

Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

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

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

Name: Nam-Won, KIM
Deputy Director
Marine Policy Bureau, Marine Ecology Division
Ministry of Land, Transport and Maritime Affairs
7F, 4th Building of Gwacheon Government Complex, 1
Jungang-Dong, Gwacheon Citry, Gyenggi-Do, 427-712,
Republic of Korea
Tel: +82-2-504-5648, Fax: +82-2-503-7303
e-mail: nwkim65@korea.kr

Dr. Byoung-Seol KOH
Senior Researcher, Marine Ecosystem Management Team, Korea Marine Environment Management Corporation
[Tel:+82-2-3498-8585](tel:+82-2-3498-8585)
Email: bskoh@koem.or.kr

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

July 15, 2011

3. Country:

Republic of Korea

4. Name of the Ramsar site:

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

Jeungdo Tidal Flat

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

This RIS is for (tick one box only):

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

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

a) Site boundary and area

The Ramsar site boundary and site area are unchanged:

or

If the site boundary has changed:

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

and/or

If the site area has changed:

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

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

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

7. Map of site:

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

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

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

b) Describe briefly the type of boundary delineation applied:

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

The boundary for the designation of the new Ramsar Site is the same as the existing protected area (Jeungdo Tidal Flat Wetland Protected Area), which is located in east, south and north west of Jeungdo-myeon (district) and along from byeongpoong-do (island) to Soyak-do (island) in Shinan-gun (county), Jeollanam-do (province), southwest Korea. The 31.3 km² of wetland protected area was designated by the Ministry of Land, Transport and Maritime Affairs (MLTM) on January 29th, 2010. This area was also previously designated a Tidal Flat Provincial Park (12.824 km²) by the Jeollanam-do Province local government in 2008.

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

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

Central point of Western part of Jeungdo tidal flat: (A~B) 34° 59'38.18" N , 126° 07'59.77"E

Central point of Middle part of Jeungdo tidal flat: (C~M) 34° 57'13.00" N , 126° 12'32.69" E

Central Point of Eastern part of Jeungdo tidal flat: (N~Y) 34° 57'59.29" N , 126° 10'10.88" E

*Center points are marked at the map of the appendix 2

9. General location:

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

Jeungdo Tidal Flat is located in Jeungdo-myeon, Shinan-gun (county), Jeollanam-do (province), in South west Korea, a district comprised of islands. With Mokpo city (50km) , South east from the wetland, and Gwangju Metropolitan city (70km North east from the wetland) as the two closest major cities.

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

Average tidal range: 3.46m MSL (min. 2.37m ~ max. 4.55)

11. Area: (in hectares)

3,130 ha (31.3km²)

12. General overview of the site:

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

Jeungdo-myeon (district), Jido-eup (town), Shinan-gun (county) is an elongated island, extending north to south. Formerly two separate islands, it became a single island after a sea wall was constructed to expand farmland and saltpans after the Korean War of 1953 to provide livelihood for people.

The rich ecology and bio-diversity of the Jeungdo-myeon (district) Haw-do (island) and its neighboring regions, including colonial vegetation and flora of the provincial park and nearby islands such as Byeongpung-do (island), Daegijeom-do (island), Sogijeom-do (island), and Soyak-do (island), have received recognition for providing resting and feeding ground of birds, spawning ground of fish, and contributing to macro benthic animal diversity. Hence, the area became designated as the UNESCO "Shinana Dadohae" Biosphere Reserve in 2009 and also as the tidal flat provincial park in 2008.

13. Ramsar Criteria:

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

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9

14. Justification for the application of each Criterion listed in 13 above:

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

■ **Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.**

Common name	Scientific name	IUCN status	CMS status	CITES status
Chinese Egret	<i>Egretta eulophotes</i>	Vulnerable	Appendix I	-
Baikal Teal	<i>Anas formosa</i>	Vulnerable	Appendix I	Appendix II
Far Eastern Curlew	<i>Numenius madagascariensis</i>	Vulnerable	-	-
Eurasian Spoonbill	<i>Platalea leucorodia</i>	Least Concern	Appendix II	Appendix II
Peregrine Falcon	<i>Falco peregrinus</i>	Least Concern	-	Appendix I

■ **Criterion 4: A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.**

Migratory waterbirds which migrate to Korean west tidal flats (such as the Jeungdo Tidal Flat) in autumn, breed in Siberia during summer and travel to winter in South-east Asia, Australia and New Zealand. These birds come back to the Korean tidal flat in spring.

