

**Designation date: 11/01/2002**

**Ramsar Site no. 1144**

## **Information Sheet on Ramsar Wetlands (RIS)**

### **2006-2008 version**

*Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9th Conference of the Contracting Parties (2005).*

#### **Notes for compilers:**

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

FOR OFFICE USE ONLY.

DD MM YY

Designation date Site Reference Number

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#### **2. Date this sheet was completed/updated:**

October 10, 2007

#### **3. Country:**

The People's Republic of China

#### **4. Name of the Ramsar site:**

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Chongming Dongtan Nature Reserve, Shanghai

#### **5. Designation of new Ramsar site or update of existing site:**

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site; or  
√ b) Updated information on an existing Ramsar site

**6. For RIS updates only, changes to the site since its designation or earlier update:**

**a) Site boundary and area**

√ **The Ramsar site boundary and site area are unchanged:**

or

**If the site boundary has changed:**

- i) the boundary has been delineated more accurately; or
- ii) the boundary has been extended; or
- iii) the boundary has been restricted

and/or

**If the site area has changed:**

- i) the area has been measured more accurately; or
- ii) the area has been extended; or
- iii) the area has been reduced

**\*\* Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

**b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:**

The expansion of the invasive species, *Spartina alterniflora*, could produce some negative impacts on regional biodiversity.

The Ramsar Criteria are changed to 1, 2, 3, 4, 5, 6, 7 and 8 from 1, 2, 4, 5 and 8 of the previous RIS.

**7. Map of site:**

Refer to Annex III of the Explanatory Note and Guidelines, for detailed guidance on provision of suitable maps, including digital maps.

**a) A map of the site, with clearly delineated boundaries, is included as:**

- i) a **hard copy** (required for inclusion of site in the Ramsar List):
- ii) an **electronic format** (e.g. a JPEG or ArcView image)";
- √ iii) a **GIS file providing geo-referenced site boundary vectors and attribute tables.**

**b) Describe briefly the type of boundary delineation applied:**

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

This Ramsar site includes the whole area of the Chongming Dongtan National Nature Reserve of Shanghai Municipality and the artificial wetlands of about 11 621 ha located between the wet boundary of the reserve and the 1968's sea wall.

**8. Geographical coordinates (latitude/longitude, in degrees and minutes):**

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

Center: 121°58'E, 31°38'N

Extent: 121°46'-122°05'E, 31°25'-31°39'N

### **9. General location:**

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

The Ramsar site is located in the easternmost Chongming Island, northwest to the urban center of Shanghai city with a distance of 40 km.

### **10. Elevation: (in metres: average and/or maximum & minimum)**

The elevation ranges between 0 m and 5 m.

### **11. Area: (in hectares)**

32 600 ha

### **12. General overview of the site:**

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

This Ramsar site is located in the easternmost Chongming Island, the biggest estuarine alluvial island in the world. It holds the biggest and only mudflat remaining natural status in the Yangtze estuarine area. Currently, it is experiencing accretion to the East China Sea with a rate of 4 km<sup>2</sup> per year. Abundant sand, mud and nutrition carried by the Yangtze River deposit here. Flourish mudflat vegetation, well developed tidal creeks and diverse benthos compose the rich natural resources of Chongming Dongtan Wetland.

Natural mudflat covers an area of 15 043 ha. The community of the endemic plant species in the Yangtze estuary, *Scirpus mariqueter*, covers an area of 3 000 ha. According to the highest biomass yield, 36 000 tons of aboveground biomass and 30 000 tons of underground biomass (fresh weight) can be produced by *Scirpus mariqueter* per year. In addition to the *Phragmites australis* community and other saline vegetation, rich primary productions are provided to the other creatures. Meanwhile, the vegetation plays important roles in purifying water, resisting storm tides and protecting coastlines. Fishing ponds and ditches are widely distributed in the artificial wetlands of about 11 621 ha located between the sea walls built in 1998 and 1968. They can provide aquacultural income accounting for 60% of the total economic production to the surrounding communities. Also, they can provide good refuges to over 60 000 waterfowls for their wintering.

Located within the ecotone of Yangtze River, Yellow Sea and East China Sea, the typical, unique, diverse and rapidly succeeding ecosystems support the rich diversity in this site. It is an important wintering place and migratory stopover for 111 species of waterfowls with millions of individuals, including many endangered bird species such as *Grus monacha*, *Platalea minor* and *Eurynorhynchus pygmeus*. It is also an important inhabiting place and migratory channel for many endangered or rare economic fish species such as *Acipenser sinensis*, *Coilia mystus* and *Coilia ectenes*. The 94 species of freshwater, seawater and migratory fish account for over 80% of the total Yangtze estuarine fish species.

