

DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

INTRODUCTION

Area: 121,248 sq.km.

Population: 16,651,000 (1977).

Summary of Wetland Situation

Most of the Democratic People's Republic of Korea is mountainous, and the only large wetland areas are situated along the west coast around the northeastern shore of Korea Bay, and in the southwest near the Imjin and Han estuaries. Here there are numerous estuarine systems with extensive intertidal mudflats, many small offshore islands, and large areas of saltpans. Inland, there is a broad coastal plain with many small lakes and water storage reservoirs, large areas of rice paddies and extensive reed marshes. The marshy coastal plain is especially well developed around the estuaries of the Chongchon-Gang, Taedong and Imjin Rivers.

Much of the country's east coast on the Sea of Japan is mountainous, and wetlands are confined to a few small delta and estuarine systems. Several of the estuaries have been naturally dammed to form saline lakes, which are gradually decreasing in salinity.

There are over a hundred natural lakes in the country, but most are very small, and the largest, Sobon-po, is only 1,612 ha in area. However, there are about 1,700 water storage reservoirs, most of which were constructed for agricultural purposes. The largest of these are Supung-ho (30,000 ha) and Unbong-ho (10,488 ha). Small lakes of volcanic origin in the mountains along the Chinese border in the north are of considerable geological and limnological interest, and there are some small mountain bogs of great botanical interest in the northern highlands.

Despite the relative paucity of wetlands, the Democratic People's Republic of Korea possesses a rich wetland fauna and flora. About 840 species of fishes and 14 species of amphibians are known to occur. The avifauna of the Korean Peninsula includes some 393 species, of which no less than 145 species are waterfowl. The great majority of these occur in the D.P.R.K. The extremely rare Crested This *Nipponia nippon* and Crested Shelduck *Tadorna cristata* were both recorded as recently as the 1970s. There are important breeding populations of the endangered Chinese Egret *Egretta eulophotes* (several hundred birds) and Black-faced Spoonbill *Platalea minor* (about 30 birds) on islands off the northwest coast, and the Scaled Merganser *Mergus squamatus* has recently been observed during the breeding season in the mountains in the northeast. Between 250 and 290 Red-crowned Cranes *Grus japonensis* spend the winter on the marshy plains in the south, and two other rare cranes, the Hooded Crane *C. monacha* and White-naped Crane *G. vipio*, occur in large numbers on passage. Other rare waterfowl which have been reported on passage or in winter include *Ciconia (ciconia) boyciana*, *Anas formosa*, *Tringa guttifer*, *Eurynorhynchus pygmeus* and *Larus saundersi*.

Considerable strides have been made in the preservation of the nation's fauna and flora. There are now seven Nature Protection Areas covering more than 75,000 ha, as well as 15 Animal Protection Areas, six Breeding Seabird Protection Areas, 15 Plant Protection Areas

and four Aquatic Resources Protection Areas. One of the Nature Protection Areas, the 14,000 ha Paekdu Nature Protection Area in the mountains of Ryanggang Province, includes two important lakes, while four of the Breeding Seabird Protection Areas are important for waterfowl as well as seabirds. The four Aquatic Resources Protection Areas have been established to protect populations of scallops, abalone, oysters and char, respectively. Many rare species of animals and plants and their habitats have been designated as Natural Monuments, as also have numerous features of special geological or geographical interest. Natural Monuments were first designated in April 1946, and by early 1980, a total of 394 had been created. Wetlands and their fauna and flora are well represented in this system. The 68 Geographical Natural Monuments include eight natural lakes, 14 waterfalls and 11 scenic stretches of coastline, while the 48 Geological Natural Monuments include ten hot springs and four other mineral springs. In addition, several rare species of waterfowl such as *Grus japonensis*, two species of amphibians, nine large breeding colonies of herons and egrets, and at least five important wintering areas for *Grus japonensis* and *G. vipio* have been designated as Natural Monuments.

At the same time, considerable efforts have been made to increase public awareness to the importance of nature conservation. Various special campaigns have been launched, including a month-long tree-planting campaign and a "Bird Month".

Wetland Research

Faunal and floral surveys have been carried out over most of the country, and vegetation maps are being prepared province by province. A considerable amount of attention has been given to the wintering Red-crowned Cranes, and in recent years some studies have been carried out on other rare waterfowl, but there do not appear to have been any detailed investigations specifically related to the nation's wetland ecosystems.

