservation measures: A national nature reserve was established.

Mai Po Marshes & Inner Deep Bay

- Geographic location: It is situated in the northwest of the New Territories, Hong Kong, bordering Shenzhen City, Guangdong Province.
- Wetland type: Intertidal mudflats and marine waters.
- Site Description: A large estuary with extensive intertidal mudflats and short mangroves, scattered with shrimp ponds and fish ponds.
- Climatic conditions: Subtropical climate with hot and humid summers and mild winters. The average annual rainfall is 2,225 mm, mainly concentrating between April and September.
- Biodiversity: Vegetation mainly include mangrove and reed species. The site is internationally important for migratory waterbirds as wintering or breeding place and staging habitat. It regularly supports a wintering population of the Dalmatian Pelican *Pelecanus crispus* although they are declining in recent years. In addition, the Chinese Egret *Egretta eulophotes*, the Asian Dowitcher *Limnodromus semipalmatus* and many shorebird species have also been recorded in the spring or winter.
- Main threats: Increasing urban development & population, water pollution.
- Conservation measures: It became a “ No Hunting Area” in 1973. Mai Po Marshes became a Site of Special Scientific Interest in 1976 and the whole site in 1986. The Mai Po Marshes Wildlife Education Center and Nature Reserve have been established by WWF-Hong Kong.

Niaodao(Bird Island)

- Geographic location: In the eastern part of Qinghai Province, 280 km west to Xining City.
- Wetland type: Permanent brackish lake.
- Site Description: Niaodao consists of several islets in Qinghaihu, which is the largest brackish lake in China with a total area of 458,300 ha. Large area of marshes and wet meadows surround the lake. The size of Qinghaihu is decreasing in a mean annual rate of 0.12m since the climate there is becoming more arid
- Climate conditions: Semi-arid continental climate with cool summers and cold winters. The mean annual temperature is 0.3-1.1 °C and the temperature can fall to -31°C. The average annual rainfall is 360-400 mm.
- Biodiversity: There is no aquatic vegetation except algae in the lake. Niaodao is an extremely important breeding area for a wide variety of waterfowl.
- Main threats: Overgrazing and decreasing water level.
- Conservation measures: It's a national nature reserve.

Poyanghu Lake

- Geographic location: In the north Jiangxi Province, 50 km north to Nanchang City. The altitude is 12-16m.
- Wetland type: Inland permanent freshwater lake.
- Site Description: Poyanghu Lake is the largest freshwater lake in China with total area 460,000 ha. It's surrounded by marshes and wet meadows, fed by five major rivers, the Gan, Wu, Xing, Rao and Xiu through the southern side and entering into the Yangtze River in the north. The lake surface can fall to an elevation of 11-12 meters during the dry season from October to the next March, and reach 21 meters during flooding season from the April to September.
- Climate conditions: Subtropical climate with annual rainfall varying from 1,400 to 1,900 mm and mean annual temperature 17°C.
- Biodiversity: About 36 species of aquatic vascular plants have been recorded in addition to some algae species. It supports rich planktonic fauna including 92 species and 21 families. Total 108 waterbird species, 122 fish species and 65 mollusc species have been recorded. The site is famous for its large wintering populations of cranes, especially Siberian White Cranes *Grus leucogeranus*.
- Main threats: Poaching and human disturbances.
- Conservation measures: National Nature Reserve.

Xianghai Lake

- Geographic location: In the western Jilin Province, 310 km northwest to Changchun City. The altitude is 156-192 meters.
- Wetland type: Riverine flooded marshlands.
- Site Description: A lowland plain with complex of small lakes, ponds, freshwater marshes and wet meadows in the basins of Huolin River, Emutai River and Taoer River. Most of the lakes and marshes are permanent and fresh, but some are seasonal and brackish to saline.
- Climate conditions: Semi-arid climate with hot summer and cold winter. The average annual rainfall is 406 mm and the mean annual temperature is 4.9°C. It's frosts from late September to May.
- Biodiversity: Extensive reed-beds, wet meadows and grasslands provide good habitats for about 200 bird species. The breeding waterbirds include 6 species of cranes, 3 species of grebes and 8 species of ducks.
- Main threats: Overgrazing and agricultural land reclamation.
- Conservation measures: National nature reserve.