### 13. Ramsar Criteria:

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1	2	3	4	5	6	7	8	9
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### 14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

#### Criterion 1:

As the biggest natural wetland in the Yangtze estuary, this wetland is possessed of complex transitional characteristics from freshwater to seawater, from the temperate zone to subtropical zone and from the Yellow Sea to the East China Sea, in terms of flora, fauna and hydrological environment. Such characteristics are unique in East Asia. Results from carbon flux monitoring indicate that the vast mudflat vegetation dominated by *Scirpus mariqueter* holds CO<sub>2</sub> fixing capability equivalent to or even beyond tropical rain forests, which can well demonstrate its significant ecological functioning.

**Criterion 2:** This wetland supports 5 EN species and 3 VU species in the IUCN Red List.

Species Latin name	Category in the IUCN Red List	Inhabiting typology
<i>Platalea minor</i>	EN	wintering, staging
<i>Tringa guttifer</i>	EN	staging
<i>Eurynorhynchus pygmeus</i>	EN	staging
<i>Acipenser sinensis</i>	EN	migratory, youth-breeding
<i>Ciconia boyciana</i>	EN	wintering
<i>Grus monacha</i>	VU	wintering
<i>Anser erythropus</i>	VU	wintering
<i>Larus saundersi</i>	VU	wintering

#### Criterion 3:

This Ramsar site is located in the ecozone of the East Sea, the Yellow Sea and the Yangtze River Basin. The vegetation in the wetland has a high productivity and a high rate of succession. Possessed of diverse ecosystem types including cropland, lake, river, freshwater, brackish water, seawater, mudflat, this site holds 462 animal species, 130 of which are waterfowls and 94 of which are fish, accounting for 15% of the total waterfowl species in the world and over 80% of the total fish species in this region, respectively. Being an ecologically-sensitive region of global significance, this site plays an important role in maintaining regional biodiversity.

#### Criterion 4:

*Grus monacha* populations with individuals over 130 continue to inhabit here through

winters for 15 years, and the wintering period lasts for 5 months. Every year, 51 species of plovers and sandpipers with millions of individuals take this site as a stopover, with which 21 populations from 10 countries/regions have close connections according to the bird-marking records. Over 60 000 individuals of geese and gulls take this wetland as their wintering or breeding place per year. Overall, this wetland plays an important role in maintaining crane populations in Northeast Asia, goose and gull populations in East Asia and plover and sandpiper populations in Asia-Pacific.

**Criterion 5:**

Based on the synchronized census of wintering waterfowls, 14 216 individuals of plovers and sandpipers, 44 431 individuals of geese and ducks, and 6 706 individuals of gulls (65 353 individuals in total) were recorded during 2005-2006, while 12 241 individuals of plovers and sandpipers, 12 364 individuals of geese and ducks, 3 582 individuals of gulls (28 287 individuals in total) were recorded during 2006-2007 (the census data are underestimated during 2006-2007 due to the bad weather occurred during field survey).

**Criterion 6:**

According to recent census data, 10 species of waterfowls beyond 1% criterion inhabit in the wetland during migratory seasons.

Species Latin Name	Individuals (census year)	1%
<i>Calidris alpina</i>	12000 (2006)	10000
<i>Charadrius alexandrinus</i>	7202 (2005)	1000
<i>Calidris tenuirostris</i>	5761 (2005)	3800
<i>Charadrius mongolus</i>	1790 (2005)	600
<i>Numenius phaeopus</i>	1200 (2005)	550
<i>Numenius madagascariensis</i>	794 (2005)	380
<i>Charadrius dubius</i>	300 (2006)	250
<i>Platalea minor</i>	62 (2006)	16
<i>Grus monacha</i>	130 (2007)	100
<i>Anas formos</i>	8000 (2005)	3000

**Criterion 7:**

The wetland is rich in fish resources. According to recent investigations and literatures, 94 fish species distribute in this site, accounting for 80.34% of the total fish species (117 recorded species) in the Yangtze estuary. These fish species fall into 34 families of 14 orders, mainly representing as Family Cyprinidae (24 species, accounting for 25.53%), Salangidae (8 species, accounting for 8.51%), Engraulidae (6 species, accounting for 6.38%), Gobiidae (5 species, accounting for 5.32%), Tetraodontidae (5 species, accounting for 5.32%), Clupeidae (4 species, accounting for 4.26%), Cynoglossidae (4 species, accounting for 4.26%). The other families hold 1-2 species respectively. Of those species, endangered, endemic or important economic species include *Acipenser sinensis*, *Trachidermus fasciatus*, *Coilia mystus*, *Coilia ectenes*, *Hemisalanx prognathus*, *Anguilla japonica*, *Mugil cephalus*, *Takifugu obscurus*, *Periopalmus cantonensis*, etc.

**Criterion 8:**

This wetland is not only the channel, but also the breeding site and feeding ground for

migratory fish. Particularly, it is the gathering water area for the young individuals of Chinese Sturgeon to seek foods and increase weight before entering the sea. Fishing season comes when the young fish of *Coilia mystus*, *Coilia ectenes* and *Anguilla japonica* pass through the wetland. In addition, the young fish of *Hemisalanx prognathus* and *Takifugu obscurus* increase their weight in the sub-tidal zone of the estuary.

