Information Sheet on EAA Flyway Network Sites (SIS) – 2017 version

Available for download from http://www.eaaflyway.net/about/the-flyway/flyway-site-network/

Categories approved by Second Meeting of the Partners of the East Asian-Australasian Flyway Partnership in Beijing, China 13-14 November 2007 - Report (Minutes) Agenda Item 3.13

Notes for compilers:

1. The management body intending to nominate a site for inclusion in the East Asian - Australasian Flyway Site Network is requested to complete a Site Information Sheet. The Site Information Sheet will provide the basic information of the site and detail how the site meets the criteria for inclusion in the Flyway Site Network. When there is a new nomination or an SIS update, the following sections with an asterisk (*), from Questions 1-14 and Question 30, must be filled or updated at least so that it can justify the international importance of the habitat for migratory waterbirds.

2. The Site Information Sheet is based on the Ramsar Information Sheet. If the site proposed for the Flyway Site Network is an existing Ramsar site then the documentation process can be simplified.

3. Once completed, the Site Information Sheet (and accompanying map(s)) should be submitted to the Flyway Partnership Secretariat. Compilers should provide an electronic (MS Word) copy of the Information Sheet and, where possible, digital versions (e.g. shapefile) of all maps.

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1. Name and contact details of the compiler of this form *:

EAAF SITE CODE FOR OFFICE USE ONLY:

E	A	A	F	0	8	6

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2. Date this sheet was completed *:

DD/MM/YYYY

xx/07/2006

3. Country *:

People's Republic of China

4. Name of the Flyway Network site *:

Accepted English transcription of the Site's name.

Nandagang Wetland Nature Reserve, Hebei Province

5. Map of site *:

The most up-to-date available and suitable map of the wetland should be appended to the SIS (only in digital format and shape file). The map must clearly show the boundary of the site. Please refer to the "Digitising Site Boundaries in Google Earth" file linked here.

See Appendix 1.

6. Geographical coordinates (latitude/longitude, in decimal degrees) *:

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.

N 3 8^{O}26'- 38^{O}33'; E117^{O}25' -117^{O}36'

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

1.5m

8. Area *:

The total area of the site, in hectares. If the areas of discrete site units are known, please also list each of these together with the names (or labels) used to identify and differentiate these units.

13,380ha

9. General overview of the site *:

A brief (two sentences) summary of the site, mentioning principal physical and ecological functions, and its importance for migratory waterbirds.

Nandagang Wetland Nature Reserve is a freshwater wetland which lies on the western side of Bohai Bay, and has an area of 13380 ha. The reserve was established mainly for protection of wetland ecosystems of reed marsh and saline seepweed marsh, and has rich biodiversity with rare waterbirds such as Black Stork, Oriental White Stork and Hooded Crane. It is an important stopover and breeding site for migratory birds, and is listed as a Nationally Important Wetland in the China National Wetland Conservation Action Plan.

259 species of birds have been recorded in the reserve including 8 species of National Protection Grade I and 39 species of National Protection Grade II. Of the 110 species of waterbirds recorded, 26 meet the 1% criteria for internationally important numbers at the site, including 9 species of shorebirds. A further seven species meet the staging criteria at this site.

The reserve has a scientific research and conservation centre, conducts regular waterbird surveys during the non-breeding season, conducts education and awareness activities and produces educational materials for waterbird and wetland conservation. Chemical pollution and sedimentation from surrounding and upstream areas threaten the water quality and hydrology of the wetland.

10. Justification of Flyway Site Network criteria *:

Please provide waterbird count information (with year of latest count) that demonstrates that the site meets the criteria of the Flyway Site Network (Annex 1). That is:

- it regularly supports > 20 000 migratory waterbirds; or,
- it regularly supports > 1 % of the individuals in a population of one species or subspecies of migratory waterbird; or,
- it supports appreciable numbers of an endangered or vulnerable population of migratory waterbird
- it is a "staging site" supporting > 5 000 waterbirds, or > 0.25% of a population stage at the site.

A listing of the populations of migratory waterbirds covered by the East Asian – Australasian Flyway Partnership and the 1% thresholds is attached (Annex 3).

The “staging site” criterion is particularly difficult to apply and application of this should be discussed with the Secretariat. Also note that some species have several populations that are very difficult to distinguish in the field.

Nine (9) shorebird species at this site meet the 1% criteria for internationally important concentrations (Table 1): Black-winged Stilt, Little Ringed Plover, Kentish Plover, Black-tailed Godwit, Spotted Redshank, Common Redshank, Marsh Sandpiper, Terek Sandpiper, Ruddy Turnstone and Sharp-tailed Sandpiper. A further seven (7) shorebird species at Nandagang are likely to meet the staging criteria (Table 2). Although data from non-breeding period surveys have not been obtained, much of the habitat is frozen in winter and few birds are seen. For seven (7) species, migration period counts which exceed the staging criteria are likely to comprise only migrating birds. Five additional species have been recorded in numbers which exceed the staging criteria, but these species - Grey Plover, Eurasian Curlew (Yang & Zhang 2006), Green Sandpiper, Pintail Snipe and Common Snipe (M. Barter pers comm.) - do occur in the Bohai Sea area during winter; thus their migration period counts at Nandagang might not all be migrating birds.