Zhalong

- Geographic location: In the west Heilongjiang Province, 26 km east to Qiqihar City. The altitude is 140-146 m.
- Wetland type: Riverine flooded marshlands.
- Site Description: A large complex of permanent and seasonal freshwater marshlands scattered with numerous small lakes, in the lower basin of the Wuyuer River.
- Climatic conditions: Temperate continental monsoon climate with cool summer and cold winter. The mean annual temperature is 3.2 °C (minimum – 40.3°C in the winter and maximum 39 °C in the summer) and average annual rainfall 368-427 mm.
- Biodiversity: The dominant vegetation in the marsh is reed beds. Submergent, floating and emergent aquatic vegetation are also abundant in the water. More than 230 bird species have been recorded, including 6 crane species. The site is important for migratory waterbirds as a key breeding area.
- Main threats: Agricultural reclamation, overgrazing and other economic development.
- Conservation measures: It has been designated as National Nature Reserve.

China Names 14 New Ramsar Sites approval in 2002:

Chongming Dongtan Nature Reserve, Shanghai

- **Geographic Location:** Chongming Dongtan (31°38'N 121°58'E) has a total area of 32,600 ha at the eastern end of Chongming Island.
- **Wetland Types:** Fresh and salt water marshes, tidal creeks, and intertidal mudflats.
- **Site Description:** An extensive area of fresh and salt water marshes, tidal creeks, and intertidal mudflats, a low lying alluvial island in the mouth of the Yangtze River, which supports farmland, fish and crab ponds, and extensive reed beds.
- **Biodiversity:** The site is a staging and wintering site for millions of birds, as well as a spawning and feeding ground for 63 species of fish, including the protected Chinese sturgeon (*Acipenser sinensis*).
- **Main Threats:** Due to its extraordinary resources and scenic qualities and its proximity to the city of Shanghai 45km away, the site is an attractive destination for ecotourism and environmental education (though the numbers of visitors within the site are regulated), and supports an important fisheries economy as well. Continuing tidal and sedimentation influences on the island itself and development pressures outward from the city are being watched for adverse effects.
- **Conservation Measures:** An ongoing project, parts of it with support from GEF and WWF, is developing the site into a centre for environmental education and training.

Dafeng (*Elaphurus davidianus*) National Nature Reserve.

- **Geographic Location:** Defeng National Nature Reserve (33°05'N 120°49'E) has a total area of 78,000 ha and situated in north part of Jiangsu Province.
- **Wetland Type:** intertidal mudflat.
- **Site Description:** The site performs all of the normal coastal wetland functions, such as flood control, sediment retention, and shoreline stabilization, to a high degree- a typical ecosystem on the coastline of the Yellow Sea.
- **Biodiversity:** National Nature Reserve. supporting a wide variety of rare animal species, including 315 species of birds (23 of them nationally protected), 600 of insects and 156 of fish, as well as the threatened Pere David's Deer or "Milu" (*Elaphurus davidianus*) for which the Reserve was chiefly gazetted. Following the introduction of 39 Milu in 1986, the population has grown to nearly 500 individuals, said to be the largest Milu population in the world; the population is in fact outgrowing the

site's capacity, and research on the release of the Milu into the wild is ongoing.

- Main Threats: Agricultural development, including land reclamation, and chemical runoff are seen as significant threats.
- Conservation Measures: Ecotourism and education are carried out within the site, with some 150,000 visitors per year.

Dalai Lake National Nature Reserve, Inner Mongolia.

