

# Information Sheet on Flyway Network Sites

## Notes for compilers:

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.

The Site Information Sheet has been divided into two sections. **Part 1 (Section 1-14) seeks basic information on the site and it is essential that it be completed.** Part 2 seeks additional information and is optional.

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. In this case the National Government Partner need only send a copy of the existing sheets with additional details on Question 1 and 10 of the Flyway Site Information Sheet.

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 copies of all maps.

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## Part 1: Essential Information

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

The full name, institution/agency, and address of the person(s) who compiled the SIS, together with any telephone and fax numbers and e-mail address.

**Compiler: Min-young Kang**  
**Institute: Seocheon county**  
**Address: 356-3, Gunsari, Seocheon-eup, Seocheon-gun, Chungnam Province, South Korea**  
**Telephone: +82-41-950-4089**  
**FAX: +82-41-950-4476**  
**E-mail: [curiosomy@korea.kr](mailto:curiosomy@korea.kr)**

### 2. Date this sheet was completed :

The date on which the SIS was completed (or updated).

**17 June 2011**

### 3. Country :

The official (short) version of the country name.

**South Korea (Republic of Korea)**

#### 4. Name of the Flyway Network site :

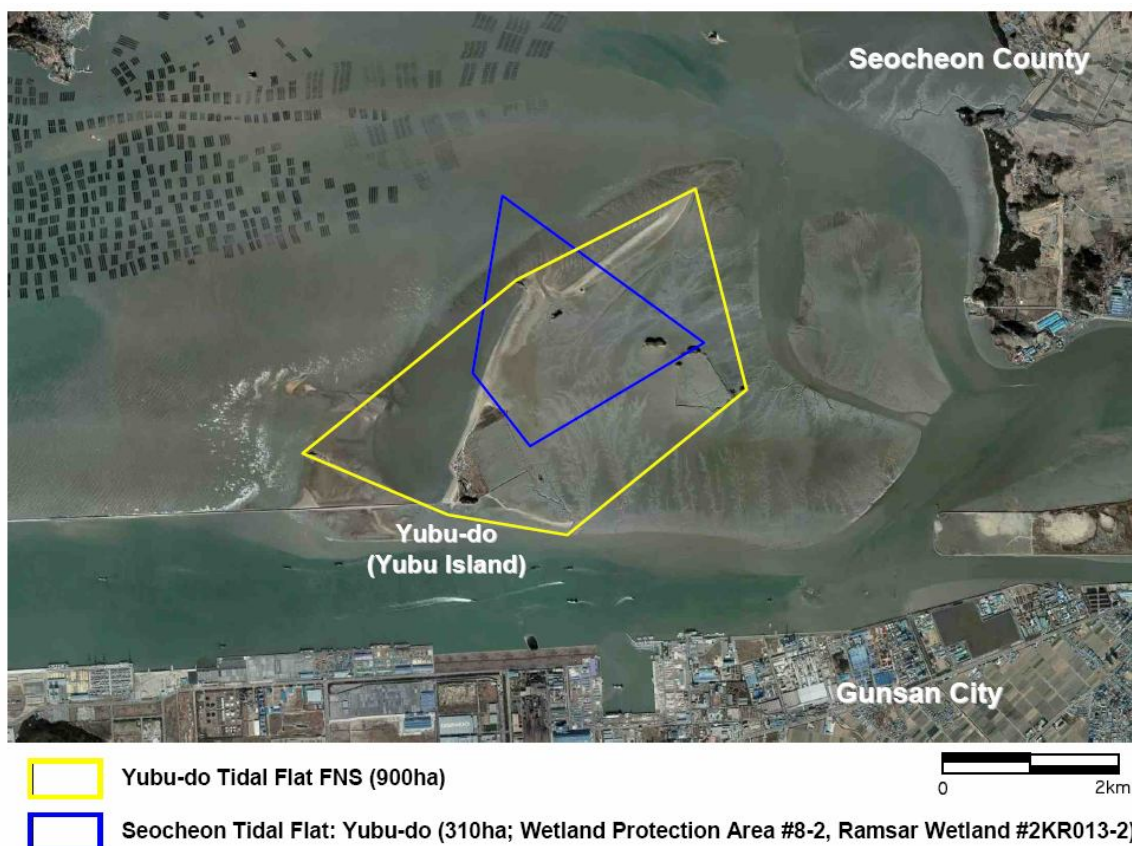
The precise name of the designated site in the national language and English. **This name will be used precisely as given on the Site certificate.** Alternative names, including in local language(s), should be given in parentheses after the precise name.