Table 1. Shorebird counts for species at Nandagang Wetland Nature Reserve that have met the 1% criteria.

No.	Chinese name	English name & (*Scientific name*)	1% criteria *	Peak count ‡	Date	Site	Reference
1	黑翅长脚鹬	Black-winged stilt (*Himantopus himantopus*)	250	2100	24/04/2001	Jiuchenzi, Tianshuibo	Liu Zhenjie
			250	1300	27/08/2004	Qianshuitan, Chewuxiang	Liu Zhenjie
			250	2600	22/04/2005	Tianshuibo, Chewuxiang	Zhao Guocai
			250	3500	06/05/2002	Tianshuibo, Datangjiao	Lu Shunhua
2	凤头麦鸡	Northern Lapwing (*Vanellus vanellus*)	1 000	1780	28/03/2002	Sinian, Xiaoqingwa, Lichendian, Tianshuibo, Datangjiao	Lu Shuhua
3	金眶鸻	Little Ringed Plover (*Charadrius dubius curonicus*)	250	320	06/04/2001	Qiuchenzi, Sanniandabo	Liu Zhenjie
4	环颈鸻	Kentish Plover (*Charadrius alexandrinus dealbatus*)	1 100	4100	20/04/2003	Tianshuibo, Sizhayan, Chewuxiang	Meng Derong
			1 100	3 300	10/04/2002	Qiuchenzi, Sanniandabo	Zhang Yanwei
			1 100	1 500	12/04/2005	Qianshuitan, Jiuchenzi	Zhao Guocai
5	黑尾塍鹬	Black-tailed Godwit *(Limosa limosa)*	1 600	1800	20/04/2002	Jiuchenzi, Sanniandabo, Qianshuitan	Liu Jingyi
			1 600	1600	19/04/2005	Jiuchenzi, Qianshuitan	
6	鹤鹬	Spotted Redshank *(Tringa erythropus)*	250	1200	10/04/2003	Qianshuitan, Jiuchenzi, Chewuxiang	Liu Jingyi
7	红脚鹬	Common Redshank (*Tringa totanus*)	1 000	1300	15/04/2000	Qianshuitan, Jiuchenzi, Chewuxiang	Lu Shuhua
8	泽鹬	Marsh Sandpiper (*Tringa stagnatilis*)	1 000	3200	24/04/2001	Datangjiao, Chewuxiang,	Liu Zhenjie

No.	Chinese name	English name & (*Scientific name*)	1% criteria *	Peak count ‡	Date	Site	Reference
						Qianshuitan	
9	尖尾滨鹬	Sharp-tailed Sandpiper (*Calidris acuminata*)	1 600	2 450	25/04/2000	Datangjiao, Chewuxiang, Qianshuitan	Lu Shuhua

* Population estimates and 1% criteria from Wetlands International (2002) and Bamford *et al* (In Press).
‡ Maximum Counts from Nandagang Wetland Nature Reserve Database.

Table 2. Shorebird counts for species at Nandagang Wetland Nature Reserve that are likely to meet the 0.25% staging criteria.

No	Chinese name	English name & (*Scientific name*)	Staging (0.25%) criteria *	Peak count ‡	Date	Site	Reference
1	金[斑]鸻	Pacific Golden Plover (*Pluvialis fulva*)	250	260	10/04/2004	Qianshuitan, Jiuchenzi	Zhao Guocai
2	矶鹬	Common Sandpiper (*Tringa hypoleucos*)	63	110	10/04/2004	Datangjiao, Qianshuitan, Wawaxiang	Meng Derong
3	翘嘴鹬	Terek Sandpiper (*Tringa cinereus*)	150	364	06/04/2003	Datangjiao, Qianshuitan, Jiuchenzi	Liu Zhenjie
4	翻石鹬	Ruddy Turnstone (*Arenaria interpres*)	88	265	03/04/2003	Jiuchenzi, Qianshuitan	Zhang Yanwei
5	红颈滨鹬	Red-necked stint (*Calidris ruficollis*)	813	3 100	20/04/2002	Qianshuitan, Jiuchenzi, Chewuxiang	Zhang Yanwei
6	青脚滨鹬	Temminck's Stint *(Calidris temminckii)*	63	83	10/04/2003	Chewuxiang	Zhang Yanwei
7	弯嘴滨鹬	Curlew Sandpiper (*Calidris ferruginea*)	450	1 350	12/04/2005	Qianshuitan, Jiuchenzi, Chewuxiang	Zhao Guocai

* Population estimates and criteria from Wetlands International (2002) and Bamford *et al* (In Press).
‡ Maximum Counts from Nandagang Wetland Nature Reserve Database.

11. Wetland Types *:

List the wetland types present (see Annex 2). List the wetland types in order of their area in the Flyway Network site, starting with the wetland type with the largest area.

- Inland wetlands: Permanent freshwater marsh (Tp); Shrub-dominated wetland (W).
- Human-made wetlands: Aquaculture shrimp pond (1); Ponds (2); Salt-pans (5); Drainage channels (9).