- Geographic Location: Dalai Lake National Nature Reserve (48°33'N 117°30'E) is situated in Inner Mongolia with a total area of 740,000 ha.
- Wetland Type: A complex of lakes, rivers, marshes, shrubs, grasslands and reed beds.
- Site Description: A complex of lakes, rivers, marshes, shrubs, grasslands and reed beds typical of wetlands in arid steppes, still retaining near-natural conditions.
- Biodiversity: A staging area in the East Asian-Australasian Shorebird Flyway, the site is important for some 284 bird species, particularly Anatidae and shorebird species, and exceeds the 20,000 individuals and 1% thresholds for a number of species. Some 30 fish species are supported, of both Siberian and Northeast China types, and some are economically important. The Dalai Lake region, as the only lower land of the Hulunbeir Plateau, has great significance for flood storage, sediment retention, and groundwater recharge, and is critical for maintaining regional climate and increasing air humidity.
- Main Threats: Fishing is the primary activity of the water area, accounting for some 10,000 tons of economic fish per year, and livestock grazing in surrounding grasslands involves more than 2 million animals. Over-fishing within the site and over-grazing leading to desertification in the area are listed as potential threats.
- Conservation Measures: Tourism offers bird watching, boating, and traditional Mongolian foods, customs, and cultures, and the area is becoming a center for environmental education and research. A management regime is in force.

Dalian National Spotted Seal (*Phoca vitulina*) Nature Reserve.

- Geographic Location: National Nature Reserve (39°15'N 121°5'E) has a total area of 11,700 ha about 20km from Dalian City, Liaoning Province.
- Wetland Type: Coastal wetland

- Site Description: A coastal area of the Bohai Sea, consisting of sea floor covered by pedestal rock of between 5 and 40 meters' depth and including over 70 islands and islets with rocky coasts and reefs.
- Biodiversity: The sites provides habitat for 100 species of fish and numerous shellfish, as well as breeding grounds for a number of whale and dolphin species. It is as a reserve for the spotted seal *Phoca vitulina*, however, that the site is best known and for which it attracts large numbers of tourists from the nearby city and elsewhere. The cycle of the seals' lives is tied to the icing and melting conditions, as, following the adults' migratory routes through the Sea of Japan, Yellow Sea, and East China Sea, young seals are born on the ice within the site and remain with a nuclear family until the ice breaks up some three months later in March.
- Main Threats: Climate change effects and pollution are thought to be potential threats. Following many years of unrestricted hunting, which has been banned since 1983, the spotted seal population has fallen to about 1000 and the species is presently considered endangered.
- Conservation Measures: Protection of spotted seal is being implemented.

Eerduosi National Nature Reserve.

- Geographic Location: National Nature Reserve (39°48'N 109°35'E) is lying in Inner Mongolia with a total area of 7,680 ha;
- Wetland Type: typical Euro-Asian grassland
- Site Description: A typical Euro-Asian grassland and Asian desert with high ecological fragility, including a large number of permanent freshwater and saline lakes and pools, with islands, and human-made aquaculture ponds.
- Biodiversity: The sites supports some 15,000 breeding Relic gull (*Larus relictus*) in May and is a staging area for 60% of the world's population of that species; some 83 other species of waterbirds are also present, with 18 of them breeding there. Within the site, 16 villages support a population of 6,400 people who rely upon undeveloped agriculture, forestry, and livestock grazing for their livelihoods; fish farming is also practiced within the site.
- Main Threats: Desertification and soil erosion, and over-extraction of groundwater, in this area adjacent to the Maowusu and Kubuqi Deserts, are seen as potential threats.
- Conservation Measures: Land use is under a holistic planning regime under the Nature Reserve authority.

Honghe National Nature Reserve.

- **Geographic Location:** It is situated in Heilongjiang Province (47°49'N 133°40'E) with a total area of 21,836 ha.
- **Wetland Type:** Marshes
- **Site Description:** A near-natural marsh ecosystem with a large variety of wetland types, providing support for six endangered and rare species of flora and three of avifauna.
- **Biodiversity:** The Reserve is the main breeding site for the Oriental stork (*Ciconia ciconia*), with 200 individuals in autumn, as well as for Black stork, Red-crowned and White-napped cranes, Whooper swan, and Mandarin duck.
- **Main Threats:** State-owned farms cultivate rice in the area. Overuse of groundwater and intensive agriculture are viewed as potential threats.
- **Conservation Measures:** A plan to regulate water supplies with a sluice dam has been put forward.

Huidong Harbor Sea Turtle National Nature Reserve.