Wetland Area Legislation

In April 1946, the Government passed the necessary legislation to create Natural Monuments and designated the first sites. Since then, relevant legislation has included the following: Cabinet Decisions No. 29 of February 1959 and No. 17 of May 1961 concerning the protection and breeding of useful animals and plants; Cabinet Decision No.93 of May 1961 concerning the conservation and management of scenic areas and Natural Monuments; and Presidential Orders No. 1 of July 1973 and No. 7 of October 1976 which further strengthened the preservation of Natural Monuments. In October 1976, a Resolution of the Council of Ministers (Cabinet Decision No.55) designated 45 Protection Areas. Two more Protection Areas have been designated since then, bringing the total by January 1987 to 47. Further Natural Monuments were designated in December 1979, and in February 1980 Cabinet Instruction No. 27 brought the total number of Natural Monuments to 394 (192 for plants, 86 for animals, 68 for geographical features and 48 for geological features).

Wetland Area Administration

The Academy of Sciences has equivalent status to a Ministry and has the power of deciding whether areas should be afforded protection. The management of nature reserves is the responsibility of the Department of Forest Management. The Government of the D.P.R.K. is currently considering whether to accede to the World Heritage Convention. If it does, the Department of Conservation in the Ministry of Culture and Arts would have responsibility for the Convention.

Organizations involved with Wetlands

a) Governmental Organizations

- Korean Academy of Sciences

The agency which decides whether or not areas should be protected. The Institute of Botany, Institute of Zoology, Institute of Forestry and Institute of Environmental Protection carry out research on the country's wildlife and natural resources. The Man and the Biosphere National Committee is based at the Academy.

- Department of Conservation, Ministry of Culture and Art

The agency responsible for the World Heritage Convention.

- Department of Forest Management

Responsible for the management of nature reserves.

- Union for Nature Conservation of the Democratic People's Republic of Korea

The Union is an umbrella organization incorporating the Animal Society, the Plant Society, the Gardening Society and the Aquatic Resources Society. It was founded as the Korean Gardening and Forestry Society in November 1959, and given its present name in March 1965.

- Animal Conservation Society

b) Non-governmental Organizations

There do not appear to be any non-governmental organizations concerned with environmental conservation or nature protection in the Democratic People's Republic of Korea.

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WETLANDS

Site descriptions based on wetland data sheets provided by Chung Jong Ryol and colleagues.

Wetland name: Lake Chon-ji

Country: Democratic People's Republic of Korea

Coordinates: 42°00'N, 128°04'E;

Location: on Mount Paekdu-san, on the border of the Peoples's Republic of China, Samjiyon County, 65 km north of Hyesan, Ryanggang Province.

Area: 921 ha.

Altitude: 2,257m.

Biogeographical Province: 2.14.5.

Wetland type: 14.

Description of site: A very clear crater lake near the summit of Mount Paekdu (2,744m), with a maximum depth of 384m. The lake is fed by local run-off and snow melt, and is covered by thick ice in winter. It is surrounded by cliffs about 500m high. The ash deposits around the lake have been dissected by water erosion and locally shaped into ridges by wind action.

Climatic conditions: Cold temperate climate with an average annual rainfall of 1,200 mm, and a mean annual temperature of -2.0°C.

Principal vegetation: Alpine tundra-line vegetation composed of open sward of grasses, sedges and herbs, and scrub with *Rhododendron aureum*, *R. pavifolium*, *Betula ploty*, *Salix rotundifolia phylla*, *Oxytropis onertil* and *Abies holophylla*. Forests dominated by *Larix olgensis* on the lower slopes of the mountain.

Land tenure: State owned.

Conservation measures taken: The lake has been designated as a Natural Monument and is protected in a Strict Nature Reserve within the Paekdu Nature Protection Area (14,000 ha), established in October 1976. The Nature Protection Area also includes a Forest Reserve, Experimental and Scientific Reserve, and Protected Landscape. A management plan has been prepared for the Protection Area.

Conservation measures proposed: Paekdu Nature Protection Area has been nominated as a Biosphere Reserve. A Core Zone will be established on the upper part of the mountain above about 1,600m, and this will include the Crater Lake. A corridor for tourism and recreation will pass through the Core Zone to the mountain summit.

Land use: None, other than tourist recreation in the Nature Protection Area. There is a meteorological station on the nearby summit. Forests on the lower slopes of the mountain are exploited for timber.

Disturbances and threats: None known; the lake and upper slopes of the mountain remain in a substantially natural condition.

Economic and social values: A popular area for tourism and outdoor recreation.