**15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):**

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

**a) biogeographic region:**

Central China region, sino-India sub-division, oriental realm.

**b) biogeographic regionalisation scheme (include reference citation):**

The Biogeography of Fauna in China (Zhang Rongzu, 1999)

**16. Physical features of the site:**

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

**Geomorphology:** The geomorphology in this site can be divided into four parts:

- i) Plain sandy island in the delta estuary: located between the 1968's and 1998's sea walls, representing as reclaimed lands.
- ii) Tidal-flat: located between the 1998's sea wall and the 0-m water level line (Wusong elevation system), corresponding to the mean low-tide level. Vast mudflats in this region show a slight slope from the sea wall to the outside sea water. According to the tidal level, elevation and vegetation, the micro geomorphology can be divided into 3 parts: supra-tidal, high-tidal and low-tidal mudflats.
- iii) Tidal creek: formed by the scours of the tides. Due to the 1991's reclamation, Baigang and Liangtonggang which are the first-grade tidal creeks evolving from the seawater channels have been silt up by the mud and sand, and they only remain the formation of the second-grade tidal creek outside the eastern part. The second-grade tidal creeks are usually developed on the high-tidal mudflats. The length of this kind of creeks could reach 3-5 km, the width could reach 50-60 m and the depth could reach 2-3 m. The third-grade tidal creeks have relatively small sizes, the lengths of which range from tens to hundreds of meters, the widths of which range from one to several meters and depths of which are tens of centimeters. The second and third grade creeks together form the web-like "streams" on the high-tidal mudflats.

**Origination:** This wetland is naturally formed in the shadow area of Chongming Island, by the deposit of the mud and sand carried by the Yangtze runoff under the influences of tides.

**Hydrology:** This site is controlled by the irregular shallow sea semidiurnal tides. There are 2 tides everyday. The flood tides range between 0.18 m and 4.62 m, while the ebb tides range between 0.02 m and 4.85 m. The annual mean tidal range is 2.43-3.08 m.

**Water quality:** The perennial water quality remains at the IV level. The mean annual salinity is

less than 0.3%. The salinity of the north and south to the site are 0.14-1.52% and 0.022-0.299%, respectively.

**Soil type:** The soil types in the areas within the 1998's sea wall are paddy soil, fluvo-aquic soil and coastal solonchaks, while the mudflats outside the 1998's sea wall hold tidal-flat solonchaks. The supra-tidal and high-tidal mudflats basically hold bog tidal-flat solonchaks, while the low-tidal mudflats hold tidal-flat solonchaks which is suitable for the growth of the saline herbaceous plants.

**Climate:** This site is located at the south edge of the north subtropical zone, where the East Asia monsoon climate is mainly represented. The frequency of southwestern wind could reach 35-40% between November and February next year. Southeastern wind holds the main place after April.

The mean annual temperature is 15.3 °C. The water is freezing-free all over the year. The frost-free period lasts for 229 days. The mean annual precipitation is 1 000.4 mm and the mean annual sunshine duration is 2 129.5 hours.

### **17. Physical features of the catchment area:**

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

As this wetland is located in the Yangtze estuary, the related catchment is the whole Yangtze River basin lying between 90°33'-122°25'E and 24 °30'-35°45'N with a coverage of 1.8 million km<sup>2</sup>. From the riverhead to the estuary, the topography spans three giant "ladders", showing a decreasing tendency in elevation from west to east. A variety of geomorphology types including mountains, hills, basins, plateaus and plains are shown. The mountains, plateaus and hills account for 84.7% of the Yangtze Basin, the plains account for 11.3% and the rivers and lakes account for 4%.

The whole catchment can be divided into three climate zones: the Qinghai-Tibet Alpine zone, the Southwest Tropical Monsoon zone and the Central China Subtropical Monsoon zone. The tropical monsoon zone accounts for 2/3 of the total area. The annual average precipitation in the basin is 1 100 mm, showing an increasing spatial pattern from northwest to southeast. Most of precipitation occurs between May and October, accounting for over 70%-90% of the total in a year. The annual average runoff is  $9.6 \times 10^{11}$  m<sup>3</sup>, taking the third place in the world, only less than the Amazon River and the Congo River.

### **18. Hydrological values:**

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

The Yangtze River has abundant water resource and produces great runoff. According to the data acquired from the Datong station, the annual total runoff is  $9\ 240 \times 10^8$  m<sup>3</sup> with an average of 29 300 m<sup>3</sup>/s. The runoff entering the sea is steady, which could play important roles in maintaining fluent shipping transportation, stabilizing the basic physical and chemical characters in the estuarine waters, stabilizing aquatic biological resources and regulating regional climate in the Yangtze estuary.