**Yubu-do Tidal Flat**

#### 5. Map of site :

The most up-to-date available and suitable map of the wetland should be appended to the SIS (in hardcopy and, if possible, also in digital format). The map must clearly show the boundary of the site.





## 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.

**36.001 N, 126.615 E**

**(Latitude : 35° 59' 21" ~ 36° 01' 22" N, Longitude : 126° 35' 00" ~ 126° 38' 05" E)**

## 7. Elevation :

(in metres: average and/or maximum & minimum)

**Average: 4m**

**Maximum: 8.4m**

**Minimum: 0.3m**

## 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.

**The total area of the site is 900ha**

## 9. General overview of the site :

A brief summary of the site (limited to not more than two sentences), mentioning principal physical and ecological functions, and its importance for migratory waterbirds.

**Tidal flats around Yubu-do, which were designated as Wetland Protected Area by the Ministry of Land Transport and Maritime Affairs in 2007 and 2008, belong to Songrim-ri, Janghang-eup, Seocheon-gun, Chungnam Province. Significant changes in sedimentary conditions and geomorphology have been observed after the construction of Geum River Barrage and Saemangeum Barrage in 1990s. Yubu-do and Seocheon Tidal Flats are located in the center of the western coast in Korea, and are thus important habitats for many threatened and specific migratory waterbirds such as Eurasian Oystercatchers (*Haematopus ostralegus*).**

**In Yubu-do about 150,000 individuals of 98 bird species were recorded by the Ministry of Environment from February 2000 through January 2003. Recently about 500,000 individuals of 69 bird species were recently observed from March 2008 to March 2009. In addition, the importance of the tidal flat ecosystem is further testified by the presence of 95 species of large benthic animals and 125 species of fish and marine life (Seocheon-gun, 2005).**

## 10. Justification of Flyway Site Network criteria :

Please provide waterbird count information 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.

## A2

**Yubu-do Tidal Flat regularly supports appreciable numbers of Critically Endangered Spoon-billed Sandpipers (*Eurynorhynchus pygmeus*).**

**Table 1. Occurrence of Critically Endangered Spoon-billed Sandpipers at Yubu-do in 2010**

Species	1% of EAAF population	1 <sup>st</sup> (4/29)	2 <sup>nd</sup> (5/18)	3 <sup>rd</sup> (6/17)	4 <sup>th</sup> (7/15)	5 <sup>th</sup> (8/28)	6 <sup>th</sup> (9/25)	7 <sup>th</sup> (10/7)	8 <sup>th</sup> (11/06)	9 <sup>th</sup> (12/05)	Peak Count in 2010	Date of peak count
Spoon-billed Sandpiper 뿔적부리도요 <i>Eurynorhynchus pygmeus</i>	10	3	4	-	-	-	1	3	-	-	4	2010. 05.18

\* Source: Daesan Regional Maritime Affairs & Port Office (2010) Report of Civilian Monitoring on Wetland Protected Areas (Seocheon WPA). 국토해양부 대산지방해양항만청(2010) 해양보호구역 시민모니터링 (서천갯벌 습지보호지역)

**A6**

Yubu-do Tidal Flat regularly supports > 1 % of the individuals in a population of the following 7 species or populations of migratory waterbirds.

