

# Ramsar Information Sheet

Published on 27 July 2017 Update version, previously published on : 30 March 2005

# Republic of Korea

Jangdo Wetland



Designation date 30 March 2005

Site number 1458

Coordinates 34°40'23"N 125°22'15"E

Area 9,00 ha

# Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a 'full' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

# 1 - Summary

## Summary

The Jangdo Wetland is a mountainous wetland occurring in a small island where wetlands are hardly found. Relatively large given the size of the island where it is formed, and with its high water-retaining capacity, the wetland is a major source of drinking water and supports the livelihood of the local community. The wetland is internationally important due to its unique geological features that provide stopover habitats for 60 migratory birds travelling along the East Asia Australian Flyway. Those birds visit the Site, along with other adjacent islands, mostly during spring and autumn. The Site was designated as a "National Wetland Conservation Area" on 31st of August 2004 by the Ministry of Environment. The Site retains a 26,457 tonnes of freshwater and the peat layer plays a significant role in holding the water. The quality of water in the wetland also records highest mark on the Water Quality Standard of ROK. This freshwater supports not only about 640 species of plants and animals but also the population of about 120 local people in the island. There were 644 species which consist of seven taxonomic groups (Plants, Birds, Mammals, Amphibians/Reptiles, Insects, Benthic Invertebrates (fresh water), hytoplanktons/Zooplanktons) found inhabiting the Site in 2013, the largest number of species that one can find in a Site occurring in any islands in Korea. The Site is unique and of conservation value considering that the plant species in the site are mostly tropical ones even though the island is not located in the tropical climate zone. The Jangdo wetland supports the internationally vulnerable Chinese egret Egretta eulophotes and the Styan's Grasshopper Warbler Locustella pleskei as well as species which are listed as nationally as endangered, e.g. Peregrine Falcom Falco peregrinus and the Eurasia Otter Lutra ultra. In addition, the Site and its land and seascape are of scenic value with various beautiful landforms and marine landscapes in and around the island.

# 2 - Data & location

# 2.1 - Formal data

## 2.1.1 - Name and address of the compiler of this RIS

# Compiler 1

Name	Hong, Kyung-Pyo
Institution/agency	Ministry of Environment
	339-012, Building #6, Government Complex-Sejong, 11 Doum 6-ro, Sejong Special Self-Governing City, Republic of Korea
E-mail	amplest@korea.kr
Phone	+82 44 201 7229
Fax	+82 44 201 7235

# 2.1.2 - Period of collection of data and information used to compile the RIS

From year 2004

To year 2013

#### 2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)

Unofficial name (optional)

Jangdo Wetland

Jangdo Wetland

## 2.1.4 - Changes to the boundaries and area of the Site since its designation or earlier update

(Update) A Changes to Site boundary Yes O No 

(Update) B. Changes to Site area

No change to area

# 2.1.5 - Changes to the ecological character of the Site

(Update) 6b i. Has the ecological character of the Ramsar Site (including applicable Criteria) changed since the previous RIS?

# 2.2 - Site location

# 2.2.1 - Defining the Site boundaries

#### b) Digital map/image

<1 file(s) uploaded>

Former maps 0

## Boundaries description

The official area of the Jangdo Wetland Ramsar Site specified in the Section 2.2.4 is 0.1 hectares smaller than the official area specified in the Korean Law. The difference derives from the difference between the GIS area measurement and the administrative measurement used by the Korean Government, and it was mentioned that the government will hold a meeting of experts to close the gap in the second half of 2015.

## 2.2.2 - General location

a) In which large administrative region does the site lie?	Chollanam-do Province
b) What is the nearest town or population	Heuksan-myeon, Sinan-gun

## 2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries?

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party?

# 2.2.4 - Area of the Site

Official area, in hectares (ha):	9	
Area, in hectares (ha) as calculated from GIS boundaries	8.8	

# 2.2.5 - Biogeography

# Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Udvardy's Biogeographical Provinces	Holarctic Region. Eastern Asiatic Region Palaearctic
Marine Ecoregions of the World (MEOW)	Temperate Northern Pacific

# 3 - Why is the Site important?

# 3.1 - Ramsar Criteria and their justification

☑ Criterion 1: Representative, rare or unique natural or near-natural wetland types

Hydrological services provided

The size of Jangdo Island where the Site is located and its catchment area is very small. The only source of water recharge to the Site is rainfall, and over the last decade, the annual precipitation amounts to 1,316 millimeters and the evapotranspiration rate is 58.6%. While the runoff that can infiltrate the surface of the wetland is small, the wetland retain enough water from groundwater recharge. Jangdo wetland provides important function to maintain the life of residents around the wetland by storing and cleansing surface water in the area where development of hydrangea - hydrological system is extremely limited. In the country, no other watersheds in islands whose size is similar to or smaller than Jangdo Island provide greater or similar hydrological services that the site does. No wetlands have been found to provide hydrological services, such as the Changdeo wetland, on a small island among the island's territory.