The suspending sand in the Yangtze estuary mainly comes from the Yangtze River. The maximal annual sand output is  $6.78 \times 10^8$  t, the minimum is  $3.41 \times 10^8$  t and the mean is  $4.86 \times 10^8$  t,

accounting for 2.7% of the total in the world. Under the influences of the tides and the currents from the southern and northern Yangtze branch, the sediments continue depositing in this wetland, thus a unique land accretion function is presented. In the recent 50 years, the land area of Chongming Island accreted by over 33.3%, which could be important backup land resources for Shanghai.

## 19. Wetland Types

### a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

#### Marine/coastal:

A	B	C	D	E	<u>F</u>	<u>G</u>	H	I	J	K	Zk(a)
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#### Inland:

L	M	N	O	P	Q	R	Sp	Ss	Tp	Ts	U	Va	Vt	W	Xf	Xp	Y	Zg	Zk(b)
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#### Human-made:

<u>1</u>	2	<u>3</u>	4	5	6	7	8	<u>9</u>	Zk(c)
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### b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

**G:** Intertidal mudflat. Bare mudflat, *Scirpus mariqueter/Scirpus triqueter* community and *Phragmites australis/Spartina alterniflora* community are shown in sequence from the sea to the land. This region is most rich of biodiversity, accounting for 42% of the wetland.

**F:** Estuarine waters. Tidal effects are obvious. Zooplankton and fish are rich. This region accounts for 25.4%.

**1:** Aquaculture (fish and crabs) ponds, mainly representing as large freshwater ponds with sizes over 53 ha and depths over 3 m and unused freshwater wetlands dominated by *Phragmites australis* community, accounting for 17.5%.

**3:** Croplands dominated by paddy fields, accounting for 10.6%.

**9:** Artificial rivers and channels, accounting for 1.5%.

## 20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The major vegetation types in this wetland are coastal saline vegetation and coastal marsh vegetation. In the near coastal areas, the mudflat communities are mainly represented as coastal saline vegetation such as *Imperata cylindrical* and *Zoysia japonica* community, because of relative high elevation and short time of water cover. The salinity of the wetland is low (below 1‰ in average). Due to the intensive reclamation for many years, the mudflats at high elevation level in the near coast have been reclaimed to aquaculture ponds or croplands. With vast waters and widespread *Phragmites australis*, the site is the important inhabiting place for wintering birds, and



breeding place for some summer migratory birds and non-wetland animals.

Coastal marsh vegetation dominates the wetland while coastal saline vegetation only covers a relatively small area. The predominant plants are *Phragmites australis*, *Scirpus mariqueter* and *Scirpus triqueter*. These marsh-vegetated areas, as well as the outside bare mudflats and the sub-tidal waters have the richest biodiversity in this site. Abundant benthos and fish resources could provide foods to a large amount of wintering and staging birds which consists of the main part of the fauna in the wetland. While due to the expansion of the invasive *Spartina alterniflora* in the recent decade, regional biodiversity are influenced in some degree.

## 21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. ***Do not include here taxonomic lists of species present - these may be supplied as supplementary information to the RIS.***

The most significant vegetation types with the largest coverage in the Dongtan Wetland are *Phragmites australis*, *Scirpus mariqueter*, *Scirpus triqueter*, *Spartina alterniflora* and some algae. *Scirpus mariqueter* is an endemic species in the Yangtze estuary, growing in the mudflats above 2 m and spreading with the accretion of the mudflats. It is a pioneer species of the mudflat vegetation. The *Scirpus mariqueter* communities cover areas of 3 000 ha, and produce biomass over 66 000 tons per year. The corms and fruits of *Scirpus mariqueter* are the important food resources for the wintering waterfowls, especially for the endangered birds such as white-crowned cranes (*Grus monacha*), cygnets (*Cygnus columbianus*) and gray cranes (*Grus grus*). The southern mudflats with the same elevation are mainly occupied by *Scirpus triqueter*, which is a kind of forage superior in quality.

*Phragmites australis* covers the most supra-tidal near-shore areas (the coverage is 1 600 ha). It also distributes in the artificial wetlands (fish/crab ponds). Its area and biomass are only less than *Scirpus mariqueter*. It can play an important role in protecting shorelines and providing critical inhabiting places for various benthos and non-waterfowl wetland birds. Parts of *Phragmites australis* are harvested in winter and utilized for paper making. Overall, it is the most important plant resource in Chongming Dongtan Wetland.

The mean density of phytoplankton in the sub-tidal waters is  $1.887 \times 10^4$  per cubic meter. Identified phytoplanktons include 4 phylums, 31 genera and 59 species, most of which are diatoms accounting for 83.05% of the total species and 99.57% of the total amount.

In the artificial wetlands within the 1998's sea wall, the main vegetation types are temperate/subtropical crops, economic forests and fruit trees.