Fauna: Fifty species of mammals and 138 species of birds have been recorded in the Nature Protection Area including the endangered Scaled Merganser *Mergus squamatus* and the fish *Saverinus malma curilus*.

Special floral values: The rich alpine tundra-like vegetation around the lake has arctic affinities and is of considerable botanical interest.

Research and facilities: The larger fauna and flora of the Nature Protection Area have been well documented, geological and soil surveys have been carried out, and a hydrological survey has conducted at the lake.

References: Poore (1986).

Criteria for inclusion: 1a, 2b.

Source: Chung Jong Ryol.

Wetland name: Lake Samjiyon

Country: Democratic People's Republic of Korea

Coordinates: 41°55'N, 128°10'E;

Location: below Mount Paekdu-san, Samjiyon County, 60 km north of Hyesan, Ryanggang Province.

Area: c.150 ha.

Altitude: 1,585m.

Biogeographical Province: 2.14.5.

Wetland type: 14.

Description of site: A natural freshwater lake with associated marshes (Samjiyon) and two other small lakes in a region of old ash fields at the lowest point in the valley between Mount Paekdu to the north and another volcanic vent (Bukpotee) to the south. Samjiyon Lake has a maximum depth of three metres, and is fed by local rainfall, snowmelt and several springs.

Climatic conditions: Cold temperate climate with an average annual rainfall of 922 mm, and a mean annual temperature of 0.4°C (January average -19.75°C, July average 16.5°C).

Principal vegetation: Mixed larch and birch forests dominated by *Larix olgensis*, with *Piceajezoensis*, *Abies nephrolepis*, *A. holophylla* and *Betula tauschii*; birch and pine scrub along streams.

Land tenure: State owned.

Conservation measures taken: The lake has been designated as a Natural Monument and is protected in the Paekdu Nature Protection Area (14,000 ha), established in October 1976. A management plan has been prepared for the Nature Protection Area.

Conservation measures proposed: Paekdu Nature Protection Area has been nominated as a Biosphere Reserve. The Samjiyon Lakes will be included in a large Buffer Zone of forest managed for timber production.

Land use: Tourism and other outdoor recreation; there is a tourist hotel by the lake. The surrounding larch forests are managed and exploited for timber.

Disturbances and threats: None known.

Economic and social values: A popular area for tourism and outdoor recreation.

Fauna: The lake is a breeding area for several species of waterfowl including *Aix galericulata*, *Anas platyrhynchos* and *Fulica atra*. Other waterfowl known to occur include *Podiceps nigricollis*, *Botaurus stellaris*, *Ixobrychus eurhythmus*, *Bucephala clangula*, the endangered Scaled Merganser *Mergus squamatus*, *Porzana paykulli*, *Gallinago solitaria* and *G. stenura*. Fifty species of mammals and 138 species of birds have been recorded in the Nature Protection Area. The mammals include *Canis lupus*, *Ursus arctos*, *Panthera pardus*, *Cervus nippon* and *Moschus moschiferus*. The fish *Saverinus malma curilus* also occurs in the area.

Special floral values: None known.

Research and facilities: The larger fauna and flora of the Nature Protection Area have been well documented, and geological and soil surveys have been carried out. The reserve has a staff of about 30, and there is an abundance of accommodation for scientists and tourists. There is no field station at present, but there are plans to construct one at Samjiyon.

References: Poore (1986); Tomek (1984).

Criteria for inclusion: 1b, 2b.

Source: Chung Jong Ryol.

Wetland name: Kanjan-Nup (Chongji) Swamp

Country: Democratic People's Republic of Korea

Coordinates: 41°12'N, 128°45'E;

Location: in Pegam County, 50 km ESE of Hyesan, eastern Ryanggang Province.

Area: 40 ha.

Altitude: 1,740m.

Biogeographical Province: 2.14.5.

Wetland type: 15 & 22.

Description of site: An area of marshes and peat bogs up to seven metres deep in the Hamgyong-Sanmaek Mountains. Nearby peaks rise to 2,309m.

Climatic conditions: Cold temperate climate with very severe winters.

Principal vegetation: Montane bog vegetation including endemic species such as *Pinguicula vulgaris* and *Eriophotumen latifolium*.

Land tenure: State owned.

Conservation measures taken: The area has been designated as a Natural Monument.

Land use: No information.

Disturbances and threats: None known.

Economic and social values: No information.

Fauna: No information.

Special floral values: A good example of a Korean mountain bog with many plant species endemic to this very restricted habitat type.