**Table 2. Monitoring results at Yubu-do in 2010**

Species	1% of EAAF population	1 <sup>st</sup> (29 Apr 2010)	2 <sup>nd</sup> (18 May 2010)	3 <sup>rd</sup> (17 Jun 2010)	4 <sup>th</sup> (15 Jul 2010)	5 <sup>th</sup> (28 Aug 2010)	6 <sup>th</sup> (25 Sep 2010)	7 <sup>th</sup> (7 Oct 2010)	8 <sup>th</sup> (6 Nov 2010)	9 <sup>th</sup> (5 Dec 2010)	Peak Count in 2010	Date of peak count
Eurasian Oystercatcher 검은머리물떼새 <i>Haematopus ostralegus</i>	100	534	210	266	264	1,248	936	640	3,600	2,402	2,402	2010. 12.05
Grey Plover 개펄 <i>Pluvialis squatarola</i>	1,300	927	502	562	463	1,332	970	820	1,385	2,558	2,558	2010. 12.05
Lesser Sand Plover 왕눈물떼새 <i>Charadrius mongolus</i>	600	552	162	4	353	685	420	170	200	-	685	2010. 08.28
Bar-tailed Godwit 큰뒷부리도요 <i>Limosa lapponica</i>	3,300	4,756	1,462	24	308	743	14	-	-	-	4,756	2010. 04.29
Eurasian Curlew 마도요 <i>Numenius arquata</i>	350	1,612	32	1,678	3,352	3,764	191	2,838	752	4,355	4,355	2010. 12.05
Far Eastern Curlew 알락꼬리마도요 <i>Numenius madagascariensis</i>	380	438	264	88	112	152	-	-	-	-	438	2010. 04.29
Dunlin 민물도요 <i>Calidris alpina</i>	17,500	46,382	7,996	4	146	416	3,040	1,450	3,452	8,672	46,382	2010. 04.29

\* Source: Daesan Regional Maritime Affairs & Port Office (2010) Report of Civilian Monitoring on Wetland Protected Areas (Seocheon WPA). 국토해양부 대산지방해양항만청(2010) 해양보호구역 시민모니터링 (서천갯벌 습지보호지역)

**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.

**G -- Intertidal flat (Sand and muddy sandy)**

**12. Jurisdiction :**

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

**[Territorial] Seocheon County (Chungnam Province)**

**[Functional] Ministry of Land, Transport and Maritime Affairs**

**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. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

**Seocheon: Office of Eco travel, Seocheon County Office, Seocheon County, Chungnam Province  
325-701, Republic of Korea**

**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 any functional/active 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.

**Daesan Regional Maritime Affairs & Port Office. 2009, 2010. Report of Civilian Monitoring on Wetland Protected Areas (Seocheon WPA).** [국토해양부 대산지방해양항만청. 2009, 2010. 해양보호구역 시민모니터링 \_서천갯벌 습지보호지역]

**Lee, J. Y. 1995. Ecology of the waders migrating go Kanghwa and Youngjong islands on the west coast of Korea. MSc Thesis of Kyung Hee University. 50 pp.** [이정연. 1995. 서해안 강화도에 도래하는 습금류의 생태. 경희대학교 대학원 석사학위논문, 50p.]

**Lee, K. S. 2000. Current status and population fluctuations of waterbirds on the west coast of Korea. PhD Thesis of Kyung Hee University. 211 pp.** [이기섭. 2000. 한국의 서해안에 도래하는 수조류의 실태와 개체수 변동. 경희대학교 박사학위논문. 211pp.]

**MOE. 1998. Waterbird Survey on the main wetlands along the west coast of Korea in Spring and Autumn. Ministry of Environment, 113pp.** [환경부, 1998. 서해안 주요습지에 도래하는 수조류의 봄, 가을 조사, 환경부, 서울 113pp.]

**National Institute of Biological Resources. 2001-2010. Annual Report of the Nationwide Winterbird Census. NIBR.** [국립생물자원관. 2001-2010. 겨울철 조류 동시센서스. 국립생물자원관.]

**Park. S. B, Baek. O. H, Im. H. S, Jeon. S. S, Joo. OY. G. 2008. The 10th COP of the Ramsar Convention: 'Korea Wetland Guide Book'.** [박성배, 백용해, 임현식, 전승수, 주용기. 2008. 국토해양부,

제10차 람사르총회기념 '한국의연안습지'가이드북.]

**Won, P. O. 1990. A Waterbird survey on the west coast of Korea. Bulletin of Korea Institute of Ornithology 3: 28-50.** [원병오, 1990. 한국 서해안의 섭금류조사. 경희대학교 부설 한국조류연구소 연구보고, 3: 28-50.]

**Won, P. O. 1998. Spring and Autumn Wader Surveys on the west coast of Korea. Nature Conservation 62: 29-41.** [원병오, 1988. 한국 서해안의 춘추 섭금류조사, 자연보존 62: 29-41.]