- **Geographic Location:** National Nature Reserve is lying in Guangdong Province (22°33'N 114°54'E) at the juncture of Daya Bay and Honghai Bay in the South China Sea, with a total area of 400 ha.
- **Wetland Type:** Beach
- **Site Description:** presently the only sea turtle protected area in China, with seawater and gently-sloping sandy beaches still in good environmental quality and eminently suitable for sea turtles, which have traditionally been regarded as a divine species and symbol of longevity and good luck in the region.
- **Biodiversity:** The beach, 1,000m long and 70m wide, surrounded by mountains on the three landward sides, supports as many as 400-500 Green Turtles (*Chelonia mydas*), an IUCN Red List endangered species, during egg-laying.
- **Main Threats:** The area is under collective ownership, and the site has been delimited as a fishery protected area by local government - since it received Reserve status in 1992, fishery stocks have benefited.
- **Conservation Measures:** It is felt that the boundaries of the present Reserve, demarcated in 1986, are somewhat too restricted for its conservation purposes, and efforts are being made to expand it. Artificial incubation and breeding ponds have been established to assist young turtles when adverse conditions, such as bad weather, warrant.

Nan Dongting Wetland and Waterfowl Reserve.

- Geographic Location: Nan Dongting Nature Reserve is located in the southern part of Dongting Lake, the middle reaches of the Yangtze River in Hunan Province (28°50'N 112°40'E) with a total area of 168,000 ha.
- Wetland Type: Fresh water lake
- Site Description: It also plays an important role in the regulation and storage of flood water from the Yangtze.
- Biodiversity: the site supports important numbers of endangered Oriental Stork (*Ciconia boyciana*) and Siberian Crane (*Grus leucogeranus*), as well as Chinese sturgeon (*Acipenser sinensis*), and produces rich fauna and flora of high economic value.
- Main Threats: Some 14,000 people live within the site, chiefly practicing fishing and aquaculture in human-made ponds and growing economic crops in the mudflat areas, including some 120,000 tons of reeds annually. Deforestation in the upper reaches of the Yangtze is leading to increased flow of mud and sand into the lake bed, and pesticide runoff and industrial pollution are also seen as potential threats.
- Conservation Measures: During "Bird Loving Week" activities are carried out for school children in the region, and some 24,000 birdwatchers visit the site's facilities annually.

Sanjiang National Nature Reserve

- Geographic Location: National Nature Reserve (47°56'N 134°20'E) is located at Heilongjiang Province with a total area of 164,400 ha.
- Wetland Type: A complex of rivers, bogs, flooded meadows and freshwater wetland.
- Site Description: An alluvial floodplain typical of high-altitude wetlands, a mixture of rivers, open bogs, seasonally flooded meadows, and sedge marshes, the largest area of freshwater wetland in the country.
- Biodiversity: The site is internationally important for waterbirds, particularly ducks, and for fishery resources, and serves as a natural reservoir for the San Jiang Plains, providing vital flood control as well.
- Main Threats: Due to its remote location and cold winters, human interference has been minimal, though local inhabitants, including 300-400 people of the He Zhe (one of the smallest ethnic groups in China) who support a unique cultural, find abundant animal, fish, and forest resources. Overfishing with small mesh nets and other human

effects are seen as potential threats, but rational ecotourism, especially in cooperation with nearby Russia, holds promise.

- Conservation Measures: Management plan on the Nature Reserve will be worked out.

Shankou Mangrove Nature Reserve.

- Geographic Location: The Nature Reserve (21°28'N 109°43'E) is on either side of the Shatian Peninsula on the Beibu Gulf at the border between Guangxi and Guangdong provinces in the southwest of China, with a total area of 4,000 ha.
- Wetland Type: Salt marsh and mangrove
- Site Description: Two related areas salt marsh and mangrove forest form a protective barrier for the coastal farmlands and villages. Some 14 species of mangrove are represented, principally *Rhizophora stylosa* and *Avicennia marina*.
- Biodiversity: It supports for a number of vulnerable and endangered species, including *Dugong dugon* and Chinese dolphin *Sotalia sinensis*, as well as for a large number of nationally protected birds species.
- Main Threats: Shrimp culture and improper hunting create pressures.
- Conservation Measures: A management plan is under implementation.