Criteria for inclusion: 1a, 2d.

Source: Chung Jong Ryol.

Wetland name: Mayang Chosuji

Country: Democratic People's Republic of Korea

Coordinates: Approximately 42°25'N, 129°45'E;

Location: about 70 km north of Chongjin, Musan County, North Hamgyong Province.

Area: Unknown.

Altitude: c.300m.

Biogeographical Province: 2.14.5.

Wetland type: 17.

Description of site: A water storage reservoir on a tributary of the Tumen River. The reservoir is situated in forested hills near the Chinese border, at the north end of the Hamgyong-Sanmaek Mountains.

Climatic conditions: Temperate climate with cold winters and a rainy season in summer.

Principal vegetation: No information.

Land tenure: State owned.

Conservation measures taken: The reservoir has been designated as a Natural Monument to protect a land-locked population of trout. Fishing is prohibited, and the felling of trees around the reservoir is banned by the Government.

Land use: No information.

Disturbances and threats: None known; the area is apparently well protected.

Economic and social values: No information.

Fauna: Almost certainly a breeding area for the endangered Scaled Merganser *Mergus squamatus*. A pair was observed in breeding display in May 1986, and at least one other bird was present at the same time. The reservoir contains an interesting land-locked population of trout.

Special floral values: No information.

Research and facilities: Some avifaunal studies have been carried out in the area.

References: Chung Jong Ryol (1987).

Criteria for inclusion: 2a.

Source: See references.

Wetland name: Unggi Lakes

Country: Democratic People's Republic of Korea

Coordinates: 42°20'N, 130°35'E;

Location: on the border with the U.S.S.R., 10-20 km east of Unggi and 90 km northeast of Chongjin, North Hamgyong Province.

Area: c.3,000 ha.

Altitude: 0-5m.

Biogeographical Province: 2.14.5.

Wetland type: 02, 06, 08 & 14.

Description of site: The estuarine and delta system of the Tumen River, with three fresh to brackish lakes of 1,800, 650 and 100 ha respectively, many smaller lakes, extensive fresh to brackish marshes, and intertidal mudflats; contiguous with a larger area of similar wetlands in the northern part of the delta across the border in the U.S.S.R.

Climatic conditions: Temperate climate with very cold winters.

Principal vegetation: No information.

Land tenure: State owned.

Conservation measures taken: None.

Land use: No information.

Disturbances and threats: No information.

Economic and social values: No information.

Fauna: No information.

Special floral values: No information.

Criteria for inclusion: 0.

Source: Operational Navigation Charts.

Wetland name: Changyong-Ho

Country: Democratic People's Republic of Korea

Coordinates: 41°23'N, 129°40'E;

Location: Ryon Pyon-Ri, Oran County, 45 km south of Chongjin, North Hamgyong Province.

Area: 816 ha.

Altitude: Sea level.

Biogeographical Province: 2.14.5.

Wetland type: 08.

Description of site: A brackish lake and associated marshes, formed by the natural damming of a shallow sea bay on the coastal plain west of the mouth of the Oranchon River. The lake is fed by a branch of the Oranchon River, and the water level fluctuates considerably throughout the year. The lake reaches a maximum depth of 39m in July and August; it is at its lowest level in January and February, reaches another high level with the spring thaw in March and April, and then falls rapidly to another low in May and June before the onset of the summer rains. The lake is completely covered by ice, up to 18 cm thick, from mid December throughout the winter, the thaw commencing in late March.

Climatic conditions: Temperate climate with very cold winters and a rainy season in summer.

Principal vegetation: No information is available on the aquatic vegetation; there are cultivated fields (root crops and rice) and young plantations of mixed forest in adjacent areas.

Land tenure: State owned.

Conservation measures taken: The area has been designated as a Natural Monument.
Land use: Fish culture and duck farming; agriculture and forestry in surrounding areas.
Disturbances and threats: No information.
Economic and social values: The lake is of considerable scientific interest for the study of geological phenomena such as volcanic activity, movement of the earth's crust, erosion, and the accumulation of salt and changes in salinity in a natural inland sea-lake.
Fauna: An important breeding and staging area for migratory waterfowl, notably herons and ducks. Breeding species include *Butorides striatus*, *Ardea cinerea*, *Anas poecilorhyncha*, *Gallinula chioropus* and possibly *Sterna hirundo*. A party of six Crested Shelducks *Tadorna cristata* was observed at the mouth of the Pouchon River, 40 km to the south of Changyong-Ho, at the end of March 1971 (0 Myong Sok, 1984). This is the last recorded observation of this poorly known and extremely rare duck, which may now be extinct.
Special floral values: No information.
References: 0 Myong Sok (1984); Tomek (1985).
Criteria for inclusion: 1b, 3b.
Source: Chung Jong Ryol.