Of the Chinese Egrets (*Egretta eulophotes*), 3 were observed in October 2010 and 24 were observed in December 2010. Most of them were found at the Tae-pyeong saltpan, located in the coastal area of the tidal flat, hunting for fish. At Jeungdo Tidal Flat, migratory Kentish Plovers (*Charadrius alexandrinus*) and Mongolian Plovers (*Charadrius mongolus*), along with Eurasian Curlews (*Numenius aruquata*), Eastern Curlews (*Numenius madagascariensis*), Red-necked Stints (*Calidris ruficollis*), Dunlins (*Calidris alpina*), Common Greenshanks (*Tringa nebularia*) and other waders, were found in October during autumn migration, feeding on crabs, clam worms, clams, and other gastropods. These species were utilizing nearby saltpans and adjacent areas as a resting ground. In December, the total wader population decreased with the exception of a few migratory birds such as the Kentish Plover (*Charadrius alexandrinus*) and Dunlin (*Calidris alpina*), while ducks such as the Nothern Pintail (*Anas acuta*), Baikal Teal (*Anas formosa*), Mallard (*Anas platyrhynchos*), and Common Pochard (*Aythya ferina*) increased in number. These ducks rested on the tidal flats while obtaining food from nearby farmlands and back swamps.

Jeungdo tidal flat provides food resources and resting areas for Chinese egrets. Also, Kentish Plovers (*Charadrius alexandrinus*) and Mongolian Plovers (*Charadrius mongolus*), along with Eurasian Curlews (*Numenius aruquata*), Far Eastern Curlews (*Numenius madagascariensis*), Red-necked Stints (*Calidris ruficollis*), Dunlins (*Calidris alpina*), Greenshanks (*Tringa nebularia*) and other waders feed on crabs, clam worms, clams, and other gastropods in Jeungdo tidal flat and rest in salt farms near the tidal flat.

The Jeungdo tidal flat and back marsh are used as a resting area ducks which winter in Korea such as the Pintall (*Anas acuta*), Baikal Teal (*Anas formosa*), Mallard (*Anas platyrhynchos*), and Pochard (*Aythya ferina*). Moreover, rice paddies neighbouring the tidal flat provide these birds with food.

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

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

a) biogeographic region:

Temperate Northern Pacific
(Cold Temperate Northwest Pacific)

b) biogeographic regionalisation scheme (include reference citation):

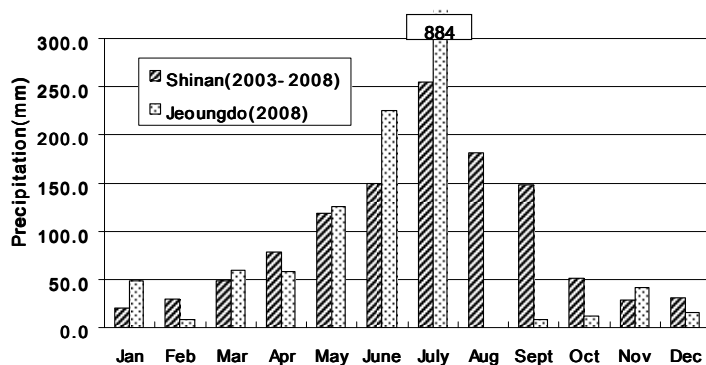
Yellow Sea (Apalding *et al.*, 2007. Marine Ecoregions of the World: A Bioregionalization of Coastal and Shelf Areas. BioScience 57(7):573-583)

16. Physical features of the site:

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

- Geology: There is no data.
- Soil:

Sandy tidal flats are well developed in Woojeon-ri, while muddy tidal flats are found in Hwa-do. There are six types of sedimentary facies at Woojeon-ri Tidal Flat, including gravelly muddy sand (gmS), gravelly sand ((g) S), sand(S), silty sand (zS), sandy silt (sZ), and silt (Z). At Hwa-do Tidal Flat, there are ten types of sedimentary facies, including muddy gravel(mG), sandy gravel(sG), gravelly mud(gM), gravelly muddy sand(gmS), gravelly mud((g)M), slightly gravelly muddy sand((g)mS), sand(S), silty sand(zS), sandy silt(sZ), and silt(Z). The proportion of gravel, sand, silt, and mud content is 0.2%, 62.2%, 31.0%, and 6.6% at Woojeon Tidal Flat, with sand being the dominant material. At Hwa-do Tidal Flat, the proportion is 2.9%, 23.2%, 59.1%, and 14.8%, respectively.
- Origins: Natural
- Hydrology: There is no data.
- Water quality
 - Salinity: 18.20~31.00 psu. (mean : 28.93 psu)
 - Dissolved Oxygen: 7.06~9.97 mg/l (mean : 7.91 mg/L)
 - COD: 1.57~3.01 mg/l (mean: 2.8 mg/L)
 - SS: 3.0~37.6 mg/l (mean : 9.3 mg/L)
 - Chl.a: 0.26~0.52 µg/l (mean: 0.38 µg/l)
- Geomorphology
 - Length of shoreline of Shinan County: 1778.63km (Jeongdo: 118.11km)
- Water permanence: impermanent (tidal mudflat)
- Tidal variation
 - Tidal range: 2.37m~ 4.55m (mean 3.46m)
- General climate
 - Air temperature:-1.7~+26.1⁰C(mean 14.02⁰C)
 - Precipitation: mean 1,486 mm (2003-2008)



17. Physical features of the catchment area:

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

There is no catchment area around Jeong-do (island) area, however, freshwater, from water channels for rice fields, flows into the mud flat intermittently during monsoon season.

18. Hydrological values:

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

There is no data.

19. Wetland Types**a) presence:**

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

Marine/coastal: A • B • C • D • E • F • G • H • I • J • K • Zk(a)

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

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

b) dominance:

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

Marine/Coastal Wetland

G: Intertidal flat : muddy area in Hwa-do(island) area and sandy in Woojeon area

20. General ecological features:

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

Jeungdo tidal flat provides food and resting grounds for waders and migratory birds which pass by this area for breeding and wintering and ducks which winter in this area. It also has a very long history of fisheries, and fishing in this area is of great cultural, social and traditional importance to the local people. The most famous and beloved fishes are goggle eyed goby (*Boleophthalmus pectinirostris*) and Shuttles hoppers (*Periophthalmus modestus*). These fishes are certainly the symbol of this area, and Jeungdo tidal flat has the “hoppers bridge” which name after these fishes.

Hard clams (*Meretrix lusoria*) found in the sand flats and Long-arm octopuses (*Octopus minor*) found in the mudflats are regional products that support many households.

The beautiful Japanese Black Pines (*Pinus thunbergii*) around the Woojeon Tidal Flat, part of the Jeungdo Tidal Flat, also add to the scenic value attracting lots of eco-tourists. The region is also famous for using the fruits of Beach Vitex (*Vitex rotundifolia*), a dominant dune plant in this area, to produce dyes.

21. Noteworthy flora:

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

The flora of Jeungdo(island), which is a geographical connector of the mainland and the oceanic region, shows distinct characteristics found in islands. Near Taepyeong salt pans of Jeungdo (island), *Salicornia herbacea*, *Suaeda japonica*, *Limonium tetragonum*, *Suaeda maritima*, *Suaeda asparagoides*, *Zoysia sinica*, *Carex scabrifolia*, reeds and other halophytes are prevalent. Near Woojeon Beach, *Carex kobomugi*, *Calystegia soldanella*, *Vitex rotundifolia*, *Elymus mollis*, *Zoysia macrostachya*, *Messerschmidia sibirica*, *Rosa rugosa*, and other dune plants are dominant. False Acacia and other native plants can be found at the Gawkdaebong area, west of proposed Ramsar site (Hong *et al.*, 2006).

Japanese Black Pine (*Pinus thunbergii*) Forest, called Gomsolim, located north of Woojeon Beach, southeast of Jeungdo, can be considered an ecotone, where coastal wetlands, a sand bar, and sand dunes are connected. Various dune plants, such as *Carex kobomugi*, perennial vines, such as *Calystegia soldanella*, could be easily spotted. Also, Beach Silvertop (*Glebnia littoralis*) and Beach Vitex (*Vitex rotundifolia*), which are dominant dune plant species in South Korea, are widely distributed.

22. Noteworthy fauna:

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

Diverse sedimentation contributes to diverse benthic animals. 92 species of macrobenthos, 490 inds/m², 120.7g/m² can be found as of 2009. Polychaetes are dominant with 38 species, and mollusks are density- and biomass-dominant fauna with 369 inds/m² and 66.0g/m². Long-arm octopuses (*Octopus minor*) are found at the mudflats. Benthic animals including infaunal Hard clams (*Meretrix lusoria*) are essential aquaculture to the local people. If the sand flats are damaged, these animals could become extinct in this area.