12. Jurisdiction *:

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

Jurisdiction of the site is shared by the following agencies:

- Nandagang Management District, Cangzhou City, Hebei Province;
- Hebei Provincial Forestry Bureau;
- Cangzhou City Forestry Bureau, Hebei Province;
- Nandagang Forestry Bureau, Cangzhou City, Hebei Province;
- Nandagang Wetland Nature Reserve Administration Office.

13. 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 and the title and/or name and email address/phone number of the person or persons in this office with direct responsibility for managing the wetland.

Two agencies share responsibility for management of the site:

- Nandagang Forestry Bureau, Cangzhou City, Hebei Province
- Nandagang Wetland Nature Reserve Administration Office

Address: Cangzhou City Nandagang Precinct, Nandagang 061103, Hebei Province, PRC
Telephone: 0317-5897851
Fax: 0317-5897850
Email: liuzhenjie1@126.com

14. Bibliographical references *:

A list of key technical references relevant to the wetland, including management plans, major scientific reports, and bibliographies, if such exist. Please list Web site addresses dedicated to the site or which prominently feature the site, and include the date that the Web site was most recently updated. When a large body of published material is available about the site, only the most important references need be cited, with priority being given to recent literature containing extensive bibliographies.

Asia-Pacific Migratory Waterbird Conservation Committee. (2001). Asia-Pacific Migratory Waterbird Conservation Strategy: 2001-2005. Wetlands International – Asia Pacific. Kuala Lumpur, Malaysia. 67pp.

Bamford, M., Watkins, D., Bancroft, W., Tischler, G. And Wahl, J. (In Press). Migratory Shorebirds of the East Asian – Australasian Flyway: Population Estimates and Internationally Important Sites. Wetlands International Global Series, and International Wader Studies. Wetlands International – Oceania. Canberra, Australia.

Nandagang Wetland Nature Reserve Database. Nandagang Wetland Nature Reserve, P.R. of China.

State Forestry Administration P.R. China (2002). China National Wetland Conservation Action Plan. China Forestry Publishing House, 142pp.

Wetlands International. (2002). Waterbird Population Estimates – Third Edition. Wetlands International Global Series No.12, Wageningen, The Netherlands, 226 pp.

Yang, Y.H. and Zhang, Z.W. (2006). Shorebirds wintering in Northern Bohai Bay. The Stilt **49**:3-6.

15. 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: The Reserve belongs to the Huanghua depressed zone which is a northeast fault formed from the quaternary period. The soil/ sediment types are affected by the Yellow River, including alluvial land, lagoon sediment, marine sediment, biological sediment and man-made sediment which formed as coastal deposits. Lagoons were formed in this area during the late ice age, due to separation by sand spits, offshore sand bars and shell banks.

Hydrology: The reserve is fed by the Haihe hydrological system, with an annual mean surface runoff capacity of 27311 thousand m^3 and annual mean surface runoff depth of 93 mm which mainly occurs in the flood season of June, July and August. The water storage capacity of the reserve is 40 million m^3. The underground fresh water resource is very poor and the water table is 1.2-2.0 m. Three rivers pass through the reserve: Nanpaihe, Xinshibeihe and Liaojiawa.

Soil type and chemical property: There are 3 soil types: wet soil, marsh soil and saline soil.

Water quality: The water quality meets Grade 1 of the State standard of surface water quality.

Climate: The reserve is in the warm temperate semi-humid monsoon zone with an annual mean temperature of 12.1 °C, with lowest temperatures occurring in January, (average -4.5C) and the highest temperatures in July (average 26.4C). The average annual rainfall is 642.5mm, mostly occurring during July – September. The mean evaporation is 2100mm. It is generally windy with an average wind speed of 3.4m/s and the wind direction is mostly southwest.

16. Physical features of the catchment area:

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

17. Hydrological values:

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

The wetland is an important water source for Beijing and Tianjin region and plays a significant role in regional climate moderation, reduction of toxins, mud and sand sediment deposition, irrigation and aquaculture.

18. General ecological features:

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

This reserve is on a large coastal plain with a deep and fertile soil layer. The water table changes with season. The vegetation presents zonal distribution according to the water table and is divided into submerged plants, floating plants, emergent plants and meadows. The dominant species of submerged plant include Bamboo-lead Pondweed, Eelgrass, Verticillate Hydrilla which is the main emergent plants. Water Chestnut and Golden Euryale are the main floating plants. They are breeding and feeding places for summering migrants. Golden Euryale is a major food for swans. Sedge communities are important feeding habitat for Anatidae.

19. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy 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 SIS.*

(Please add here the species which do not come under sec no 14)

The site supports examples of the Class II national protected plant: Wild Soybean *(Glycine soja)*.

20. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 10. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the SIS.*

(Please add here the species which do not come under sec no 14)

259 bird species, 27 fish species, 6 reptile species, and 291 insect species are recorded in this area, including 8 species under national protection Grade I: Hooded Crane, Siberian White Crane, Oriental White Stork, Black Stork, Great Bustard, Red-crowned Crane, Chinese Merganser; and 39 species under national protection Grade II. A large number of bird species with high population density concentrate in this area, especially Black-winged Stilt.

21. Social, economic and cultural values:

a) Describe if the site has any general social, economic 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:

This wetland is a good base for scientific research and education and is excellent for bird watching and eco-tourism.