Wetland name: Muge-Ho
Country: Democratic People's Republic of Korea
Coordinates: 41°21'N, 129°44'E;
Location: Muge-Ri, Oran County, 48 km south of Chongjin, North Hamgyong Province.
Area: 250 ha.
Altitude: Sea level.
Biogeographical Province: 2.14.5.
Wetland type: 08.
Description of site: A brackish lake and associated marshes, formed by the natural damming of a shallow sea bay on the coastal plain east of the mouth of the Oranchon River. The lake is fed by a branch of the Oranchon River, and the water level fluctuates by about 3m according to the flow in the river. The lake reaches a maximum depth of 7m during the rainy season in July and August; at low water levels in January and February, the surface area is reduced to 182 ha. The lake is completely frozen over in winter (mid-December to late March).
Climatic conditions: Temperate climate with very cold winters and a rainy season in summer.
Principal vegetation: No information.
Land tenure: State owned.
Conservation measures taken: The area has been designated as a Natural Monument.
Land use: No information; agriculture, including rice-growing, and forestry in surrounding areas.
Disturbances and threats: No information.
Economic and social values: No information.
Fauna: An important breeding and staging area for migratory waterfowl, notably herons and ducks.
Special floral values: No information.
Criteria for inclusion: 1b, 3b.
Source: Chung Jong Ryol.

Wetland name: Ryonghung-Gang Estuary
Country: Democratic People's Republic of Korea
Coordinates: 39°49'N, 127°34'E;

Location: Hejug-Ri, Kumyan County, west of the cities of Hamhung and Hungnam, South Hamgyong Province.

Area: c.10, 000 ha.

Altitude: 0-5m.

Biogeographical Province: 2.14.5.

Wetland type: 02, 06, 08, 11, 13 & 19.

Description of site: The lower reaches, riverine marshes and estuarine mudflats of the Ryonghung River, with the cities of Hamhung and Hungnam on the eastern shore. The river rises in the Nangnim Sanmaek Mountains to the north, and there are large areas of rice paddies along the lower reaches extending to the estuary.

Climatic conditions: Temperate climate with very cold winters and a rainy season in summer.

Principal vegetation: Freshwater marshes, brackish estuarine marshes and rice paddies.

Land tenure: State owned.

Conservation measures taken: None.

Conservation measures proposed: There is a proposal to designate the estuary as a Natural Monument.

Land use: No information; rice-growing in surrounding areas.

Disturbances and threats: No information.

Economic and social values: No information.

Fauna: An important staging area for migratory waterfowl, notably Red-crowned Cranes *Grus japonensis*, and a wintering area for *Cygnus cygnus*.

Special floral values: No information.

References: Chung Jong Ryol (1987); Pak U Il (1987).

Criteria for inclusion: 2a, 3b.

Source: Chung Jong Ryol.

Wetland name: Kwan-Po

Country: Democratic People's Republic of Korea

Coordinates: 39⁰46'N, 127⁰30'E;

Location: 10 km south of Hungnam City, Chongpyong County, South Hamgyong Province.

Area: 1,064 ha.

Altitude: Sea level.

Biogeographical Province: 2.14.5.

Wetland type: 08.

Description of site: A brackish lake, 0.8-1.5m deep, and associated marshes, formed by the natural damming of an estuarine system; the largest inland sea-lake in Korea. The lake is fed by the Wonsuchon and Pupyorchon Rivers, which rise in the hills to the west.

Climatic conditions: Temperate climate with cold winters and a rainy season in summer.

Principal vegetation: Brackish marshes; rice paddies in surrounding areas.

Land tenure: State owned.

Conservation measures taken: The lake has been designated as a Natural Monument, as has the nearby breeding colony of herons and egrets at Sondok-ri.

Land use: Fish culture and duck farms; agriculture (rice-growing) in surrounding areas.

Disturbances and threats: No information.

Economic and social values: The lake is of considerable scientific interest for the study of geological phenomena such as the movement of the earth's crust, processes of erosion and changes in salinity.

Fauna: An important breeding area for ducks, and an important staging and wintering area for a wide variety of waterfowl. *Grus japonensis* and *G. vipio* often occur on passage. There is a very large breeding colony of egrets *Egretta* spp and Grey Herons *Ardea cinerea* in a two ha pine forest at Sondok-ri, not far from the lake. Several thousand birds are present at the colony during the breeding season.