23. Social and cultural values:

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

Dolmen and shell mound monuments found at Woojeon-ri, west Jeung-do (island), indicates human presence since the Neolithic Era. Archaeological evidence related to Song and Yuan Dynasty of China, about 2 km from the Bangchuk-ri coast, west of Osan(mountain) in northwest of Jeungdo, shows that this region was indeed a part of the Marine Silk Road, a seaward passage for trade and cultural exchanges between China and other countries in the ancient times since Han dynasty. The archaeological evidence found well-preserved in the muddy sediment- is extremely rare, even in comparison to the rest of the world, suggesting that these tidal flats have a basis for their preservation.

Local residents depended on fishing until the reclamation projects in the 1950's. Currently, roughly half of their income comes from farming and the other half from fishing. Fishing for sea bass (*Lateolabrax japonicas*), brown croaker (*Micthys miuy*), dotted gizzard shad (*Konosirus punstatus*), and flathead mullet (*Mugil cephalus*), as well as foraging for Hard clams (*Meretrix lusoria*) and other clams, laver and abalone, support the local economy.

Local residents use Laver farming and hard clams (*Meretrix lusoria*) fishing for their livelihood - 24 types of fish and 4 types of Crustacea are fished. Fish caught seasonally are sea bass (*Lateolabrax japonicas*) in Spring; brown croaker (*Micthys miuy*) in Summer; dotted gizzard shad (*Konosirus punstatus*) in Fall; flathead mullet (*Mugil cephalus*) in Winter. Other important essential invertebrates are surf clam (*Macra veneriformis*), manila clam (*Ruditapes philippinarum*), portunid crab (*Charybdis japonica*), and fiddler crab (*Uca arcuata*).

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?

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:

Traditional fishing methods are still being used in this area. These traditional foraging methods for mollusks like the long-legged octopus and shellfish such as the Hard clam (*Meretrix lusoria*) help circulate organic compounds in lower and upper parts of the tidal flats. Salt pans utilizing tidal flats provide important case studies for new uses of the land. Such sustainable development models show that certain human actions may actually help conserve nature giving tidal flats in the area an outstanding universal value (OUV) compared to other tidal flats in the world, including the Wadden Sea.

In addition, a traditional fishing method called *doksal*, which utilizes the intertidal range, is popular amongst tourists. The traditional *Hwiri* net has a relatively bigger mesh compared to the mesh of other regions to allow younger fish to escape, which shows consideration in sustainable fish harvesting.

Jeungdo Tidal Flat has been preserved well due to the fact that it is isolated from land, receiving little human influence. Resident monitoring is in effect, and the island is trying to ban cars and smoking, while designating the island as a slow city and constructing a tidal flat research center. Traditionally, local communities have been in existence and the communal fishing groups continue that tradition today. These groups are self-regulated groups inducing growth of fishing population and preserving biodiversity.

- 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:

Traditionally, local communities have been in existence and the communal fishing groups continue that tradition today. These groups are self-regulated groups, inducing growth of fishing population and preserving biodiversity.

- 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:

The tidal flats in the Doseo (islands and islets) region are environmentally and culturally significant due to its beautiful scenery, relation to the local economy, water ways, natural resources, traditional knowledge, and history of peoples' co-existence with the tidal flats

24. Land tenure/ownership:

- a) within the Ramsar site:

The government of the Republic of Korea

- b) in the surrounding area:

Shinan-gun, Jeollanam-do. The surrounded area mainly consists of the sea, where belongs to the government, and in the terrestrial part, the area consists of the government-owned land including road and private-owned land.

25. Current land (including water) use:

- a) within the Ramsar site:

Most of the tidal flats are utilized as hand fishing and shellfish foraging grounds, but limited eco-tours are being operated by experts due to the rise of eco-tourism.

- b) in the surroundings/catchment:

Most of the surrounding lands are being utilized for environmental friendly farming, which limits the amount of polluted organic matter entering the tidal flats. The Ministry of Land, Transportation and Maritime Affairs also operates laver (popular seaweed product in Korea) and Hard clam (*Meretrix lusoria*) farms.