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? (Double-click the checkbox to check and choose "Checked" under "Default Value" from "Check Box Form Field Options" window)

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: ☐

22. Land tenure/ownership:

a) Within the Flyway Network site:

The wetland is owned by the State and is managed by the local government.

b) In the surrounding area:

23. Current land (including water) use:

a) Within the Flyway Network site:

The land is used for crops, reed harvesting and aquaculture.

b) In the surroundings/catchment:

24. 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 Flyway Network site:

Pollutants from a small paper plant and chemistry industry on the upper river affect the water quality. Sediment reduces the water storage capacity. Pesticides from the surrounding area also pollute the wetland.

b) In the surrounding area:

25. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Flyway Network 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.

A County level nature reserve was established in 1995 and updated to Provincial level in 2002 with an area of 13380 ha, and the master plan and management measures were developed. The Reserve is tightly managed and hunting, poisoning and egg collection are forbidden. A management plan has been published. Public education activities are conducted. A green protection zone width of 20m has been planted around the wetland.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate, see Annex 3):

Ia ☐; Ib ☐; II ☐; III ☐; IV ☐; V ☐; VI ☐; N/A ☐

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

If yes, is it being implemented?: If no, is one being planned?

d) Describe any other current management practices:

26. Conservation measures proposed but not yet implemented:

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

Nil

27. Current scientific research and facilities:

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

The reserve established a scientific research and conservation centre, conducted a wildlife resources survey and compiled an inventory of Nandagang Wetland. It has published many reports and papers, such as Breeding Behaviour Comparison between Black-winged Stilt and Pied Avocet, Breeding Behaviour Observation of Black-winged Stilt in Nandagang, A New Bird Record in Hebei Province – Black Coucal, etc. Waterbird monitoring conducted twice a month during the wintering season. Main facilities include telescope, camera, digital video and computer.

28. 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.

Developed and distributed booklets, leaflets, CDs, posters. Conducted public awareness campaign on "World Wetlands Day" and "Bird Loving Week".

29. Current recreation and tourism:

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

None.

30. Threats *:

Which of the following threats is present historically – when the threat stopped but the effects are still there (H), currently (C) or potentially (P)?

	Historically	Currently	Potentially
Residential and commercial development			
housing and urban areas	☐	☐	☐
commercial and industrial areas	☐	☐	☐
tourism and recreation areas	☐	☐	☐
Agriculture and aquaculture			
annual and perennial non-timber crops	☐	☐	☐
wood and pulp plantations	☐	☐	☐
livestock farming and ranching	☐	☐	☐
marine and freshwater aquaculture	☐	☐	☐

Energy production and mining			
oil and gas drilling	☐	☐	☐
mining and quarrying	☐	☐	☐
renewable energy	☐	☐	☐
Transportation and service corridors			
roads and railroads	☐	☐	☐
utility and service lines	☐	☐	☐
shipping lanes	☐	☐	☐
flight paths	☐	☐	☐
Biological resource use			
hunting and collecting terrestrial animals	☐	☐	☐
gathering terrestrial plants	☐	☐	☐
logging and wood harvesting	☐	☐	☐
fishing and harvesting aquatic resources	☐	☐	☐
Human intrusions and disturbance			
recreational activities	☐	☐	☐
war, civil unrest and military exercises	☐	☐	☐
work and other activities	☐	☐	☐
Natural system modifications			
fire and fire suppression	☐	☐	☐
dams and water management/use	☐	☐	☐
other ecosystem modifications	☐	☐	☐
Invasive and other problematic species and genes			
invasive non-native/alien species	☐	☐	☐
problematic native species	☐	☐	☐
introduced genetic material	☐	☐	☐
Pollution			
household sewage and urban waste water	☐	☐	☐
industrial and military effluents	☐	☐	☐
agricultural and forestry effluents	☐	☐	☐
garbage and solid waste	☐	☐	☐

air-borne pollutants	☐	☐	☐
excess energy	☐	☐	☐
Geological events			
volcanoes	☐	☐	☐
earthquakes/tsunamis	☐	☐	☐
avalanches/landslides	☐	☐	☐
Climate change and severe weather			
habitat shifting and alteration	☐	☐	☐
droughts	☐	☐	☐
temperature extremes	☐	☐	☐
storms and flooding	☐	☐	☐

Please write here any additional threats and comments/queries you have on the threats.

Annex 1: Criteria for the inclusion of sites in the Flyway Site Network

(From the Partnership Text)

To be considered for inclusion in the Flyway Site Network, this Partnership adopts the following criteria:

a. Convention on Wetlands (Ramsar, Iran, 1971) criteria for internationally important sites for migratory waterbirds. That is:
   - Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.
   - Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.
   - Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

b. The staging criteria as applied under the Asia - Pacific Migratory Waterbird Conservation Strategy. That is:
   i. A staging site should be considered internationally important if it regularly supports 0.25% of individuals in a population of one species or subspecies of waterbirds on migration.
   ii. A staging site should be considered internationally important if it regularly supports 5,000 or more waterbirds at one time during migration.

c. Under exceptional circumstances a site can be nominated if it supports migratory waterbirds at a level or stage of their life cycle important to the maintenance of flyway populations. Justification of such nominations will be considered by the Partnership on a case by case basis.