## Part 2 – Optional

### 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.

The deposits in the Tidal Flat of Seocheon County are composed of sand, silt, and muddy sand, although it is covered predominantly by sand or muddy sand overall. Since sands account for over 85% of the composition in the tidal flat of Yubu-do, there are diverse benthic animals and fishery resources. Yubu-do is composed of sand dunes, sandy beaches, abandoned salt pans, and dikes near the village in Yubu-do. There are rocky coasts and cliffs near a small hill as well.

- Water depth: less than 10 m
- Tidal variation: 8.4 m at maximum
- Speed of tidal currents: 10.2 – 66.9 cm/s (flood tide), 10.2 – 56.6 cm/s (ebb tide)
- Permanence of water: impermanent water quality by tidal cycles

The temperature in surface seawater fluctuates from 6.1 to 24.9 °C with a monthly average of 15.4 °C.

Salinity in surface seawater ranges from 2.29 to 3.17 ‰, with its average at 2.9‰. The average of pH is about 7.96, and the average of dissolved oxygen is 9.21mg/L. The average of chemical oxygen demand and suspended solid is 1.92mg/L and 17.6mg/L, respectively (National Fisheries Research and Development Institute, 2008).

In the past 30 years, the average annual temperature in the areas of the Seocheon Tidal Flat recorded at 18.9 °C, with the lowest at 3.6 °C in January and highest at 29.6 °C in August. The annual precipitation is about 1,200 mm, and 60% of it is concentrated in the summer seasons from July through September. The monthly average precipitation is about 100 mm, humidity averages at 75.4%, and the average of wind velocity is 3.9 m/s (The Korea Meteorological Administration, 2008).

### 16. Physical features of the catchment area :

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

The Yubu-do Tidal Flat in the middle of the western coast of Korea is an open tidal flat formed between Gunsan in Jeollabuk-do and Boryeong in Chungcheongnam-do. The tidal flat extends along 84.7 km of the costal line and expands 63.3 km<sup>2</sup>.

In the tidal flat of Yubu-do in Seocheon-gun, sand accounts for over 85% of the composition. The volume of clay is quite low at 5.7% on the average (Seocheon-gun, 2005).



**17. Hydrological values :**

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

**N/A**

**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.

 **Ecosystem service**

The Yubu-do Tidal Flat is integral in providing habitation for marine life and birds. 95 species of macro benthic animals were collected from the Tidal Flat, and polychaetes kinds of the Annelids Phylum were most popular with 43 species present, followed by 24 species of crustaceans and 19 species of molluscs. These species are mostly tubicole, dwelling, burrowing species. Among benthic animal, bivalve molusca as like *Solen strictus*, *Phacosoma japonicus*, *Macra veneriformis* provides also to human for valuable food. The Yubu-do Tidal Flat in Seocheon is home to diverse groups of organisms ranging from benthic life to birds at the highest level of consumption, forming a stable ecosystem.

 **Economic value**

The sediments in this flat consist of sand and/or muddy sand facies, which is highly effective in flood control by infiltrating the precipitation and seeping the groundwater through seawater-sediment interface during the heavy raining season. In addition, this flat not only protects the coastline from various outside forces such as typhoon, wave, tidal current, but also purifies the pollutant (nutrient and metallic elements etc.) discharged from fertilizers and sewage near the tidal flat.

**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.*

Being on the coast adjoining the land, the Tidal Flat is diversely populated with halophytes and sand dune plants characteristic of the sediment on the upper part of the Tidal Flat toward the land. A total of 45 taxa consisting of 17 families, 33 genera, 33 species and 1 variety was reported (Seocheon-gun, 2005). In sand dune areas, typical sand dune vegetation has been developed: *Ischaemum anthephoroides* (Gaetsoebori) is dominant and roundleaf chastetree (Sunbiginamu, *Virtex rotundifolia*), *Elymus mollis* (Gaetgeuryeong), *Carex pumila* (Jomborisacho), *Carex*

*kobomugi*(Tongborisacho), field gromwell (Gaejichi, *Lithospermum arvense*), and *Messerschmidia sibirica* (Moraejichi) are well developed while protecting sand dune system. In the coastal area, salt marsh vegetation is developed such as chinese lowgrass (Gaetjandi, *Zoysia sinica*), *Suaeda glauca* (Namunjae), *Suaeda japonica* (Chilmyeoncho) and reed (Galdae, *Phragmites communis*). In the Janghang-ri, Janghang-eup area, seagrass community (*Zostera spp.*) plays an important role to maintain coastal ecosystem providing spawning and nursery ground of oceanic life and purifying pollutants. And some *Suaeda malacosperma* (Gisucho) usually appearing in the brackish water zone are found in the Geum River Estuary.