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

a) within the Ramsar site:

The construction of a barge dock and its facilities, built prior to the Jeungdo Bridge, along with "Nodoo" Road (made by stepping-stones long time ago and then cement-working more recently) has hampered the sea flow. At Bangchuk-ri, the sea wall would cut off the sea flow, causing sand erosion. The eroded sand flows into Jeungdeung-ri Jjangddonguh Bridge and its neighbouring areas, increasing the sedimentation by sand particles at the sand flats.

b) in the surrounding area:

The construction of Jeungdo Bridge allows easy access to the island from the mainland, as about one million tourists visited the island in 2010. The total trash output in 2006, prior to the bridge, was 920 tons (2.5 tons per day), which increased to 2,000 tons (5.5 tons per day) in 2010. During peak season in July and August, the trash output rose to 20 tons a day. The economical loss of this pollution is estimated as 200 million KRW in 2011 to clean and dispose garbage. Jeungdo Island's capacity is estimated to be 350,000 visitors per year, and to limit tourists, an environmental fee of 2,000 Won (\$2 USD) will be charged as of May 2011.

27. Conservation measures taken:

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

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

- Designated as Jeollanam-do Tidal Flat Provincial Park (June 2008, Size of the Park: 12.824 km²; Land 0.737 km², Surface of the Sea 12.087 km²) is protected under natural park legislation.
- Designated as Wetland Protected Area (January 2010, 31.30 km²), protected under Wetland Conservation Act.
- Designated as UNESCO Shinan Dadohae (archipelago) Biosphere Reserve (May 2008).
- UNESCO World Heritage Site tentative list (January 2010, Cultural Heritage Administrations of Korea) and priority consideration (February 2011, Cultural Heritage Administration of Korea), currently planning to register under World Heritage Site (April 2011, ongoing).
- To prevent these harmful effects of trash pollution by tourists, the local government, Shinan-gun, is working on establishment of the ordinance of the Protection and Preservation of Island Environment. According to this ordinance, at the gate of Jeungdo from May 1, 2011, every tourist driving his/her car to get into Jeungdo has to pay an environmental tax and receive a plastic bag for his/her own garbage.

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?:

- Five Year Plan for Shinan-gun (county) Tidal Flat Research and monitoring (Shinan-gun, 2010) was established in 2010.
- Five Year Plan for Jeungdo Tidal Flat Management was established at the end of 2010 and is being implemented since 2011.

-d) Describe any other current management practices:

Expert groups have been invited to conduct educational outreach programs to raise public awareness. Traffic signs, directions board and other promotional materials have been installed to raise awareness of tidal flat importance. Coastal eco-trails and wind breakers were established to limit unwarranted access to the tidal flats at the Wetland Protected Area border.

28. Conservation measures proposed but not yet implemented:

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

Disposal of unused seaweed nets for laver farming in tidal flats and other wastes.

Ten wrecked fishing boats and 6 barges which were dumped in the tidal flat are to be disposed of in 2011.

29. Current scientific research and facilities:

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

Jeungdo tidal flat research & education center: 3,474 m² area in Byeongpoong-do (island) was purchased for the center. The center is to study tidal flat natural resources and educate people and sustainability, based on local indigenous knowledge and experience. At the moment, its office is at Jeungdo Tidal Flat Ecology Exhibition Center for research and monitoring that are taking place this year. Shinan-gun (county) office hires professional researchers to monitor birds, insects, plants, and waste throughout the year and utilize the data in systematic conservation of the tidal flats.

Annual monitoring of vegetation is conducted by professionals and the Jeungdo Tidal Flat Ecology Exhibition Center staff and waterfowl monitoring in spring and autumn is by waterfowl experts.

Monthly monitoring of marine waste is conducted by the Jeungdo Tidal Flat Ecology Exhibition Center.

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

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

Jeungdo site is where many stakeholders have tried to protect the tidal-flat. Lots of protect project are ongoing. The central and local governments support finance positively, the academic researchers and NGOs carry out various researches and public awareness projects with the fund. The core of these CEPA activities is taken by Jeungdo Tidal-flat Eco-center.

- Citizen Monitoring project (ongoing since 2009).

- Local resident ecological tour guide training (ongoing since 2010).

- Environmentally friendly agricultural marketplace: The market has been held every second and fourth Saturday from April to October in front of Jjang-Ddoong-ea Bridge in Jeungdong-ri. This is one of public awareness project to increase local people's pride to protect and conserve the tidal-flat and increase their income to sell organic products to visitors as well.