Annex 2: Ramsar Classification System for Wetland Type

The codes are based upon the Ramsar Classification System for Wetland Type as approved by Recommendation 4.7 and amended by Resolutions VI.5 and VII.11 of the Conference of the Contracting Parties. The categories listed herein are intended to provide only a very broad framework to aid rapid identification of the main wetland habitats represented at each site.

To assist in identification of the correct Wetland Types to list in section 19 of the RIS, the Secretariat has provided below tabulations for Marine/Coastal Wetlands and Inland Wetlands of some of the characteristics of each Wetland Type.

Marine/Coastal Wetlands

A -- **Permanent shallow marine waters** in most cases less than six metres deep at low tide; includes sea bays and straits.
B -- **Marine subtidal aquatic beds**; includes kelp beds, sea-grass beds, tropical marine meadows.
C -- **Coral reefs**.
D -- **Rocky marine shores**; includes rocky offshore islands, sea cliffs.
E -- **Sand, shingle or pebble shores**; includes sand bars, spits and sandy islets; includes dune systems and humid dune slacks.
F -- **Estuarine waters**; permanent water of estuaries and estuarine systems of deltas.
G -- **Intertidal mud, sand or salt flats**.
H -- **Intertidal marshes**; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes.
I -- **Intertidal forested wetlands**; includes mangrove swamps, nipah swamps and tidal freshwater swamp forests.
J -- **Coastal brackish/saline lagoons**; brackish to saline lagoons with at least one relatively narrow connection to the sea.
K -- **Coastal freshwater lagoons**; includes freshwater delta lagoons.
Zk(a) – **Karst and other subterranean hydrological systems**, marine/coastal

Inland Wetlands

L -- **Permanent inland deltas**.
M -- **Permanent rivers/streams/creeks**; includes waterfalls.
N -- **Seasonal/intermittent/irregular rivers/streams/creeks**.
O -- **Permanent freshwater lakes** (over 8 ha); includes large oxbow lakes.
P -- **Seasonal/intermittent freshwater lakes** (over 8 ha); includes floodplain lakes.
Q -- **Permanent saline/brackish/alkaline lakes**.
R -- **Seasonal/intermittent saline/brackish/alkaline lakes and flats**.
Sp -- **Permanent saline/brackish/alkaline marshes/pools**.
Ss -- **Seasonal/intermittent saline/brackish/alkaline marshes/pools**.
Tp -- **Permanent freshwater marshes/pools**; ponds (below 8 ha), marshes and swamps on inorganic soils; with emergent vegetation water-logged for at least most of the growing season.
Ts -- **Seasonal/intermittent freshwater marshes/pools on inorganic soils**; includes sloughs, potholes, seasonally flooded meadows, sedge marshes.
U -- **Non-forested peatlands**; includes shrub or open bogs, swamps, fens.
Va -- **Alpine wetlands**; includes alpine meadows, temporary waters from snowmelt.
Vt -- **Tundra wetlands**; includes tundra pools, temporary waters from snowmelt.
W -- **Shrub-dominated wetlands**; shrub swamps, shrub-dominated freshwater marshes, shrub carr, alder thicket on inorganic soils.
Xf -- **Freshwater, tree-dominated wetlands**; includes freshwater swamp forests, seasonally flooded forests, wooded swamps on inorganic soils.
Xp -- **Forested peatlands**; peatswamp forests.
Y -- **Freshwater springs; oases**.
Zg -- **Geothermal wetlands**
Zk(b) – **Karst and other subterranean hydrological systems**, inland

Note: "**floodplain**" is a broad term used to refer to one or more wetland types, which may include examples from the R, Ss, Ts, W, Xf, Xp, or other wetland types. Some examples of floodplain wetlands are seasonally inundated grassland (including natural wet meadows), shrublands, woodlands and forests. Floodplain wetlands are not listed as a specific wetland type herein.

Human-made wetlands

1 -- **Aquaculture** (e.g., fish/shrimp) **ponds**
2 -- **Ponds**; includes farm ponds, stock ponds, small tanks; (generally below 8 ha).
3 -- **Irrigated land**; includes irrigation channels and rice fields.
4 -- **Seasonally flooded agricultural land** (including intensively managed or grazed wet meadow or pasture).

5 -- **Salt exploitation sites**; salt pans, salines, etc.
6 -- **Water storage areas**; reservoirs/barrages/dams/impoundments (generally over 8 ha).
7 -- **Excavations**; gravel/brick/clay pits; borrow pits, mining pools.
8 -- **Wastewater treatment areas**; sewage farms, settling ponds, oxidation basins, etc.
9 -- **Canals and drainage channels, ditches.**
Zk(c) -- **Karst and other subterranean hydrological systems**, human-made

Annex 3: IUCN Protected Areas Categories System

IUCN protected area management categories classify protected areas according to their management objectives. The categories are recognised by international bodies such as the United Nations and by many national governments as the global standard for defining and recording protected areas and as such are increasingly being incorporated into government legislation.

Ia Strict Nature Reserve
Category Ia are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphical features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values.

Ib Wilderness Area
Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

II National Park
Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

III Natural Monument or Feature
Category III protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.