## 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.*

Protected avian species: 5 species

- Eurasian Oystercatchers (Endangered Species Class II , Natural Monuments #326)
- Far Eastern Curlew (Endangered Species Class II)
- Saunders’s Gull (Endangered Species Class II)
- Eurasian Spoonbill (Endangered Species Class I, Natural Monuments #205)
- Spoon-billed Sandpiper (Endangered Species Class I)

The diverse population of living organisms on the Tidal Flat, such as polychaeta including *Capitellidae*, crustaceans including ghost shrimp (Ssok, *Upogebia major*), *Macrophthalmus japonicus* (Chilgae), and sand-bubbler crab (Yeopnanggae, *Scopimera globosa*), and molluscs including Yellow Sea button top shell (Seohaebidangodung, *Umbonium thomasi*), Japanese clam (Gaeryangjogae, *Macra chinensis*), and short necked clam (Bajirak, *Ruditapes philippinarum*) provide important sources of food for the water birds.

In particular, some of the noteworthy inhabitants are Japanese eel (Baemjangeo, *Anguilla japonica*) and sweet fish (Eueneo, *Plecoglossus altivelis*) which taking advantage of the estuarine environment move back and forth between the fresh water and sea water, as well as other inhabiting fish include blue scaled herring (Baendaengii, *Harengula zunasi*), dotted gizzard shad (Jeoneo, *Konosirus punctatus*), and mullet (Gasungeo, *Mugil haematocheilus*). On Yubu-do, Korean Tiger Lizards (Pyobeomjangjibaem, *Eremias argus*) inhabits sand dunes and Eurasian Oystercatchers (*Haematopus ostralegus*) breed near *Elymus mollis* (Gaetgeuryeong) vegetations.

## 21. Social and cultural values :

a) Describe if the site has any general social and/or cultural values e.g., fisheries production,

forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

**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?

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:

**N/A**

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

- a) within the Flyway Network site:
  - **Public, local government (Seocheon county), and private owned**
- b) in the surrounding area:
  - **Public owned**

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

- a) within the Flyway Network site:
  - **Mainly fisheries**
- b) in the surroundings/catchment:
  - **N/A**

## **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:

- **Past:** After the construction of Geum River Barrage in 1990, the lower reach of Geum River was turned into a kind of freshwater lake; the change of environments caused fragmentation of the estuarine ecosystem and reduced biodiversity.
- **Present:** The water quality of the Geum River Lake is in the 3<sup>rd</sup> class which requires water-quality managements. Widening Projects of two main roads along the site (Jeonbuk #706 and Chungnam #68) are under consideration and is already started in some parts.
- **Potential:** To improve water quality in nearby Saemangeum area, a new drainage system from the site to Saemangeum is under consideration and it may affect physical and hydrological condition of the site.

b) in the surrounding area:

- **Rapid environmental changes caused by the Four River Restoration Projects in catchment areas (throughout 29.57 km in length) may affect some physical and biological features of the site.**
- **High pressures for tour site development around Geum River Lake**
- **On-going Saemangeum Reclamation**

## 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.

- **Yubu-do is a part of the 'Seocheon Tidal Flat' which was designated as Wetland Protected Area in 2008 and as Ramsar site (site no. 2KR013) in 2010.**

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

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

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

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.

