

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7, as amended by Resolution VIII.13 of the Conference of the Contracting Parties.

Note 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. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Bureau. Compilers are strongly urged to provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of maps.

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

October 10, 2004

3. Country:

P.R. China

4. Name of the Ramsar site:

Shuangtai Estuary

5. Map of site included:

a) **hard copy** (required for inclusion of site in the Ramsar List): *yes* -or- *no*

b) **digital (electronic) format** (optional): *yes* -or- *no*

6. Geographical coordinates (latitude/longitude):

41°00'N, 121°47'12" E

7. General location:

Shuangtai Estuary wetland lies on the north of Liaodong Bay, at the estuary of Liao River (Shuangtai River is the name for its lower stream), North-eastern China. It is about 35 kilometers away to the southwest of Panjin city, Liaoning Province.

8. Elevation: (average and/or max. & min.) 0m~4m**9. Area:** (in hectares) 128,000 ha

10. Overview:

Shuangtai Estuary wetland includes the essential part of the world's largest reed (*Phragmites communis*) marsh, a large area of *Suaeda* community and shallow sea. It provides important habitats for wetland species, especially for the resting and breeding of some endangered water birds such as Red-Crowned Cranes *Grus japonensis*, White Cranes *G. leucogeranus* and Saunder's Gulls *Larus saundersi*.

11. Ramsar Criteria:

Circle or underline 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).

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8

12. Justification for the application of each Criterion listed in 11. 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: This wetland has the function of flood control and prevention. It also plays an important role in maintaining the underground water table and regulating the local climate. In addition, it is also the last barrier for the retention of nutrients and preventing coastal water eutrophication.

Criterion 2: This is the southern most site for breeding of the globally endangered Red-Crowned Cranes *Grus japonensis*, with more than 20 pairs breeding here every year. This is also the largest breeding site for the Saunders's gulls *Larus saundersi*, globally vulnerable and plays an essential role for the existence and development of this species. More than 400 critically endangered Siberian cranes *Grus leucogeranus* also stop over this place during migrating season (IUCN Red List 2004).

Criterion 3: This wetland is a complex ecosystem with rich biodiversity and high productivity. There are 869 species living in this wetland at different salinity gradients.

Criterion 4: This wetland is right on the Eastern Asia migrating route for shore birds. It provides ideal habitat for shore birds, geese and ducks, gulls, egrets and some wetland dependent finches. The estuary is the southernmost site for the breeding of Spotted Seal *Phoca largha*.

Criterion 5: Over 50,000 waterfowls breed at this wetland every spring, while the migrating birds were recorded over 400,000 at the same period.

Criterion 6: This wetland has 106 waterfowl species. The following species' biogeographic population overpass the 1% level threshold: more than 6,000 Saunders's Gulls breed here each year, which is about 70% of the total population in the world. More than 800 Red-Crowned Cranes *Grus japonensis*, globally endangered, migrate and pass this wetland every year, which accounts for 80% of the total population in the world. More than 400 critically endangered Siberian Cranes *Grus leucogeranus* also stop over this place during migrating season and this constitutes 13% of the biogeographic population.

Criterion 7: Fish and shell species at the estuary constitute the food basis for the large bird population. There are 44 species of crustacean, 63 species of molluscs, 124 species of fish, and 14 species of amphibians. Among the fish, 38 are fresh water species, 41 are sea species, and 16 are migration species. *Pseudosciaena polyactis*, *Lateolabrax Japonica*, *Liza haematocheila*, *Takisfugu* spp., crabs, and hard clamps *Meretrix meretrix* are endemic species. This is also the world highest production base for *Meretrix meretrix*.

Criterion 8: Many fish species breed in sea water as a spawning site and grow up in fresh water. They cannot survive without this estuary wetland.

13. 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:

Lower Liaohe plain region, temperate deciduous broad-leaved forest – Luvisols zone.

b) biogeographic regionalisation scheme (include reference citation):

The biogeographic region was delineated from the scheme in the “Physical Geographical Atlas of China” (p95), edited by the Department of Geography, North-western China Normal University and the Atlas Press, published by the Atlas Press of China in 1984.

14. 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.

Geology and geomorphology:

Geotectonically this area belongs to the north-eastern part of Northern China Platform, while regionally it is on the Liaohe fault basin. The lower Liaohe basin experienced three times of transgression since Pleistocene with corresponding fluvial layers. The ever changing shoreline indicates the frequent tectonic activities in this area. Geomorphologically, this wetland is a part of the marine deposit – alluvial plain. The terrain is wide and flat, with elevation between 0m~4m, and slope at 0.02%. Rivers can be easily distinguished from the reed marsh.