IV Habitat/Species Management Area
Category IV protected areas aim to protect particular species or habitats and management reflects this priority. Many Category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

V Protected Landscape/ Seascape
A protected area where the interaction of people and nature over time has produced an area of distinct charcter with significant, ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

VI Protected area with sustainable use of natural resources
Category VI protected areas conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems.

Appendix 1: Location and Zone Maps for Nandagang Wetland Nature Reserve.

Figure 1. Location map of Nandagang Wetland Nature Reserve, Hebei Province**.**

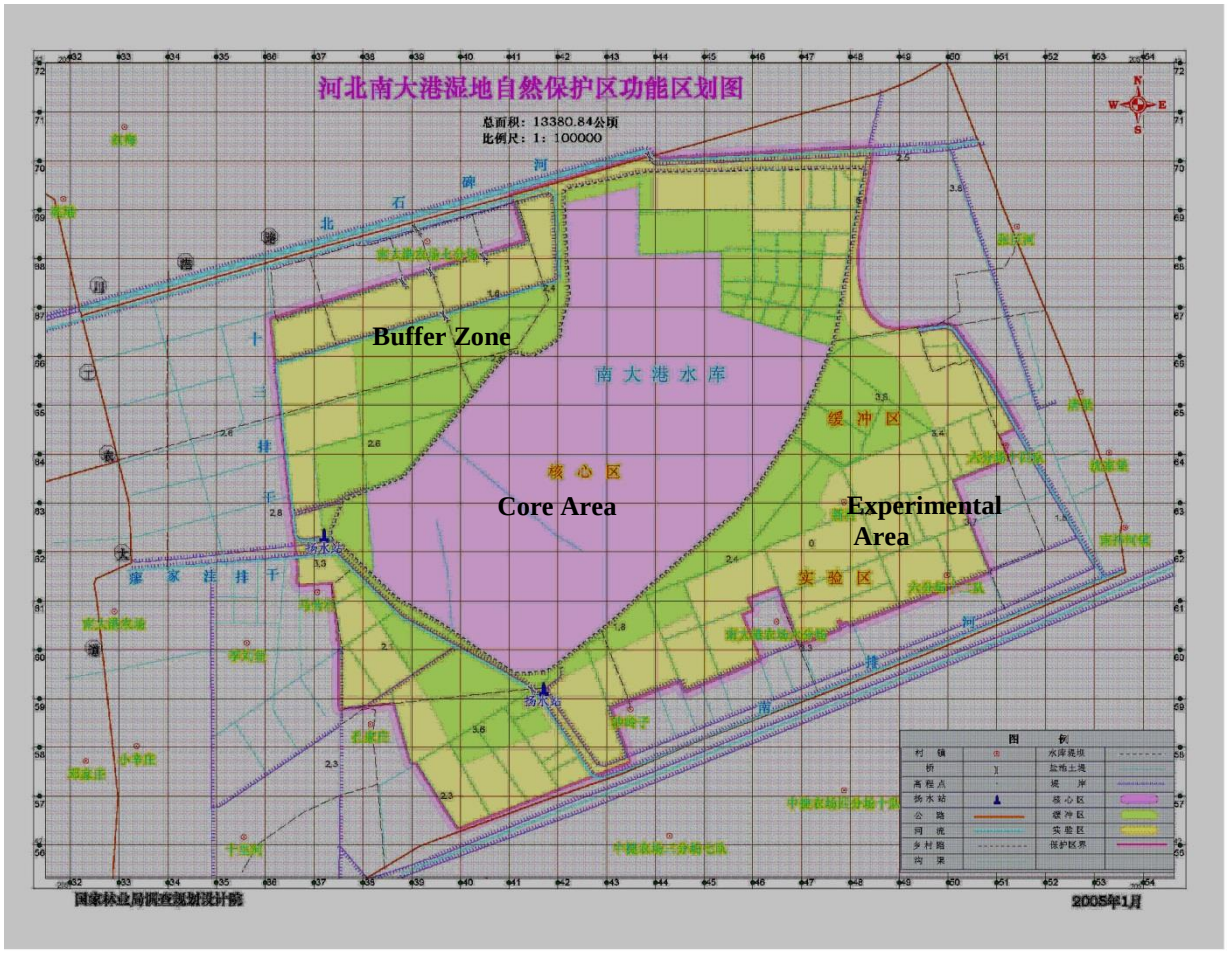

Figure 2. Zone and boundary map of Nandagang Wetland Nature Reserve**.**

Appendix 2: Peak counts of all shorebirds in 2000-2005 at Nandagang Wetland Nature Reserve. Species in **bold underlined red** meet the 1% criteria, and in **bold blue** meet the 0.25% staging criteria. Five additional species have migration period counts that exceed the staging criteria, but these species occur elsewhere in the region during winter and thus migration period counts might not all be migrating birds.