**Designation of the Geum River estuarine areas (15.3km<sup>2</sup>) in Maseo-myeon, Hwayang-myeon, and Hansan-myeon as a Wetland Protection Area and a Ramsar Wetland is planned.**

**27. Current scientific research and facilities :**

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

**'Research on the change in Avifauna at Geum River and Saemangeum area'(2011) by National Science Museum** [금강및새만금지역조류변화상연구' 2011년이후 국립과학박물관]

**'Civilian Monitoring on Wetland Protected Areas (Seocheon WPA)' (2011) by Daesan Regional Maritime Affairs & Port Office** [2011, 해양보호구역 유부도 갯벌 시민모니터링, 대산지방해양항만청]

**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.

Seocheon County manages a **'BIRD VILLAGE-Bird Ecology Exhibition Hall'** with exhibition rooms, lecture rooms, libraries, and birdwatching trails for visitors. Geumgang Environmental Education Center is also involved in CEPA activities. More than 50 programs are run annually by many organization and authorities such as the UNDP/GEF Korea Wetland Project team (Geum River Project Team).

**29. Current recreation and tourism :**

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

In the site, visitors may experience both inland freshwater and coastal wetland along the Geum River Barrage; more than 2 million tourists annually visit this area. Seocheon County started to hold a birdfair since 1997, and the significant number of tourists, particularly in winter, is birdwatchers at present. Every November, Seocheon county also holds the "Seocheon Bird Travel" (generally for 1 month) at the Seocheon BIRD VILLAGE - Bird Ecology Exhibition Hall located nearby the Geum River Barrage. (Various programs such as international symposium, birdwatching tours, exhibitions and performances, and education programs)

## Appendix: Monitoring Result at Yubu-do Tidal Flat

**Table 1. Result of January counts at the Yubu-do site from 2001 to 2010**

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Mean
No. species	13	23	17	26	30	20	30	25	27	29	24
No. individual	13,608	18,952	12,010	8,503	9,723	7,629	6,559	5,496	9,016	12,043	10,354

\* Source: National Institute of Biological Resources. 2001-2010. Annual Report of the Nationwide Winterbird Census. NIBR. 국립생물자원관.

(2001-2010) 겨울철 조류 동시센서스. 국립생물자원관.

**Table 2. Main dominant species (based on abundance) and their numbers recorded in January at the Yubu-do site from 2001 to 2010**

Rank	2001	2002	2003	2004	2005
1 <sup>st</sup>	Dunlin 3,500	Mallard 5,061	Eurasian Oystercatcher 3,024	Spot-billed Duck 3,118	Eurasian Oystercatcher 3,418
2 <sup>nd</sup>	Common Shelduck 2,700	Spot-billed Duck 4,552	Dunlin 2,130	Eurasian Oystercatcher 1,746	Common Shelduck 1,730
3 <sup>rd</sup>	Eurasian Oystercatcher 2,500	Common Shelduck 3,272	Common Shelduck 1,605	Grey Plover 920	Mallard 1,303
4 <sup>th</sup>	Spot-billed Duck 1,650	Eurasian Oystercatcher 3,200	Common Pochard 1,500	Herring Gull 617	Dunlin 890
5 <sup>th</sup>	Eurasian Curlew 1,040	Herring Gull 892	Spot-billed Duck 1,422	Dunlin 530	Herring Gull 727

Rank	2006	2007	2008	2009	2010
1 <sup>st</sup>	Eurasian Oystercatcher 2,200	Spot-billed Duck 2,702	Eurasian Oystercatcher 3,145	Eurasian Oystercatcher 2,890	Eurasian Oystercatcher 4,800
2 <sup>nd</sup>	Dunlin 1,340	Herring Gull 1,325	Common Shelduck 789	Spot-billed Duck 1,860	Dunlin 3,000
3 <sup>rd</sup>	Spot-billed Duck 900	Eurasian Oystercatcher 1,017	Dunlin 782	Eurasian Curlew 4,566	Herring Gull 2,097
4 <sup>th</sup>	Common Shelduck 825	Dunlin 604	Spot-billed Duck 378	Common Shelduck 660	Black-tailed Gull 1,124
5 <sup>th</sup>	Saunders's Gull 650	Eurasian Curlew 391	Grey Plover 229	Saunders's Gull 477	Spot-billed Duck 464

\* Source: National Institute of Biological Resources. 2001-2010. Annual Report of the Nationwide Winterbird Census. NIBR. 국립생물자원관.

(2001-2010) 겨울철 조류 동시센서스. 국립생물자원관.

## **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 a 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