31. Current recreation and tourism:

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

Due to the sandy beaches and beautiful landscape, the Jeungdo Tidal Flat draws many tourists as well as students of tidal environment. – Ecotourism in Jeungdo is to offer opportunities to learn and experience its tidal flat environment and local culture and improve well-being of local residents. As Jeungdo was designated as the first slowcity in South Korea, its ecotourism also boosts for slow tour. The local resident travel agency is a part of Eco-tourism to differ from other commercial tour. Local residents are descendents to have indigenous knowledge about the site. They have learned and trained how to tell their knowledge to visitors from Eco-tourism specialists and experts. This agency will make a great role to increase the locals' income.

- Tidal Flat Exhibition
 - View Tidal Flat Exhibit (What are Tidal Flats, Types of Tidal Flats, Conditions for Tidal Flat Formation, Functions of Tidal Flats, Tidal Flats around the World: Shinan Tidal Flat, Understanding Tidal Flat Fauna and Halophytes)
 - Tidal Flats and People: (Introduce Jeungdo Slow City Policy, View related exhibits)
- The Korean Peninsula's Cheonnyeon-Haesong Forest
 - Eco-tour of the Forest (View the Forest Ecology, Obtain Deeper Understanding of the Forest)
 - Woojeon Beach Viewing (Coastal Sand Flats and Erosion Prevention)
- Mud-hopper Bridge Tidal Flat Tour/ Woojeon Beach

- Understanding the Characteristics of Tidal Flats; Halophytes and Waterfowl Viewing (Observation with Field Scope)
- Understanding Tidal Flat's Fauna and Flora
- Shinan Ocean Floor Artifact Monument : Sunset Viewing
- Hwi-ri Guide : Experiencing the Lives of Local Residents at the Hwa-do Tidal Flat

<Table 1. Annual number of visitors (Shinan County Statistics, 2011)>

Year	2007	2008	2009	2010	2011 (until July)
Number of Visitors	107,027	230,136	372,730	780,850	504,080

32. Jurisdiction:

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

Territorial Jurisdiction:

Governor office of Shinan County

Functional Jurisdiction:

Marine Policy Bureau, Marine Ecology Division of Ministry of Land, Transport and Maritime Affairs

Shinan-gun Office

33. Management authority:

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

Name: PARK, Woo Ryang

Position: Governor of Shinan County

Address: Shinan-gun Office, Chabeomseok-gil , St. 35, Mokpo, Jeollanam-do, Korea (ZIP: 530-705)

Tel: +82-61-240-8002

[습지 관리담당자]

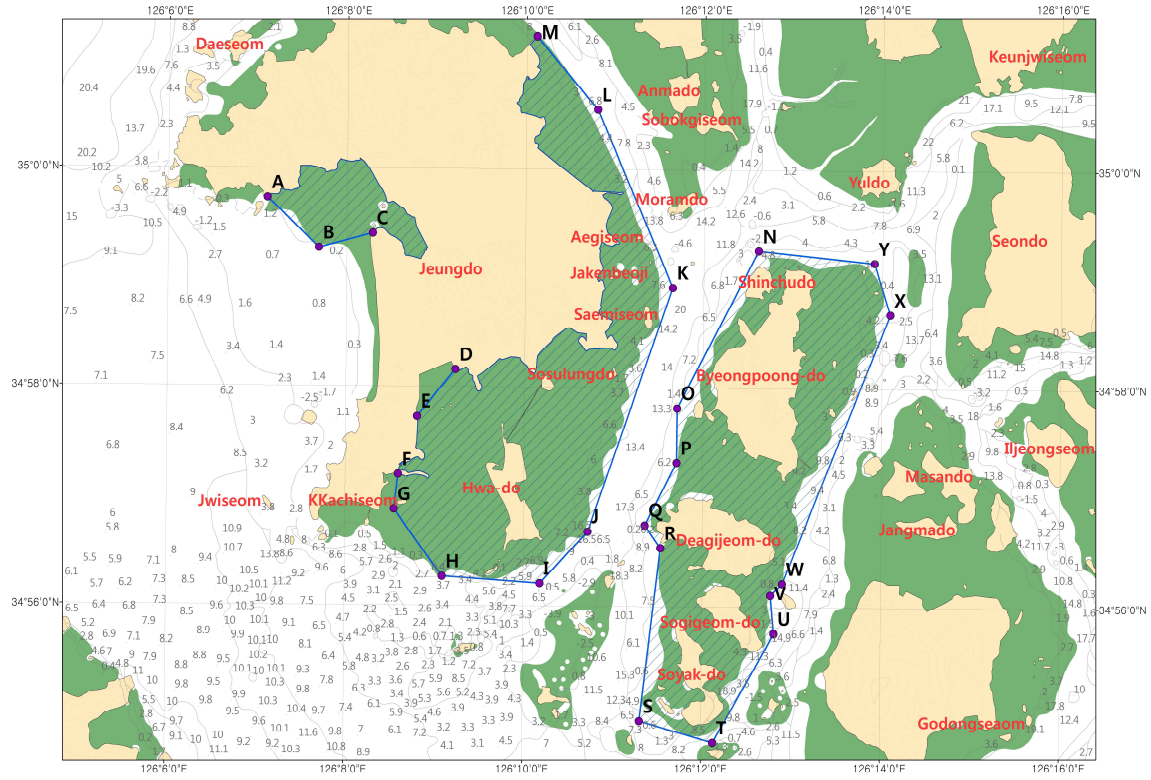
34. Bibliographical references:

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

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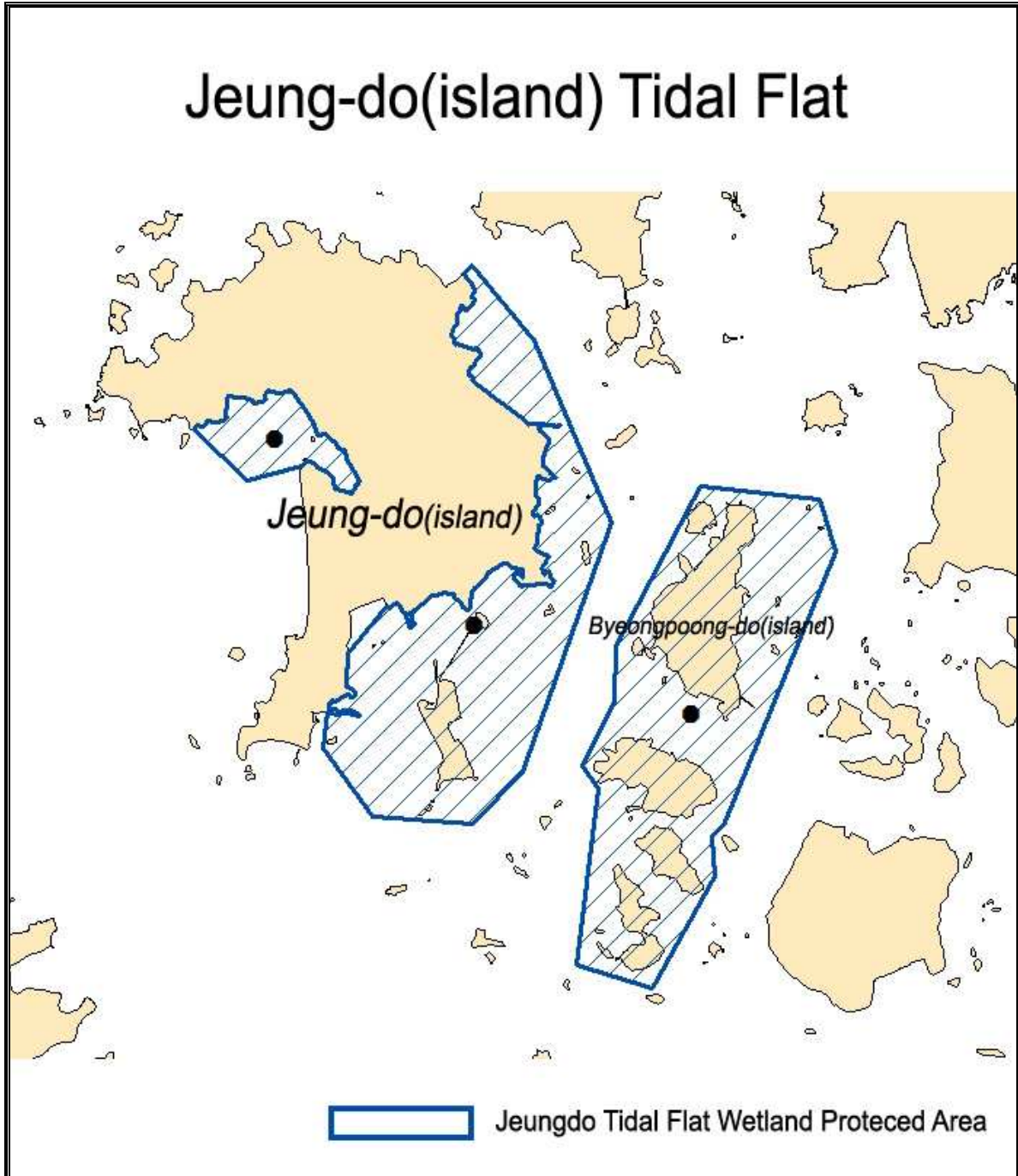
Appendix 1. Maps of Jeungdo tidal flat Wetland Protected Area