No	Chinese name	English name & (*Scientific name*)	1% and (0.25%) criteria *	Peak count ‡	Date	Site	Reference
1	蛎鹬	Eurasian Oystercatcher (*Haematopus ostralegus osculans*)	250 (63)	35	16/09/2003	Jiuchenzi, Sanniandabo	Liu Jingyi
2	黑翅长脚鹬	**Black-winged stilt** (*Himantopus himantopus*)	250 (63)	**2100**	**24/04/2001**	Jiuchenzi, Tianshuibo	Liu Zhenjie
			250	**1300**	**27/08/2004**	Qianshuitan, Chewuxiang	Liu Zhenjie
			250	**2600**	**22/04/2005**	Tianshuibo, Chewuxiang	Zhao Guocai
			250	**3500**	**06/05/2002**	Tianshuibo, Datangjiao	Lu Shunhua
3	反嘴鹬	Pied Avocet (*Recurvirostra avosetta*)	1 000 (250)	320	20/04/2003	Wawaxiang, Tianshuibo, Datangjiao	Liu Zhenjie
4	普通燕鸻	Oriental Pratincole (*Glareola maldivarum*)	20 000 (5 000)	360	16/05/2001	Daqingwa, Luweiba, Guanwa	Liu Jingyi
5	凤头麦鸡	**Northern Lapwing** (*Vanellus vanellus*)	1 000 (250)	**1780**	**28/03/2002**	Sinian, Xiaoqingwa, Lichendian, Tianshuibo, Datangjiao	Lu Shuhua
6	灰头麦鸡	Grey-headed Lapwing (*Vanellus cinereus*)	250 (63)	59	06/04/2001	Sanzhayan, Tianshuibo	Liu Zhenjie
7	灰斑鸻	Grey Plover (*Pluvialis squatarola*)	1 250 (313)	380	07/04/2003	Qianshuitan, Jiuchenzi	Zhang Yanwei
8	金[斑]鸻	**Pacific Golden Plover** (*Pluvialis fulva*)	1 000 (250)	**260**	**10/04/2004**	Qianshuitan, Jiuchenzi	Zhao Guocai
9	长嘴剑鸻	Long-billed Ringed Plover (*Charadrius placidus*)	100 (25)	6	10/04/2002	Qianshuitan, Jiuchenzi	Meng Derong
10	金眶鸻	**Little Ringed Plover** (*Charadrius dubius curonicus*)	250 (63)	**320**	**06/04/2001**	Qiuchenzi, Sanniandabo	Liu Zhenjie
11	环颈鸻	**Kentish Plover** (*Charadrius alexandrinus dealbatus*)	1 100 (275)	**4100**	**20/04/2003**	Tianshuibo, Sizhayan, Chewuxiang	Meng Derong
			1 100	**3 300**	**10/04/2002**	Qiuchenzi, Sanniandabo	Zhang Yanwei

No	Chinese name	English name & (*Scientific name*)	1% and (0.25%) criteria *	Peak count ‡	Date	Site	Reference
			1 100	**1 500**	**12/04/2005**	Qianshuitan, Jiuchenzi	Zhao Guocai
12	蒙古沙鸻	Lesser Sand Plover (*Charadrius mongolus*)	1 400 (350)	36	10/04/2002	Jiuchenzi, Sanniandabo	Zhang Yanwei
13	铁嘴沙鸻	Greater Sand Plover (*Charadrius leschenaultii leschenaultii*)	1 100 (275)	169	08/04/2001	Jiuchenzi, Sanniandabo	Meng Derong
14	丘鹬	Eurasian Woodcock (*Scolopax rusticola*)	250 (63)	12	10/04/2000	Sinian, Dataizi	Lu Shuhua
15	针尾沙锥	Pintail Snipe (*Gallinago stenura*)	250 (63)	180	07/04/2002	Chewuxiang, Qianshuitan	Zhang Yanwei
16	扇尾沙锥	Common Snipe (*Gallinago gallinago*)	1 000 (250)	460	10/04/2000	Chewuxiang, Qianshuitan	Meng Derong
17	半蹼鹬	Asian Dowtwicher (*Limnodromus semipalmatus*)	240 (60)	8	27/08/2004	Chewuxiang, Qianshuitan	Liu Zhenjie
18	小杓鹬	Little Curlew (*Numenius minutus*)	1 800 (450)	7	06/10/2002	Qianshuitan, Jiuchenzi, Tianshuibo	Zhang Yanwei
19	中杓鹬	Whimbrel (*Numenius phaeopus variegates*)	1 000 (250)	240	07/04/2003	Chewuxiang, Sizhayan	Zhang Yanwei
20	白腰杓鹬	Eurasian Curlew (*Numenius arquata*)	400 (100)	140	12/03/2002	Chewuxiang, Sizhayan	Liu Zhenjie
21	红腰杓鹬	Far Eastern Curlew (*Numenius madagascariensis*)	380 (95)	62	06/03/2000	Chewuxiang, Sizhayan	Lu Shuhua
22	黑尾塍鹬	**Black-tailed Godwit** *(Limosa limosa)*	1 600 (400)	**1800**	**20/04/2002**	Jiuchenzi, Sanniandabo, Qianshuitan	Liu Jingyi
			1 600	**1600**	**19/04/2005**	Jiuchenzi, Qianshuitan	
23	斑尾塍鹬	Bar-tailed Godwit *(L. lapponica menzbieri /baueri)*	1500/1700 (813)	170	19/04/2005	Jiuchenzi, Sanniandabo, Qianshuitan	Meng Derong
24	鹤鹬	**Spotted Redshank** *(Tringa erythropus)*	250 (63)	**1200**	**10/04/2003**	Qianshuitan, Jiuchenzi, Chewuxiang	Liu Jingyi
25	红脚鹬	**Common Redshank** (*Tringa totanus*)	1 000 (250)	**1300**	**15/04/2000**	Qianshuitan, Jiuchenzi, Chewuxiang	Lu Shuhua
26	泽鹬	**Marsh Sandpiper** (*Tringa stagnatilis*)	1 000 (250)	**3200**	**24/04/2001**	Datangjiao, Chewuxiang, Qianshuitan	Liu Zhenjie
27	青脚鹬	Common Greenshank (*Tringa nebularia*)	600 (150)	50	25/04/2002	Datangjiao, Chewuxiang, Qianshuitan	Zhang Yanwei