Xi Dongting Lake (Mupinghu) Nature Reserve

- Geographic Location: The nature reserve is located at the important western part of Dongting Lake in Huanan Province (29°01'N 112°05'E) with a total area of 35,000 ha.
- Wetland Type: Freshwater lake
- Site Description: It comprises open freshwater lake and smaller lakes, some shallow mudflats during low water periods, reed swamp, sphagnum bog, and beaches.
- Biodiversity: The site is very important for rare fish, such as Chinese sturgeon (*Acipenser sinensis*), and birds, such as the threatened Oriental Stork (*Ciconia boyciana*); in addition it serves as a staging area for many other migrating cranes and storks.
- Main Threats: Fishing and increasingly fish-breeding, and livestock grazing are important economic activities dependent upon the site. Industrial pollution, unwise fishing practices, and overproduction of reeds are seen as threats.
- Conservation Measures: Conservation research and education, with assistance from WWF, are increasingly important. Because of the

extraordinary beauty of the site, with its "deeply green grass and dancing water birds", an increase in ecotourism is being planned.

Xingkai Lake National Nature Reserve

- **Geographic Location:** The National Nature Reserve is located in Heilongjiang Province (45°17'N 132°32'E) contiguous with Russia to the south across the Songacha River with a total area of 222,488 ha.
- **Wetland Type:** A complex of grassland, marshes, lakes and forests.
- **Site Description:** A complex wetland system including grassland, marshes, lakes, and forests, The site, at the northern end of the large lake.
- **Biodiversity:** It provides important breeding habitat for a number of bird species protected in China, and some 65 fish species and more than 460 higher plant species are present.
- **Main Threats:** land reclamation for agriculture and overfishing are the main threats to wetland conservation.
- **Conservation Measures:** A transboundary nature reserve agreement (including joint training) was established in 1992 with the Khank Nature Reserve in Russia, with the help of the International Crane Foundation, and another in 1996 for management of the whole Xingkai Lake. The reserve joined the North East Asian Crane Site Network in 1997. Four ecotourism resorts drew 500,000 visitors from China and abroad in 2000.

Yancheng National Nature Reserve

- **Geographic Location:** The national nature reserve is lying in northern part of Jiangsu Province (33°31'N 120°22'E.) with a total area of 453,000 ha.
- **Wetland Type:** Coastal mudflat
- **Site Description:** National Nature Reserve comprises the largest coastal wetland in China, expansive mudflats along over 120 kilometres of coastline which supports high biodiversity.
- **Biodiversity:** About 3 million individuals of 200 bird species are said to migrate through the site annually, and many, particularly Anatidae, winter there. The site provides one of the two largest habitats in China for the Pere David's or Water deer (*Elaphurus davidianus*), known as "Milu", and is said to support about 10% of the world population of Black-faced spoonbill (*Platalea minor*).

- **Main Threats:** The core areas are uninhabited and in natural condition, whereas the buffer and experimental zones include rice fields, fish and shrimp ponds, with about one million people living in and near the site.
- **Conservation Measures:** The site is owned by Yancheng City: the Reserve management has managerial rights over the core area, whilst local governments have managerial rights over the buffer zones, within agreed parameters.

Zhanjiang Mangrove National Nature Reserve

- **Geographic Location:** National Nature Reserve is located at Guangdong Province (20°54'N 1108'E) with a total of area of 20,279 ha.
- **Wetland Type:** Mangrove forest
- **Site Description:** The largest mangrove forest wetland reserve in China, located along coastal areas of the Leizhou Peninsula at the southernmost tip of China between the South China Sea and the Tonkin Gulf, adjacent to Hainan Island.
- **Biodiversity:** Some 24 species of mangrove are said to be present, and at low tide large areas of exposed mudflats provide excellent support for migrating waterbirds. Like other mangrove forests, the somewhat separate components of the site provide sanctuary for offshore fish, sustenance for birds and other fauna, and coastal protection from waves, tides, and storm surges.
- **Main Threats:** The coastal and inshore area supports economic fishing and aquaculture for local people. Agricultural and urban development and fishfarming have destroyed much of the former mangrove areas, Ocean pollution of oil and heavy metal has been taking a toll.
- **Conservation Measures:** A comprehensive management and afforestation programme for the Reserve, supported by The Netherlands, holds promise for arresting these impacts.