Special floral values: No information.

References: Chung Jong Ryol (1987).

Criteria for inclusion: 1b, 3b.

Source: Chung Jong Ryol.

Wetland name: Shijun-Ho

Country: Democratic People's Republic of Korea

Coordinates: 39°06'N, 127°45'E;

Location: Kanwon-Ri, Tongchon County, 25 km east of Wonsan, Kangwon Province.

Area: 230 ha.

Altitude: Sea level.

Biogeographical Province: 2.15.5.

Wetland type: 08.

Description of site: A saline lake, up to 3.5m deep, and associated marshes on the narrow coastal plain south of Yonghung Bay, with two smaller lakes to the south. The lake is fed by run-off from hill ranges to the south and west.

Climatic conditions: Temperate climate with cold winters and a rainy season in summer.

Principal vegetation: Brackish marshes; rice paddies to the southeast.

Land tenure: State owned.

Conservation measures taken: The lake and a nearby breeding colony of herons and egrets (Ryonsan-ri) have been designated as Natural Monuments.

Land use: Outdoor recreation and tourism; agriculture in surrounding areas.

Disturbances and threats: No information.

Economic and social values: The lake is a popular tourist resort.

Fauna: An important wintering area for waterfowl, notably *Ardea cinerea*, *Cygnus cygnus*, *C. olor*, *Anser fabalis* and many ducks. In summer, the lake is an important feeding area for large numbers of *Larus crassirostris* from a breeding colony on a nearby offshore island. There is a breeding colony of egrets *Egretta* spp and Grey Herons *Ardea cinerea* at Ryonsan-ri, not far from the lake.

Special floral values: No information.

References: Chung Jong Ryol (1987); Tomek (1984).

Criteria for inclusion: 1b, 3b.

Source; Chung Jong Ryol.

Wetland name: Samil-Po

Country: Democratic People's Republic of Korea

Coordinates: 38°44'N, 128°12'E;

Location: Samil-Po-Ri, Kosong County, 80 km ESE of Wonsan, Kangwon Province.

Area: 676 ha.

Altitude: Sea level.

Biogeographical Province: 2.15.5.

Wetland type: 14, 19, 20 & 22.

Description of site: A freshwater lake, up to 4.2m deep, and associated marshes on a narrow coastal plain with hills rising steeply to over 1,600m in the west; in a region of wet meadows, peat bogs, old peat cuttings and rice paddies. The lake is fed by the Nam-gang River.

Climatic conditions: Temperate climate with cold winters and a rainy season in summer; the average annual rainfall is 1,580 mm and the mean annual temperature 11°C.

Principal vegetation: Freshwater marshes; wet thickets, wet meadows and rice paddies in surrounding areas. Land tenure: State owned.

Conservation measures taken: The lake has been designated as a Natural Monument.

Land use: Outdoor recreation and tourism; agriculture (mainly rice-growing) in surrounding areas.

Disturbances and threats: No information.

Economic and social values: The lake is a popular tourist resort.

Fauna: An important wintering area for waterfowl, notably *Grus japonensis* (50-70 in recent years) and *Cygnus cygnus*, and a breeding area for several species including *Porzana fusca*.

Special floral values: No information.

References: Chung Jong Ryol (1987); Pak U Il (1987); Tomek (1984).

Criteria for inclusion: 1b, 2a.

Source: Chung Jong Ryol.

Wetland name: Chongchon-Gang Estuary

Country: Democratic People's Republic of Korea

Coordinates: 39°43'N, 125°24'E;

Location: Tongrim-Ri, Mundok County, 65 km NNW of Pyongyang, South Pyongan Province.

Area: c.30, 000 ha.

Altitude: Sea level.

Biogeographical Province: 2.14.5.

Wetland type: 02, 06, 08, 11, 13 & 19.

Description of site: The estuarine system of the Chongchon-Gang River, with extensive estuarine marshes and intertidal mudflats, large areas of rice paddies, and a marshy low-lying island; at the northeastern extremity of Korea Bay.

Climatic conditions: Temperate climate with cold winters and a rainy season in summer.

Principal vegetation: Fresh to brackish marshes and rice paddies.

Land tenure: State owned.

Conservation measures taken: None.

Conservation measures proposed: There is a proposal to establish a Natural Monument at the wetland.

Land use: No information.

Disturbances and threats: No information.