Origins:

This wetland is naturally formed.

Hydrology:

The water source for this wetland is mainly from surface water. Several rivers flow into the sea through this area: The Shuangtai River (Liao River), Daling River, Daliao River, and Raoyang River. Most of the water is brought by the former two rivers. The annual flow of Shuangtai river is $4.51 \times 10^9 \text{m}^3$, while that of the Daling river is $2.01 \times 10^9 \text{m}^3$.

Soil type:

The main soil types are Halaquept, Mar-Orthic Halosols, Mat-Orthic Halosols, and Sta-Orthic Halosols, with high organic matter and salt content.

Water quality:

The water quality through this area is about Vth class, according to the national standard, which is very seriously polluted.

Depth, fluctuations and permanence of water:

The water depth behind the protecting embankment is determined by rainfall and irrigation regime. The reed is usually irrigated and discharged according to the need of its growth, according to the need of sedge growth to control irrigative water. The water depth outside of the embankment is affected by sea tide, ranging between 0.62m~3.18m.

Tidal type:

Irregular half-day tide.

Area of accumulative water:

Reed marsh, ponds, reservoirs and canals.

Downstream area:

Liaodong bay.

Climate:

This wetland lies on the middle latitude zone and belongs to the semi-humid and semi-dry continental temperate monsoon climate. Spring warms up quickly with low precipitation and dry air. Summer is relatively hot and humid, with concentrated rainfall. The autumn weather is usually cool and fine. Winter is cold and dry with low precipitation. The annual average temperature is 8.4°C, and precipitation is 623.2mm, while the evaporation is 1568.6mm. Affect by the Bohai Sea, the average wind speed is 4.3m/s, mainly from the south-western direction. The frost-free period is 172 days. The depth of the normal frozen layer is 1.10m.

15. Physical features of the catchment area:

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

This wetland is a part of the Liaohe Delta, which is a complex delta formed by several large rivers such as the Liao River, Daliao River, Daling River and Xiaoling River etc. The whole catchment area of the above rivers is over 300,000 km², covering the main part of Liaoning Province and a part of Inner Mongolia, Jilin and Hebei province. The area belongs to the temperate deciduous broad-leaved forest zone with brown soil. The main land use types are agriculture and forest.

16. Hydrological values:

The reed marsh in this wetland acts as a sponge for flood control and prevention. It absorbs water during high water level season and supply for ground water during dry season to avoid salt water invasion. About 10.4 million tones of sedimentation are retained by the wetland every year with new beach area created. In addition, it is also a natural treatment system for the polluted rivers flowing through this wetland.

17. 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 • F • G • H • I • J • K • Zk(a)

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

Human-made: 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

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.

H-G-A-F-M-N-Tp-Ts-W-Y-1-3-6-2

18. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site.

The main vegetation types as the habitat of waterfowls are *Phragmites communis*, *Suaeda heteroptera* and *Nitraria sibirica*. The rich bio-products from water and marsh plants, as well as that from paddy fields and breeding ponds, form complicated food web in this wetland.

19. Noteworthy flora:

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. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

The vegetation of this wetland belongs to the Northern China flora. Species composition is relatively simple due to the dynamic estuary environment. There are 217 plant species in total, but only less than 10 are dominant species. Reed community, e.g. *Phragmites communis*, is the main nesting habitat for Red-Crowned Cranes and other crane species. *Suaeda heteroptera* community is the main breeding habitat for Saunders's Gull and many other waterfowls. These reed lands form beautiful scenery resources for eco-tourism. Reed is also a valuable raw material for paper making.

20. 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.*

The fauna of this wetland belongs to the Liaohe plain province, Song-Liao plain sub-region, North-eastern China region, Palearctic region. Five species are listed as the national first-class protected birds: Red-crowned Crane (*Grus japonensis*), Siberian Crane (*Grus leucogeranus*), Black Stork (*Ciconia nigra*), Oriental white Stork (*Ciconia boyciana*) and Golden Eagle (*Aquila chrysaetos*). Twenty-nine species are listed as the national second class protected animals. The "Sino-Japan Migratory Birds Protection Agreement" has found 145 species; while the "Sino-Australia Migratory Birds Protection Agreement" has recorded 46 species. More than 20 species are of international importance. For example, among the total 1900 Red-crowned Crane in the world, more than 800 stop over in this wetland, and about 50 of them breed here. More than 6000 out of the totally over 8000 Saunders's Gulls breed in this place. The number of other endangered species such as Siberian crane (*Grus leucogeranus*), White-naped Crane (*Grus vipio*), Hooded Grus (*Grus monacha*), Parrot Bill (*Paradoxornis heudei*), Oriental White Stork (*Ciconia boyciana*), Black Stork (*Ciconia nigra*) and Spotted Seal (*Phoca largha*) are also noteworthy. It is a breeding and wintering site of about 106 species of geese and ducks. The total quantity can be over 500,000.