No	Chinese name	English name & (*Scientific name*)	1% and (0.25%) criteria *	Peak count ‡	Date	Site	Reference
28	白腰草鹬	Green Sandpiper (*Tringa ochropus*)	250 (63)	85	15/04/2003	Datangjiao, Qianshuitan, Wawaxiang	Zhang Yanwei
29	林鹬	Wood Sandpiper (*Tringa glareola*)	1 000 (250)	21	12/04/2005	Qianshuitan, Jiuchenzi, Chewuxiang	Zhao Guocai
30	矶鹬	**Common Sandpiper** (*Tringa hypoleucos*)	250 (63)	**110**	**10/04/2004**	Datangjiao, Qianshuitan, Wawaxiang	Meng Derong
31	翘嘴鹬	**Terek Sandpiper** (*Tringa cinereus*)	600 (150)	**364**	**06/04/2003**	Datangjiao, Qianshuitan, Jiuchenzi	Liu Zhenjie
32	翻石鹬	**Ruddy Turnstone** (*Arenaria interpres*)	350 (88)	**265**	**03/04/2003**	Jiuchenzi, Qianshuitan	Zhang Yanwei
33	大滨鹬	Great Knot (*Calidris tenuirostris*)	3 750 (938)	370	20/04/2001	Qianshuitan, Jiuchenzi, Chewuxiang	Liu Jingyi
34	红腹滨鹬	Red Knot (*Caldris canutus*)	2 200 (550)	320	22/04/2005	Qianshuitan, Jiuchenzi, Chewuxiang	Zhao Guocai
35	红颈滨鹬	**Red-necked stint** (*Calidris ruficollis*)	3 250 (813)	**3 100**	**20/04/2002**	Qianshuitan, Jiuchenzi, Chewuxiang	Zhang Yanwei
36	青脚滨鹬	**Temminck's Stint** (*Calidris temminckii*)	250 (63)	**83**	**10/04/2003**	Chewuxiang	Zhang Yanwei
37	长趾滨鹬	Long-toed Stint (*Calidris subminuta*)	250 (63)	36	25/03/2004	Chewuxiang	Meng Derong
38	尖尾滨鹬	**Sharp-tailed Sandpiper** (*Calidris acuminata*)	1 600 (400)	**2 450**	**25/04/2000**	Datangjiao, Chewuxiang, Qianshuitan	Lu Shuhua
39	黑腹滨鹬	Dunlin (*Calidris alpina*)	9 500 (2 380)	2 200	22/04/2002	Qianshuitan, Jiuchenzi, Chewuxiang	Zhang Yanwei
40	弯嘴滨鹬	**Curlew Sandpiper** (*Calidris ferruginea*)	1 800 (450)	**1 350**	**12/04/2005**	Qianshuitan, Jiuchenzi, Chewuxiang	Zhao Guocai
41	阔嘴鹬	Broad-billed Sandpiper (*Limicola falcinellus sibirica*)	250 (63)	39	20/04/2004	Jiuchenzi, Chewuxiang	Meng Derong

* Population estimates and 1% criteria from Wetlands International (2002) and Bamford *et al* (In Press).

‡ Maximum Counts from Nandagang Wetland Nature Reserve Database.

Appendix 3: Other waterbirds that meet 1% criteria in 2000-2005 at Nandagang Wetland Nature Reserve.

No	Chinese name	English name	1% criteria	Peak count	Date	Site
1	卷羽鹈鹕	Dalmatian Pelican	1	2	20/11/2002	Datangjiao
2	黑鹳	Blank Stork	1	6	28/03/2004	Datangjiao
3	东方白鹳	Oriental White Stork	30	278	16/03/2004	Luweiba, Daqingwa
4	灰鹤	Common Crane	110	125	06/12/2003	Wawaxiang, Daqingwa, Luweiba
5	白枕鹤	White-naped Crane	40	153	12/03/2003	Wawaxiang, Daqingwa, Luweiba
6	白琵鹭	Eurasian Spoonbill	65	68	03/11/2002	Datangjiao, Daqingwa
7	豆雁	Bean Goose	600/550	4 500	28/11/2004	Datangjiao, Luweiba, Daqingwa, Lic
8	绿翅鸭	Common Teal	8 000	8 500	12/11/2003	Datangjiao, Daqingwa, Lichendian, Sanzhayan, Tianshuibo, Jiuchenzi
9	鹊鸭	Common Goldeneye	750	1 240	15/11/2001	Datangjiao, Wawaxiang, Jiuchenzi, Sanzhayan, Tianshuibo