## 22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. ***Do not include here taxonomic lists of species present - these may be supplied as supplementary information to the RIS.***

**Birds:** According to the census records and literatures, there are 209 species of birds, 111 of which are waterfowls, falling into 16 families of 9 orders. Of those, only six species are resident birds and the rest are migratory birds (including 7 species of summer migratory birds, 45 species of winter migratory birds and 48 species of traveling birds), accounting for 3.70% and 96.30% of the total, respectively. There are 12 species of birds listed into the national protection categories. *Ciconia minutus*, *Ciconia bigra*, *Grus monacha* and *Haliaeetus albicilla* are listed into the first-class categories under the national protection and *Platalea minor*, *Platalea leucorodia*, *Cygnus columbianus*, *Grus grus*, *Aix galericula*, *Numenius borealis*, *Tringa guttifer* are listed into the second-class.

- i) **Plovers and sandpipers:** Plovers and sandpipers form the major bird communities in spring and autumn with the species up to 46, and the individuals of transit can reach millions. The northwards transit period in spring begins in late March with the fastigium ranging from early April to late April, continues until mid May, lasting for about 60 days in total. The southwards transit period in autumn begins in mid July with the fastigium ranging from mid September to mid October, continues until late October, lasting for 130 days.
- ii) **Geese and ducks:** Geese and ducks are the major part of the bird population in winter with the species up to 24. The individuals of geese and ducks for wintering or transit are estimated up to 50 000 in this wetland. They migrate into this site for wintering or transit from the north in mid October every year with the fastigium of mid/late November, and then leave during mid March to early April in the next year, with a staging period up to 150-180 days.
- iii) **Cranes:** There are 3 species of cranes inhabiting in the Chongming Dongtan Wetland, which are *Grus monacha*, *Grus vipio* and *Grus grus*. All of them are listed into the national protection categories as well as IUCN and CITES lists. Their wintering period in the wetland lasts from late October to April in the next year, taking 5 months in total.
- iv) **Gulls:** There are 12 species of gulls inhabiting in this wetland and the individuals for wintering can be up to over 10 000 with *Larus argentatus* and *Larus ridibundus* as the major communities.

**Animals:** According to the investigation and historical records, there are 10 animal species such as *Lipotes vexillifer* which is under the national first-class protection.

**Amphibians and reptiles:** According to the survey there are 8 species of amphibians and reptiles such as *Pelophylax nigromaculata*, *Rana limnocharis*, *Bufo bufo*, *Sinonatrix annulaeis* and *Elaphe dione*.

**Fish species:** Fish are important aquacultural resources in the Chongming Dongtan Wetland. There are 94 species of fish, falling into 34 families of 14 Orders, accounting for 80.34% of the total fish in the wetlands of Shanghai area. Of those species, Chinese sturgeon and white sturgeon are listed under the national first-class protection. The major ecotypes are migratory fish, brackish water fish, freshwater fish, tidalflat fish and seawater fish. The important economic fish species include *Mugil cephalus*, *Coilia ectenes*, *Coilia mystus*, *Anguila japonica*, etc.

**Benthos:** As a dominant primary consumer group in the wetland, Benthos is an important indicative species for the environmental quality of the wetland. There are 70 benthos species, including 35 crustaceans, 20 mollusks, 13 Annelids, 1 coelenterate and 1 memertinea. The species can be classified into three types: freshwater type, saline water type and brackish water type. The important economic species are *Bullacta exarata*, *Eriocheir sinensis*, *Moerella iribescens*,

*Metaplex longipes, Sinonovacula constricta and Macrobrachium nipponense*

### **23. Social and cultural values:**

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

Construction and development of Chongming Dongtan has constituted an important part of the program for building Shanghai into a modern, international metropolis and enhancing its comprehensive competitiveness. Moreover, it can support the constructions of ecological civilization. Meanwhile, Chongming Dongtan can provide the city with important reserve land resources for sustainable development. Duo to its unique geographic location and abundant natural resources as well as diverse ecological services including atmosphere regulation, climate regulation, hydrological regulation, nutrient cycle, water purification and shoreline protection, Chongming Dongtan has become an excellent scenic and ecotourism spot for the citizens of Shanghai. Besides, it is a good site for conducting such activities as environmental education, bird watching and estuarine ecosystem study. Chognming Dongtan is also an important fishery production base (*Eriocheir sinensis*, sea eels and other species of fish of economic value) and a green agricultural production base in the reclaimed land area within the sea wall.

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

No.

If Yes, tick the box and describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

### **24. Land tenure/ownership:**

a) within the Ramsar site:

State ownership: 96%; collective ownership: 4%.

The intertidal mudflat wetland and the estuarine waters are situated within the national nature reserve (area: 24 255 ha, accounting for 68% of the wetland) which is administrated by the reserve

bureau (belonging to the forestry department). The land use right of the most artificial wetlands (area: 8 468 ha, accounting for 24%) has been transferred to the Shanghai Industries (group) Company Ltd. And the other artificial wetlands (8%) are owned by Yangtze Farm of Shanghai Nonggongshang Group (state ownership) and Yingdong Village of Chenjiazhen Town (collective).

b) in the surrounding area:

State/collective ownership.