Other ecosystem services provided

The Jangdo Wetland not only supports the survival and livelihood of the local community, but also provides refuge for wildlife. It provides about 50 tonnes of drinking and usable water per day and 18,250 tonnes annually. The water it provides is a single drinking water source for about 120 local people.

☑ Criterion 2 : Rare species and threatened ecological communities

☑ Criterion 3 : Biological diversity

The Jangdo Wetland is home to a myriad of wild species including 99 species of migratory birds. European otters, at the top of the food chain, are found within and around the site, which indicates a healthy ecosystem and rich biodiversity of the site.

The site provides habitats for most of the species on the island. The wetland is critical for those species because the island itself is not big enough to support all these species without the wetland. There are about 644 species found in the wetland. It represents the largest species concentration in terms of islands in ROK.

Most of the birds inhabit either in alpine wetlands or in the mountainous area at the back of the wetland. However, for their survival, fresh water is necessary which the wetland provides. Also, it was observed that they feed from the wetland. According to the first survey conducted from March to June in 2004, it was observed that the island may have been used by large number of migratory birds as a stopover or temporary habitat.

Justificatio

Because the survey has been conducted from March to June 2004, it is hard to find out which birds stay in the island for whole year and visit the island temporally. However, the number of birds observed in March hit the peak and the number gradually decreased. We could speculate that many birds stay only for stopover temporally. Further survey is necessary (Page 136, in Ministry of Environment & National Institute of Environmental Research, 2004).

Unfortunately, long-term survey to observe migratory birds has not been conducted on the island and the changes on the population of migratory birds are not available.

Animals broadly inhabit almost whole area of the island, as it is a major source of clean fresh water. Even though the island itself is fairly small (3.02 km²), local people used to graze animals before designating as a protected area. Furthermore, Lutra lutra, which needs clean water and appropriate food, has been found living near the wetland. It explains that the wetland sustains stable food web even for the large animals.

Many endangered plants are pushed to the cliff area of the island and remain only in small numbers. It is caused by human activities like collecting plants for commercial purpose and natural succession of plants. At present, only a couple of Dendrobium minutiflorum surviving at the cliff on the northwest side of island. The island supports other precious species such as Ligularia stenocephala and Neofinetia falcate which are narrowly distributed in a small area at the northern part of ROK.

# 3.2 - Plant species whose presence relates to the international importance of the site

<no data available>

3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Common name		criterion	Size Period of pop. Est.	occurrence	IUCN Red A List	CITES Appendix I	CMS Appendix I	Other Status	Justification
Birds											
CHORDATA / AVES	Locustella pleskei	Styan's Grasshopper Warbler		0000			VU Gi: Giss				

<sup>1)</sup> Percentage of the total biogeographic population at the site

3.4 - Ecological communities whose presence relates to the international importance of the site

<no data available>

# 4 - What is the Site like? (Ecological character description)

# 4.1 - Ecological character

The main wetland type of the Site is freshwater marshes and freshwater marshes on peat soils. The geology of Jangdo Wetland comprises of metamorphic and granite rocks, and metamorphic rocks are considered to be formed in the pre-Cambrian period. Due to the presence of granite rocks that are softer than metamorphic rocks, differential erosion occurs and sediments and water converges in the depressed areas.

The main vegetation in the Site consists of plant species of second vegetation that are usually found in an environment in which disturbance, such as rice farming, regularly occurs and has conditions that ensure suitable pollination for plant species, including Isachne globosa-Salix koreensis, Isachne globosa, Persicaria thunbergii, Mischanthus sinensis var. purpurascens, Juncus effusus var. decipiens-Carex dickinsii, and Camellia japonica.

Jando Wetland is assessed to be of high conservation value because the site provides stopover sites for migratory waterbirds, many of which are endangered or threatened, and is a linkage that connects the warm templerate vegetation. Indeed, studies have found that a total of 99 migratory bird species use the site as a stopover. The abundant aquifer of the watershed provides water for about 640 species. The site also provides a refuge for wildlife.