Main Threats Faced in China's Wetland

Unplanned Reclamation and 'Improvement'

The immediate factors causing the decline in wetland area and weakening of wetland functions are conversion to farmland and urbanisation. According to an incomplete data, some 1.19 million ha of coastal mudflats have been lost and 1 million ha of wetlands have been urbanised or used for mining. Furthermore, some 1.3 million ha of lake surface have been lost to reclamation, thus water storage capacity has been reduced by 35,000 million

m³: this exceeds the total volume of China's five largest lakes. Some 1000 lakes have disappeared for ever. Because of their reduced capacity to store water, lakes are no longer able to regulate flooding into and from rivers, thus the frequency of flooding has increased. During the flood season, the surplus water from farmland (reclaimed lakes) has been pumped out into lakes and rivers, and this has led to increasingly disastrous flooding. Such problems have become constraints to the economic development of lake areas.

The conversion of wetlands to other uses also prevents the survival of the water-dependent biota. Fish resources are destroyed and other aquatic resources cannot develop and increase.

Unwise Use of Wetland Water Resources

Wetlands are one of the most important sources of water both for industry and for human life. Over-extraction and/or unwise use of water resources has made it difficult to ensure an adequate supply of water in China.

The over-extraction of water from wetlands and/or the over-extraction of underground water that take place in North and Northwest China have already threatened wetland hydrology. For example, because of unwise use, the Tarim and Heihe Rivers, located in an inland area of Northwest China, do not have sufficient water and have dried up downstream so that the vegetation is gradually dying out and people are being forced to leave their homesteads. In recent years the flow of the Yellow River (Huanghe River) has begun to decrease: the records of the Lijin Hydrological Station indicate that in 1997 the Yellow River had 226 days (62% of the year) without water flow. This had a very negative impact on people's lives and industry in that year. In Northwest China, over-extraction of water from the rivers has caused some lakes to shrink and has increased water salinity. Lake Manas, located in the west of the Junggar Basin in Xinjiang Region, had an area of 550 km² in the 1950s, however due to uncontrolled use of the water in the rivers that fed it, in the 1960s the lake had no inflow from rivers and is becoming a salt pond/desert.

Wetland Pollution Worsened

Pollution is one of the most serious threats to wetlands of China. Pollution has not only worsened water quality but also harmed the biodiversity of wetlands. Many natural wetlands have become sites for discharging agricultural-industrial wastewater as well as sewage from urban areas.

The pollution of lakes through nitrification is a common problem in China, and eutrophication is rising. More than two thirds of the lakes are eutrophic

The underlying causes of coastal erosion are waves, tidal currents, hurricanes, vegetation destruction, mining and quarrying. The excavation of sand has destroyed the sandy coast. In Tianjin Municipality, Hebei Province and Shandong Province, shell dikes have disappeared due to the excavation of shells for construction and animal foodstuffs, exacerbating erosion. The destruction of wetlands has caused saltwater incursion and infiltration, and the provision of fresh water has been threatened.

3 Potential Ramsar Sites

It is difficult to overstate the global importance of China's wetlands. According to a preliminary study, China has 192 of 947 internationally important wetlands in Asia defined according to the criteria of the Convention on Wetlands, covering over 16 million ha or over 20% of the area of wetlands of international importance in the region. The gap between the current and potential Ramsar sites in China indicates that there are major extra work for China to designate more sites for the Ramsar List in the future.

A substantial number of wetlands in China is of critical international importance although they have not been designated for the Ramsar List, which can be illustrated by the Yellow River Delta National Nature Reserve. With an area of 1,530 km², abundant wetland vegetation and aquatic organisms, as well as sparse human population, the Nature Reserve provides habitats for breeding, migration and wintering birds. Populations of 10,000 geese and ducks, plovers and gulls can be observed frequently during the migration seasons. Among the waterfowls that occur, there are 48 species of shorebirds with annual numbers of around 200,000 to 300,000, 10 species of cranes including 2,000 individuals of Common Crane *Grus grus*, 200 individuals of Red-crowned Crane *Grus japonensis* wintering here, 30 species of Anatidae with a wintering Whooper Swan population of 2,000 individuals from mid-November to mid-April and 30 species of other waterbirds have been recorded.