## **25. Current land (including water) use:**

a) within the Ramsar site:

The natural wetland accounting for 68% of the total has been all strictly protected by the national nature reserve as inhabiting site of waterfowls, within which reserve protection management activities, scientific researches, ecological monitoring and environmental education have been developed. The core area, buffer area and experiment area cover 18 030 ha, 1 014 ha and 5 211 ha, respectively. Traditional cattle grazing and harvesting for mudflat economic resources (razor clam, *Bullacta exarata*, amphibious crabs and juvenile crabs and sea eels) are managed with passport system and limited in terms of yield amount, within specific time, regions and intensity.

The artificial wetlands accounting for 32.6% of the total have been identified as ecological/organic agricultural zone, ecotourism zone and demonstration zone of wetland ecological restoration. Currently agriculture and fishery are the major activities while manufacture and real estate are strictly limited.

b) in the surroundings/catchment:

The surrounding area is represented as residential area. The adjacent Chenjiazhen Town and Qianshao Farm hold a regular population of 65 000 and an external population of 2 300 during harvest season for juvenile crabs and sea eels. Local residents are mainly engaged in agricultural, forestry and aquacultural (economic fish and crab) production, of which fishery accounts for 65% of the total agricultural production.

## **26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:**

a) within the Ramsar site:

The expansion of the invasive species, *Spartina alterniflora*, could produce negative impacts on regional biodiversity which is mainly based on local plant species.

b) in the surrounding area:

The fishing activities in the areas below the low tidal level could exert influences over perching and food-seeking of waterfowls.

## **27. Conservation measures taken:**

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

In November, 1998, the Shanghai Municipal People's Government approved the establishment of Chongming Dongtan as a nature reserve. In July, 1999, the Chongming Dongtan Nature Reserve was formally included in the East Asia-Australia Protected Area Network for wading birds. Chongming Dongtan was designated as a Class A2 wetland of international importance in "China's Biodiversity Conservation Action Plan" promulgated in 1994. In "China Wetland Conservation Plan", which was promulgated and implemented in 2000, Chongming Dongtan was listed as a national important wetland as well as an important site of the national wetland demonstration zones for ecological constructions.

The relative functional departments of the Shanghai government have taken measures to limit the exploitations of the Chongming Dongtan Wetland to low intensity and capacity under the condition that the ecological environment is effectively protected. "The administrative rules of the Chongming Dongtan Bird Nature Reserve of Shanghai Municipality" was promulgated and implemented by the Shanghai government in 2004. In 2005, the reserve was promoted to a national nature reserve with natural wetlands of 2 1455 ha under its strict protection and management.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia; Ib; II; III; IV; V;  VI

c) Does an officially approved management plan exist; and is it being implemented?

"The management plan of the Chongming Dongtan Bird Nature Reserve of Shanghai Municipality" (2005)

d) Describe any other current management practices:

The construction and development of the Chongming Dongtan Bird Nature Reserve has been put into "the 10<sup>th</sup> 5 years' plan" of economic and social development of Shanghai Municipality. Meanwhile, 50 million RMB will be invested to the projects in two stages during "the 10<sup>th</sup> 5 years", such as construction of the management and protection system (including necessary transportation and management tools) of the Chongming Dongtan, restoration and improvement of habitats, rescue and nursing of migratory waterfowls, scientific research and monitoring systems and basic facilities. The management division has made "The master plan of the Chongming Dongtan Bird Nature Reserve of Shanghai Municipality" according to the requirement of the relative rules and laws.

The management division signed agreements with the People's government of Chongming County and Shanghai Industries (group) company Ltd. to co-strengthen the construction and management of the reserve. Also, the reserve actively leads local community residents to participate the management. For instance, the reserve retains bird protectors within local communities and provides technical instructions as well as job opportunities.

Led by the management division of the reserve, "The contact meeting for resource management of the Chongming Dongtan Wetland" was established, which was mainly organized by the relative functional divisions of the government of Chongming County, surrounding towns' government and large community organization. Its function is comprehensively managing exploitation activities of the wetland resources including ecotourism.

This site is not listed in the Montreux record.

## **28. Conservation measures proposed but not yet implemented:**

e.g. management plan in preparation; official proposal as a legally protected area, etc.

“The master plan of the Chongming Dongtan Bird Nature Reserve of Shanghai Municipality” was made in 2001 and is being revised at present.

“The ecotourism plan of the Chongming Dongtan Bird Nature Reserve of Shanghai Municipality” (2004);

“The construction plan of the Chongming Dongtan Bird National Demonstration Reserve of Shanghai Municipality” (2007);

The research plan: “Treatment for *Spartina alterniflora* and optimizing birds’ habitat” (2007).

## **29. Current scientific research and facilities:**

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

The conducted or ongoing scientific research programs are as follows:

The research program entitled as “Restoration for degraded wetlands and its demonstration” (2005-2006) has been finished.