Economic and social values: No information.

Fauna: An important staging area for a wide variety of waterfowl, particularly the cranes *Grus monacha*, *G. japonensis* and *G. vipio*. Over 1,000 *G. monacha* were recorded in March 1981, and large numbers were again present in the spring of 1983, 1984 and 1985. The birds roost along the lower reaches of the Chongchon-Gang, and feed in nearby rice paddies. A few White Storks *Ciconia (ciconia) boyciana* have occurred on passage and in winter in recent years. Other rare species of waterfowl occurring on passage include *Egretta eulophotes*, *Platalea minor* and *Anser cygnoides*.

Special floral values: No information.

References: Chung Jong Ryol (1987).

Criteria for inclusion: 1b, 2a, 3b.

Source: Chung Jong Ryol.

Wetland name: Tegam-do, Sogam-do and Sonchonrap-to

Country: Democratic People's Republic of Korea

Coordinates: 39°25'-39°42'N, 124°24'-124°39'E;

Location: 10-20 km off the northeast coast of Korea Bay, 45-85 km SSE of Shini-ju, Chongju and Sonchon Counties, North Pyongan Province.

Area: Several hundred ha.

Altitude: Sea level to 264m.

Biogeographical Province: 2.14.5.

Wetland type: 03.

Description of site: A group of small rocky islands in the northeastern part of Korea Bay, comprising an archipelago of ten islands (including Tegam-do and Sogam-do) in the southeast and the two islands of Sonchonrap-to (Rap-to and Sorap-to) in the northwest. Tegam-do is 600m long and 300 wide; Sogam-do is a rugged island with steep cliffs and some tree and scrub cover; Rap-to is 2,000m long and 450m wide and is devoid of trees; Sorap-to is 500m long and 250m wide and is mostly rocky.

Climatic conditions: Temperate climate with cold winters and a rainy season in summer.

Principal vegetation: No information.

Land tenure: State owned.

Conservation measures taken: The islands have been designated as Breeding Seabird Protection Areas to protect breeding colonies of egrets, spoonbills and seabirds (Tegam-do Breeding Seabird Protection Area and Sonchonrap-to Breeding Seabird Protection Area).

Land use: No information.

Disturbances and threats: None known.

Economic and social values: No information.

Fauna: The islands are important for their breeding Chinese Egrets *Egretta eulophotes*, Black-faced Spoonbills *Platalea minor* and sea-birds. Some 50-60 *E. eulophotes* and a few pairs of *P. minor* breed on Tegam-do; 40-50 pairs of *E. eulophotes* and several pairs of *P. minor* breed on Sogam-do; some *E. eulophotes* breed on Sorap-to; and a few *P. minor* breed on other islands in the group. The total population of *E. eulophotes* in the islands is estimated at about 200-250 birds. The egrets nest in low trees or on the ground in low vegetation, and feed on tidal mudflats amongst the islands, usually within seven or eight km of the nesting sites. The spoonbills nest on cliff ledges. Other breeding birds include Streaked Shearwater *Calonectris leucomelas* (on Rap-to), Temminck's Cormorant *Phalacrocorax filamentosus* (several thousands on Sorap-to), Oystercatcher *Haematopus ostralegus*, Black-tailed Gull *Larus crassirostris* (tens of thousands), Rhinoceros Auklet *Cerorhinca monocerata* (on Rap-to) and White-rumped Swift *Apus pacificus*.

Special floral values: No information.

Research and facilities: A study has been made of the breeding Chinese Egrets.

References: Chung Jong Ryol (1987).

Criteria for inclusion: 1b, 2a.

Source: See references.

Wetland name: Taedong Estuary and Taesong-Ho

Country: Democratic People's Republic of Korea

Coordinates: 38°40'-39°00'N, 125°05'-125°30'E;

Location: in the region of Nampo, 50 km southwest of Pyongyang, South Pyongan and South Hwanghae Provinces.

Area: c.70,000 ha.

Altitude: 0-5m.

Biogeographical Province: 2.14.5.

Wetland type: 02, 03, 06, 08, 09, 11, 13, 14 & 19.

Description of site: The estuarine and floodplain system of the Taedong River, with extensive fresh to saline marshes, salt pans and intertidal mudflats in the estuary, and several shallow freshwater lakes, associated marshes and large areas of rice paddies on the adjacent plains. Taesong-Ho Lake (c.750 ha) lies on the west bank of the river some 15 km from the coast. The small island of Tok-to lies off the south coast of the outer estuary.