21. Social and 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.

The rich natural resources, beautiful scenery, and large amount of birds constitute a nice place for eco-tourism and recreation. The total production of fish, prawn and crabs is millions of tonne each year, while reed is over 500,000 tonne. The nearly untouched natural wetland ecosystem is also an important base for scientific research on shallow sea, inland wetland ecosystem, ecotone and biodiversity.

22. Land tenure/ownership:

(a) within the Ramsar site:

State owned. The Shuangtaihekou National Nature Reserve has 5000 hectare with usufruct.

(b) in the surrounding area:

State owned.

23. Current land (including water) use:

(a) within the Ramsar site:

The land is managed and used such as reed marsh 50,500 ha, paddy fields 1,300 ha, prawn-crab breeding ponds 5,000 ha. The remaining area is natural. There are about 20,000 people seasonally living here for reed irrigation and harvest, oil exploration facility checking, agriculture and aquaculture.

(b) in the surroundings/catchment:

Mainly for agricultural use and reed harvesting.

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

Resources exploitation activities: oil exploration, land reclamation, prawn-crab breeding and reed management.

Environment pollution: polluted water brought by the Liao River degraded the productivity of fish and lowered the quantity and quality of food for birds.

25. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

- 1) The Shuangtaihekou Nature Reserve has been established. In 1988, it is promoted to National Nature Reserve. In 1996, it joined the "East Asian – Australasian Shorebird Site Network". In 2002, it joined the "North East Asian Crane Site Network".
- 2) Management Rules for the Shuangtaihekou National Nature Reserve of Liaoning Province has been made. A work team has also been established to execute the rules in the nature reserve.
- 3) Feeding sites, rescue and breeding centres have been established for the animals. Red-crowned Cranes and Saunders's Gulls have been bred successfully.
- 4) Panjin Wetland Ecosystem Monitoring Station has been established. The main items studied include the formation, status and maintenance measures on wetlands, and the behaviour, habitat vegetation and population relationship for the water fowls.
- 5) Wetland restoration engineering. About 400 ha of habitat have been restored for the Saunders's Gull, by pumping sea water back to the degraded wetland.
- 6) Master planning for the nature reserve has been made and approved by the central government, with corresponding investment.

26. Conservation measures proposed but not yet implemented:

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

Detailed management plan for the Nature Reserve has been proposed. But it is not yet approved by the related administration bureau.

27. Current scientific research and facilities:

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

Based on this piece of wetland, several scientific projects founded by the National Natural Science Foundation of China has been conducted, including the National Key Project "Resource dynamics, landscape structure and sustainable development around Bohai Sea". Systematic studies on "Residential Red-crowned Cranes population in Panjin", "Restoration technology for the *Suaeda heteroptera* community" and "Biotic characters and protection measures for Saunder's gull" are still continued. Artificial fecundation, hatching and fostering for Red-crowned Cranes have been conducted. Long term cooperative population monitoring with Japanese scientists for Saunder's gull is also on-going.

The Nature Reserve is presently equipped with 7 computers, 5 telescopes, GPS and camera etc.

28. Current conservation education:

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

The Nature Reserve launched a "Bird Week" in April, for the propaganda of bird protection and promoting the public consciousness. Many schools have "Bird-lovers class" with thematic lessons on bird protection. The reserve itself has become the education base for environment protection. An exhibition hall has been established in the nature reserve, open for public visitors. In 1995, the nature reserve was designated as the "Environment educational base of Liaoning Province".

29. Current recreation and tourism:

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

Seasonal ecotourism is conducted in the wetland. Main scenic spots include "red carpet", "waterfowl garden", "bird-watching platform", and exhibition hall. Over 80 thousands tourists visit here every year. In 1997, this wetland was evaluated as the "Top 50 best landscape of Liaoning Province". Further ecotourism plans are in realization.

30. Jurisdiction:

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

This wetland belongs to the Panjin municipality administratively, and managed by the State Bureau of Forestry.

31. 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.

Shuangtaihekou National Nature Reserve of Liaoning province. Director: Wang Lifeng.

Address: Oil street 132#, Xinglongtai district, Panjin City, Liaoning Province, China.

32. Bibliographical references:

scientific/technical references only. If biogeographic regionalisation scheme applied (see 13 above), list full reference citation for the scheme.

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