The proposed research plan to the State Forestry Administration (SFA) at present is “Research on prevention and control strategy of avian-flu for wild fowls in Shanghai” (2006-2008). Currently, a field laboratory of epidemic monitoring has been established preliminarily, which covers an area of 20 m<sup>2</sup> and is mainly equipped with biological activity refrigerator, extreme low temperature refrigerator, constant temperature incubator, anatomical lens, microscope, spectrophotometer, field epidemic monitoring backpack, GPS, and field close-monitoring-system for goose and duck habitats.

The reserve established “Field carbon flux monitoring station of the Chongming Dongtan Wetland” in collaboration with Fudan University in 2004. By far, continuous monitoring for 3 typical wetland vegetation types (*Phragmites australis*, *Scirpus mariqueter* and *Spartina alterniflora*) in the Chongming Dongtan Wetland has been conducted for 3 years.

“Comprehensive observation station for atmosphere composition in the Chongming Dongtan Wetland” was established by the reserve in collaboration with Shanghai Weather Bureau in 2007. The constructions have been basically completed and turn to the stage of equipment installation and debugging at present.

“Field ecological research station of the Yangtze estuarine wetland” was established 2 km away outside the wetland, in collaboration with Shanghai Greenery Bureau and Fudan University in 2006. Going into operation now, the station is fully equipped with basic facilities such as offices, theme labs and dormitories, and covers an area of 600 m<sup>2</sup>. It will be further developed into an international open ecological research platform.

The reserve developed “Geographic information system of the Chongming Dongtan Wetland of international importance” in collaboration with East China Normal University in 2007.

## **30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:**

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Multiple propaganda and environmental education activities aiming at primary and secondary students have been developed independently or in collaborations with related organizations at home and abroad such as Wildlife Conservation Association of Shanghai, WWF and TNC. Propaganda brochures with 5 kinds and 80 thousand copies have been printed out. Another 2 kinds of brochures are in design at present and 50 thousand copies are to be printed. Four short videos on propaganda of nature reserve and wetland conservation with diverse themes have been produced and one is being made. In May, 2005, the official website of the reserve ([www.dongtan.cn](http://www.dongtan.cn) or [www.dongtan.org.cn](http://www.dongtan.org.cn)) was established. Footpaths of 3 km for wetland monitoring are being designed and estimated to be put into use in May, 2008.

### **31. Current recreation and tourism:**

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Currently, no ecotourism project or activities is opened to the public. The visitors are only limited outside the reserve to develop generic visiting. Exhibition boards for propaganda are set in holidays. Former tourism activities of disorder developed by local residents have been banned.

### **32. Jurisdiction:**

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

Territorial: the People's government of Shanghai Municipality

Functional: State Forestry Administration

### **33. Management authority:**

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Institution: The Chongming Dongtan Bird Nature Reserve Management Division of Shanghai Municipality

Address: Dongwang Road, Dongtan, Chongming County, Shanghai 202183, China

Principal: Guoxian Song (director)

Tel: +86-(0)21-59472291

Fax: +86-(0)21-59472291

Website: <http://www.dongtan.cn>

### **34. Bibliographical references:**

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

- [1] Shanghai Wildlife Conservation Association. 1995. Study on the relation between Chongming Dongtan Ecological Environment and Rational Use. Background data.
- [2] Shanghai Agriculture and Forestry Bureau. 1998. Argumentation on the Construction of Shanghai Chongming Dongtan Natural Reserve.