Appendix 2: Table: Position of the Jeungdo Tidal Flat Wetland Protected Area

position	Latitude(N)	Longitude (E)	position	Latitude(N)	Longitude(E)
A	34°59'44.90''N	126° 06'56.23''E	N	34° 59'16.69N	126° 12'26.36''E
B	34° 59'17.30''N	126° 07'30.95''E	O	34° 57'50.45N	126° 11'32.32''E
C	34° 59'25.50''N	126° 08'07.09''E	P	34° 57'20.44N	126° 11'32.14''E
D	34° 58'10.96''N	126° 09'03.28''E	Q	34° 56'46.09N	126° 11'11.08''E
E	34° 57'45.35''N	126° 08'37.67''E	R	34° 56'33.87N	126° 11'21.73''E
F	34° 57'13.41''N	126° 08'25.16''E	S	34° 54'58.65N	126° 11'08.26''E
G	34° 56'54.15''N	126° 08'22.53''E	T	34° 54'47.02N	126° 11'57.51''E
H	34° 56'17.65''N	126° 08'55.07''E	U	34° 55'46.90N	126° 12'38.09''E
I	34° 56'14.05''N	126° 10'00.85''E	V	34° 56'07.97N	126° 12'35.69''E
J	34° 56'42.59''N	126° 10'32.82''E	W	34° 56'14.44N	126° 12'43.53''E
K	34° 58'56.60''N	126° 11'28.84''E	X	34° 58'42.27N	126° 13'55.02''E
L	35° 00'33.91''N	126° 10'37.72''E	Y	34° 59'10.19N	126° 13'44.24''E
M	35° 01'13.93''N	126° 09'56.64''E			

Appendix 3. Central points of Jeungdo Tidal Flats



Appendix 4: List of Species in Jeungdo Tidal Flat

Category	Common name	Scientific name
Bird	Kentish Plover	<i>Charadrius alexandrinus</i>
	Mongolian Plover	<i>Charadrius mongolus</i>
	Red-necked Stint	<i>Calidris ruficollis</i>
	Dunlin	<i>Calidris alpina</i>
	Common Greenshanks	<i>Tringa nebularia</i>
	Nothern Pintail	<i>Anas acuta</i>
	Mallard	<i>Anas platyrhynchos</i>
	Common Pochard	<i>Aythya ferina</i>
	Eurasian Wigeon	<i>Anas penelope</i>
	Common Teal	<i>Anas crecca</i>
	Northern Pintail	<i>Anas acuta</i>
	Eurasian Curlew	<i>Numenius arquata</i>
Fish	goggle eyed goby	<i>Boleophthalmus pectinirostris</i>
	Shuttles hopfish	<i>Periophthalmus modestus</i>
	Common sea bass	<i>Lateolabrax japonicus</i>
	Spotted sardine	<i>Konosirus punctatus</i>
	Yellow croaker	<i>Larimichthys polyactis</i>
	Yellow puffer	<i>Takifugu obscurus</i>
	Mullet	<i>Mugil cephalus</i>
Mollusk	Long-arm octopus	<i>Octopus minor</i>
	Hard clam	<i>Meretrix lusoria</i>
	Manila clam	<i>Ruditapes philippinarum</i>
	Surf clam	<i>Macra veneriformis</i>
Plant	-	<i>Salicornia herbacea</i>
	-	<i>Suaeda japonica</i>
	-	<i>Limonium tetragonum</i>
	-	<i>Suaeda maritima</i>
	-	<i>Suaeda asparagoides</i>
	-	<i>Zoysia sinica</i>
	-	<i>Carex scabrifolia</i>
	-	<i>Calystegia soldanella</i>
	-	<i>Vitex rotundifolia</i>
	-	<i>Elymus mollis</i>
	-	<i>Zoysia macrostachya</i>
	-	<i>Messerschmidia sibirica</i>
	-	<i>Rosa rugosa</i>
	-	<i>Carex kobomugi</i>
	Beach Silvertop	<i>Glebnia littoralis</i>
	Beach Vitex	<i>Vitex rotundifolia</i>
Japanese Black Pine	<i>Pinus thunbergii</i>	