Climatic conditions: Temperate climate with cold winters and a rainy season in summer.

Principal vegetation: Fresh, brackish and saline marshes, wet thickets and rice paddies; agricultural land and coniferous and mixed forests in surrounding areas.

Land tenure: State owned.

Conservation measures taken: The island of Tok-to has been designated as a Breeding Seabird Protection Area.

Land use: Outdoor recreation and tourism.

Disturbances and threats: No information.

Economic and social values: No information.

Fauna: An important staging area for *Grus monacha*, *G. japonensis* and shorebirds, and a breeding area for a variety of waterfowl. Up to 300 Hooded Cranes *G. monacha* have been observed along the lower reaches of the Taedong River in March and October. A few Eastern White Storks *Ciconia (ciconia) boyciana* have occurred in winter in recent years. Several pairs of Black-faced Spoonbills *Platalea minor* breed on the island of Tok-to, along with Black-tailed Gulls *Larus crassirostris* and Rhinoceros Auklets *Cerorhinca monocerata*.

The coastal plains of Chosan and Onchon Counties to the north of the estuary are an important wintering area for Great Bustards *Otis tarda*. Flocks of up to 40-50 birds have been observed between mid-October and March.

Special floral values: No information.

References: Chung Jong Ryol (1987); Tomek (1984 & 1985).

Criteria for inclusion: 2a, 3b.

Source: See references.

Wetland name: Wetlands of South Hwanghae and Kaesong

Country: Democratic People's Republic of Korea

Coordinates: 37°45'-38°15'N, 125°00'-126°30'E;

Location: in Panmun County, Kaesong City, and Yonan,

Paechon, Taetan, Pyoksong, Ongjin, Kangryong, Ryongyon and Changkjon Counties, South Hwanghae Province.

Area: Unknown.

Altitude: 0-10m.

Biogeographical Province: 2.15.5.

Wetland type: 02, 06, 08, 11, 13, 14, 15 & 19.

Description of site: A vast area of marshy plains with scattered hill ranges, and numerous estuaries and bays with extensive intertidal mudflats extending west from the estuarine system of the Imjin and Han Rivers and Demilitarized Zone to the region of Changkjon on the southeastern shore of Korea Bay. There are many small lakes and reservoirs, large areas of reed-beds and rice paddies, and numerous hot springs, which maintain areas of open water throughout the winter.

Climatic conditions: Temperate climate with cold winters and a rainy season in summer.

Principal vegetation: Reed-beds and rice paddies.

Land tenure: State owned.

Conservation measures taken: At least six Natural Monuments have been established; four for wintering *Grus japonensis* and *G. vipio* (Kangryong, Panmun, Ongjin and Paechon), one for wintering waterfowl in general (Kumya), and one to protect a large breeding colony of *Ardea cinerea* (Sahyong-ri).

Land use: No information.

Disturbances and threats: No information.

Economic and social values: No information.

Fauna: An extremely important wintering area for Red-crowned Cranes *Grus japonensis* and many other species of waterfowl. Between 1979/80 and 1984/85, the wintering population of *G. japonensis* fluctuated between 193 and 219 individuals. The birds are concentrated in three main regions: Panmun-gun Panmunchom-ri and Rimhan-ri (32-85 birds); Kangryong-gun and Tongp-ri (60-113 birds); and Ongjin-gun and Ryongyon-gun (49-76 birds). White-naped Cranes *G. vipio* occur in large numbers on passage, and in recent years, a flock of 20-30 birds has wintered near Kaesong in Panmun County. Hooded Cranes *G. monacha* also occur on passage. A flock of 17 Eastern White Storks *Ciconia (ciconia) boyciana* appeared in Kangryong County in January 1981, and 5-6 birds have wintered in this area ever since. The estuarine marshes are very important for wintering Whooper Swans *Cygnus cygnus*, flocks of as many as 300-500 birds occurring in Kangryong and Ongjin Counties. Hundreds of Grey Herons *Ardea cinerea* nest in a group of thirteen old trees at Sahyong-ri near Pyoksong. The White-tailed Eagle *Haliaeetus albicilla* is a regular winter visitor. The extensive intertidal mudflats are presumably of considerable importance for migratory shorebirds, gulls and terns.

Special floral values: No information.

Research and facilities: Some studies have been carried out on the wintering cranes.

References: Chung Jong Ryol (1987); Kim & Oesting (1981); Pak U 11 (1987).

Criteria for inclusion: 2a, 3b.

Source: See references.

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