## 4.2 - What wetland type(s) are in the site?

#### Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
Fresh water > Marshes on peat soils >> U: Permanent Non- forested peatlands		3		Rare
Fresh water > Marshes on peat soils >> Xp: Permanent Forested peatlands		1		Representative

## 4.3 - Biological components

#### 4.3.1 - Plant species

Other noteworthy plant species

Scientific name	Common name	Position in range / endemism / other
Carex jaluensis		
Carex onoei		
Clematis fusca		
Damnacanthus indicus		
Dendropanax morbiferus		
Drosera rotundifolia		
Farfugium japonicum		
Galium trifidum		
Gentiana jamesii		
Glyceria leptolepis		
Hosta yingeri		
Juncus decipiens		
Litsea japonica		
Lobelia sessilifolia		
Lonicera caerulea caerulea		
Ludwigia epilobioides		
Machilus japonica		
Menyanthes trifoliata		
Murdannia keisak		
Pleurospermum kamtschaticum		
Sanguisorba tenuifolia alba		
Sphagnum palustre		
Trientalis europaea arctica		
Utricularia ochroleuca		
Viola biflora		

## 4.3.2 - Animal species

Other noteworthy animal species

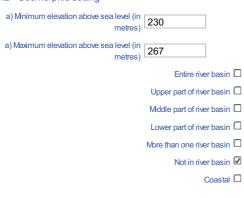
Phylum	Scientific name	Common name	Pop. size	Period of pop. est.	%occurrence	Position in range /endemism/other
CHORDATA/AVES	Accipiter gularis	Japanese Sparrowhawk				
CHORDATA/AVES	Accipiter nisus	Eurasian Sparrowhawk				
CHORDATA/AVES	Accipiter soloensis	Chinese Sparrowhawk;GrayFrog- Hawk				
CHORDATA/AVES	Columba janthina	Japanese Wood Pigeon				
CHORDATA/AVES	Egretta eulophotes	Chinese Egret				
CHORDATA/AVES	Falco peregrinus	Peregrine Falcon				
CHORDATA/AVES	Falco subbuteo	Eurasian Hobby;Northern Hobby				
CHORDATA/AVES	MIvus migrans	Black Kite				
CHORDATA/AVES	Pandion haliaetus	Osprey;Western Osprey				
CHORDATA/AVES	Pernis ptilorhynchus	Crested Honey Buzzard				
ARTHROPODAINSECTA	Acrida cinerea					
ARTHROPODAINSECTA	Camponotus jejuensis					
ARTHROPODAINSECTA	Copris tripartitus					
ARTHROPODAINSECTA	Ctenichneumon seoulensis					
ARTHROPODAINSECTA	Eurhadina koreana					
ARTHROPODAINSECTA	Gampsocleis sedakovii					
ARTHROPODAINSECTA	Gryllotalpa orientalis					
ARTHROPODAINSECTA	Locusta migratoria					
CHORDATA/MAMMALIA	Lutra lutra	European Otter				
ARTHROPODAINSECTA	Oxya chinensis sinuosa					
ARTHROPODAINSECTA	Teleogryllus emma					
ARTHROPODAINSECTA	Trichomma koreanum					

# 4.4 - Physical components

## 4.4.1 - Climate

Climatic region	Subregion
D: Moist Mid-Latitude climate with cold winters	Dwa: Humid continental (Humid with severe, dry winter, hot summer)

# 4.4.2 - Geomorphic setting



# 4.4.3 - Soil



Are soil types subject to change as a result of changing hydrological Yes O No ® conditions (e.g., increased salinity or acidification)?

#### Please provide further information on the soil (optional)

In the site, the brownish-red peat layers were initially built up by the bedrock weathering and erosion processes throughout geological periods. This was further developed by the accumulation of rarely-decomposed plants owing to hydrologic conditions and micro-climate of the soil below surface layer. The bottom impermeable layer below the peat layers is composed of yellowish sediments that contain clay minerals leached out from the surface layer.

#### 4.4.4 - Water regime

#### Water permanence

Presence?	Changes at RIS update
Usually permanent water	
present	

#### Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
riesence:	Predominant water source	Crianges at Nio update
Water inputs from rainfall	<b></b> ✓	No change

#### Water destination

Presence?	Changes at RIS update	
Marine	No change	

#### Stability of water regime

Presence?	Changes at RIS update
Water levels largely stable	No change

#### 4.4.5 - Sediment regime

Sediment regime unknown

#### Please provide further information on sediment (optional):

The depth of the sediment layer reaches on average 30.3 ±20.1cm and the depth of the deepest area stands at 102 cm. The proportion of organic matters in soil is 15.6±7.6 % (5.8 to 40.1 %) on average, which is slightly higher than that in other forest soils (less than 10%).