4 Importance of International Cooperation

In recent years, China has been to give wider consideration to the conservation of its biodiversity patrimony, and in particular recognizing the importance of the nation's wetlands. By 1996, 152 inland wetland and coastal reserves comprising over 1.13 million hectares have been established. Furthermore, China ratified the Ramsar Convention on Wetlands of International Importance in 1992 and ratified the Biodiversity Convention in

1993. The importance of conserving and managing wetlands in a sustainable way has been stressed both in the China Agenda 21 and in the Biodiversity Action Plan. The Government has completed a National Wetland Conservation Action Plan (NWCAP) involving 17 different agencies.

However, recent studies indicate that nearly 40% of all wetlands of international importance in China remain under moderate to high threat. The fundamental causes for the continued degradation of wetlands are generally associated with human development pressures, with drainage and conversion to agriculture and pollution occurring at most sites. As a developing country with large population, China can not address the threats to wetlands without the support both in financial and technical from international communities. In fact, the enhanced international cooperation has greatly advanced wetland conservation and wise use in China through Sino-Japanese Agreement on Migratory Bird Conservation, Sino-Australian Agreement on Migratory Bird Conservation, East Asian-Australasian Shorebird Reserve Network, Northeast Asia Crane Network etc.

According to a Memorandum of Understanding (MOU) between Wetlands International - Asia Pacific and the former Ministry of Forestry of China, the Wetlands International-China Programme was formally established in Beijing in September 1996. The office has become an important channel to establish cooperation between China and overseas. Wetlands International-China Programme is willing to make more contribution to this area in the future under the support of our international partners and colleagues.

5. A lot of Efforts Done by China in Wetland Conservation

Since the 1990s a series of measures has been taken to conserve wetlands, and China's wetlands and their biodiversity have been protected to some extent. Under the pressure of population growth and economic development, human livelihoods have become increasingly dependent on wetland resources, and this has led to the loss of some wetland biodiversity. Government of China has paid her due attention to wetland conservation. The State Council has urged State Forestry Administration to formulate a planning on wetland conservation as soon as possible. Since beginning of the new century wetland conservation as an important component of a national ecological improvement and become a part of Tenth Five Year Plan of National Economy and Social Development. In the past years some achievements have been made in wetland conservation, including (i) promulgation of the National Wetlands Conservation Action Plan for China;

(ii) implementation of the National Programme of Wildlife Protection and Strengthening of Nature Reserves; (iii) strengthening conservation of natural wetland (some 310 wetland nature reserves are established by June 2001); (iv) completion of national inventory of wetland resources; (v) assigning another 14 wetland sites as that of international importance and (iv) launching a national campaign to raise public awareness on wetland importance through WWD and Bird Loving Week in particular.

6. More Work Needs to Be Doing in Coming Year

It is vital to conserve the wetlands of China – especially those wetlands that remain in good condition with little or no human interference – before it is too late, so that they will be available in the future for research and potential use. Should a new use for the conserved wetland be discovered in the future, it will create invaluable wealth and benefits. The earlier the wetlands are conserved, the better it will be for the national interest. To protect today's natural wetland is of the same importance as to protect strategic resources for the future development of the nation.

It must be realized that in most cases ecological systems cannot be restored once they have been destroyed. Furthermore, restoration, if possible, will take a long time and require a large quantity of resources. The worsening environment has increased poverty and put pressure on economic and social development; However, we must be aware of heavy pressure of economic development and growing population on wetland. We will have a lot of work to do in biodiversity conservation in the future. First of all, we urge all level government to pay high attention to wetland conservation; Second, improve coordination among relevant sectors and strengthen legislation; Third, we have to develop the national planning to wetland conservation; Finally, further strengthen management of the wetlands of international importance. Establishment and development of sound wetland ecosystem may improve our environment and favor social sustainable development. China will have a graceful landscape of mountains and rivers.