- [3] The office of comprehensive survey for coastal zone and intertidal resource. 1998. Report of Comprehensive Survey on the Coastal Zone and Intertidal Resources of Shanghai. Shanghai: Shanghai Scientific & Technological Press.
- [4] Wang Tianhou, Qian Guozhen, et al. 1988. Charadriiformes at the south Yangtze River Mouth and north Hangzhou Bay. Shanghai: East China Normal University Press.
- [5] Sun Zhenhua, Zhao Renquan. 1996. Dynamic Changes of Migratory Bird Natural Reserve in Chongming Eastern Beach. Shanghai Environmental Science 15(10): 41-44.
- [6] Sun Zhenhua, Yu kuai. 1991. Establishment of Migratory Bird Natural Reserve Region on the Eastern Beach of Chongming Island and Its Functional Regionalization. Shanghai Environmental Science 10: 16-19.
- [7] Sun Zhenhua, Tao Kanghua, Wang Jiazhen, et al. 1990. The Natural Environmental Control Factors of the Habitat of Certain Rare Birds Wintering at the Eastern Beach of Chongming Island, Shanghai. Shanghai Environmental Science 9: 16-19.
- [8] Xu Shiyuan, Huang Yangsong, Fan Ankang. 1986. An Analysis on Geomorphology Types and Zonation of the Shanghai Municipality Area. Journal of East China Normal University Natural Science Edition 4: 75-82.
- [9] Lu Jianjian. 1990. Wetland in China. Shanghai: East China Normal University Press.
- [10] Lu Jianjian. 1994. Study on Waterfowls in China. Shanghai: East China Normal University Press.
- [11] Lu Jianjian. 1998. Research and Protection of Wetland in China. Shanghai: East China Normal University Press.
- [12] Li Zhixun, Tang Ziyang, Jing Jianhua. 1959. Report on Birds in Shanghai. Acta Zoologica Sinica 11: 390-408.
- [13] Ou Shanhua, Yang Binsheng, et al. 1992. The Collection of the Theses on the Population Characteristics of *Scirpus mariqueter* and Its Efficiency of Silt Pile-up in Shanghai Coastal Zone. Journal of Shanghai Normal University (Natural Sciences) Supplement 21.
- [14] Zhang Shihao, Xuan xiao. 1989. Report on Birds in Chongming Island in China. Background data.
- [15] Zhou Xiujia. 1986. The Vegetation Regionalization of Shanghai. Journal of Shanghai Normal University (Natural Sciences) 1:97-102
- [16] Tang Shihua, Yu Kuai, et al. 1996. The Research on Charadriiformes Community and Its Feeding Habits in the Chongming Dongtan. Journal of East China Normal University. Zoology.
- [17] Cui Zhixing, Qian Guozhen. 1985. The Feeding Habits of Charadriiformes. Zoogical Research supplement 1.
- [18] Huang Zhengyi, Yu Kuai, Sun Zhenhua. 1993. Bird Resources and Habitat in Shanghai. Shanghai: Fudan University Press.
- [19] Huang Zhengyi, et al. 1991. Wildlife Under State Protection in Shanghai. Shanghai: Fudan University Press.
- [20] Huang Zhengyi, Xie Yimin, Du DeChang, et al. 1991 The Handbook of Shanghai Wildlife Protection. Shanghai Agriculture and Forestry Bureau.
- [21] Wetland International-China Programme. 1998. Wetland and Waterbird Conservation. Beijing: China Forestry Publishing House.
- [22] Xu Hongfa, Zhao Yunlong. 2005. Scientific Survey on Chongming Dongtan Migratory Birds



- Nature Reserve of Shanghai. Beijing: China Forestry Publishing House.
- [23] Yu Kuai, Tang Ziming, et al. 1991. The Relation Between Feeding Habits and Habitats of *Cygnus columbianus* in Chongming Dongtan. Research on Birds in China. Beijing: Science Press.
- [24] Yu Kuai, Tang Shihua, Wang Huizhi. 1995. A Study on the Feeding Habits of Winter Ducks on the Eastern Beach of Chongming Island, Shanghai. Journal of Shanghai Normal University(Natural Sciences) 24:69-74
- [25] Australian Environment Programme, Ministry of the Environment of Japan. 1997. The Network of Wading birds Protection between East Asia and Australia. Report on wading birds that migrate north in 1997.
- [26] Ma Zhijun. 2005. Assessment for Bird Habitat in Chongming Dongtan Bird Nature Reserve.
- [27] Barter M.D. Tonkinson,S.X.Tang,et al.. 1997. Staging of Great Knot, Red Knot and Bar-tailed Godwit at Chongmin Dao, Shanghai: Jumpers to Hoppers, Stilt 31:2-11.
- [28] Barter M.D. Tonkinson, F.W.Qian et al.. 1997. Hunting of Migratory Waders on Chongming Dao: a declining occupation? Stilt31:18-22.
- [29] Barter M.D. Tonkinson,et al.. 1997. Shorebird number in the Chang Jiang (Yangtze River) Estuar during the 1997 Northward Migration., Shorebird Survey in China. Wetlands International-China Program & Wetlands International-Oceania.
- [30] Sowerby A.C. 1932. The fauna of the Shanghai area, Birds, China Journal, 16: 279-280.
- [31] Sowerby A.C. 1943. Birds recorded from or known to occur in the Shanghai area. Heude Not. D'orn. 1:1-212.
- [32] Tang Sixian, Wang Tianhou. 1995. Shorebirds Hunting in East China. Asian Wetland Bureau, Publish No 114.
- [33] Wang Tianhou , Tang Sixian. 1995. Shorebirds in East China. Asian Wetland Bureau. Publish No115.
- [34] Wilkinson E.S. 1929. Shanghai birds. A study of birds in Shanghai and the Surrounding districts. North-China Daily News & Herald Limited , Shanghai xxi,1-243.
- [35] Wilkinson E.S. 1935. The Shanghai Birds year. North-China Daily 1-129.
- [36] Wilkinson E.S. 1926. Further notes on some of the birds seen in Shanghai China Journal. Sci. and Arts 5:28-34, 133-139.
- [37] Barter M.D., et al. 1997. Wader number on Chongming Dao, Yangtze estuary during northward migration and the conservation implications. Stilt 30:7-13.