#### 4.4.6 - Water pH

#### Circumneutral (pH: 5.5-7.4)

(Update) Changes at RIS update No change 

● Increase 

O Decrease 

O Unknown 

O

Unknown

### 4.4.7 - Water salinity

## Fresh (<0.5 g/l)

 $^{ ext{(Update)}}$  Changes at RIS update No change ullet Increase O Decrease O Unknown O

Unknown

Please provide further information on salinity (optional):

Salinity: 0.07 psu (mean)

## 4.4.8 - Dissolved or suspended nutrients in water

Mesotrophic 🗹

(Update) Changes at RIS update No change Increase O Decrease O Unknown O

Unknown

## 4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological

characteristics in the area surrounding the Ramsar Site differ from the i) broadly similar O ii) significantly different 10 characteristics in the area surrounding the Ramsar Site differ from the ii) broadly similar O iii) significantly different 10 characteristics in the area surrounding the Ramsar Site differ from the iii) broadly similar O iii) significantly different 10 characteristics in the area surrounding the Ramsar Site differ from the iii) broadly similar O iii) significantly different 10 characteristics in the area surrounding the Ramsar Site differ from the iii) broadly similar O iii) significantly different 10 characteristics in the area surrounding the Ramsar Site differ from the iii) broadly similar O iii) significantly different 10 characteristics in the area surrounding the Ramsar Site different 10 characteristics in the area surrounding the Ramsar Site different 10 characteristics in the area surrounding the Ramsar Site different 10 characteristics in the area surrounding the Ramsar Site different 10 characteristics in the area surrounding the Ramsar Site different 10 characteristics in the area surrounding the Ramsar Site different 10 characteristics in the area surrounding the Ramsar Site different 10 characteristics in the area surrounding the Ramsar Site different 10 characteristics in the area surrounding the Ramsar Site different 10 characteristics in the area surrounding the area surrounding the Ramsar Site different 10 characteristics in the area surrounding the area surrounding the Ramsar Site different 10 characteristics in the area surrounding the ar

Surrounding area has greater urbanisation or development

Surrounding area has higher human population density  $\square$ 

Surrounding area has more intensive agricultural use  $\square$ 

Surrounding area has significantly different land cover or habitat types  $\hfill\Box$ 

#### Please describe other ways in which the surrounding area is different

The deperssion of the bedrock of the island, which was formed by erosion, is greater in the middle of the island than the edges, which causes water to flow from the edges and maintains the ability of the site to retain water. The soil conditions in the area surrouding the site is shallower and drier than those in the site, so the surrounding area is covered by a forest vegetation and rocky landscapes.

## 4.5 - Ecosystem services

## 4.5.1 - Ecosystem services/benefits

#### Provisioning Services

1 To World Hing Con Wood		
Ecosystem service	Examples	Importance/Extent/Significance
Fresh water	Drinking water for humans and/or livestock	High

### Regulating Services

Negulating Services		
Ecosystem service	Examples	Importance/Extent/Significance
Maintenance of hydrological regimes	Groundwater recharge and discharge	High
Maintenance of hydrological regimes	Storage and delivery of water as part of water supply systems for agriculture and industry	High
Pollution control and detoxification	Water purification/waste treatment or dilution	Medium
Hazard reduction	Flood control, flood storage	Medium

# Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Spiritual and inspirational	Aesthetic and sense of place values	Medium
Scientific and educational	Educational activities and opportunities	Medium
Scientific and educational	Important knowledge systems, importance for research (scientific reference area or site)	Medium
Scientific and educational	Major scientific study site	High

## Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganizms, the genes they contain, and the ecosystems of which they form a part	Medium

Within the site:	100s

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes O No ⊚ Unknown O

# 4.5.2 - Social and cultural values

<ul> <li>i) the site provides 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</li> </ul>	
ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland	
iii) the ecological character of the wetland depends on its interaction with local communities or indigenous peoples	
iv) 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	

# 4.6 - Ecological processes

(EOD)	
(ECD) Anima al manuna di catica muna di caticità i	Columbia ionthina Lutra lutra
Animal reproductive productivity	Columba ianthina. Lutra lutra
	o oranio a januma, zaca iaca

# 5 - How is the Site managed? (Conservation and management)

# 5.1 - Land tenure and responsibilities (Managers)

#### 5.1.1 - Land tenure/ownership

ı ub	lic owners	u III

Category	Within the Ramsar Site	In the surrounding area
National/Federal government	✓	

#### Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	<b>&gt;</b>	✓

#### Provide further information on the land tenure / ownership regime (optional):

As of 2009, the government authorities bought up the entire land area of the site, 76,790 square meters. Regardless of ownership form, both the site and its surrounding areas are conserved and managed in pursuant to the Wetland Conservation Act enacted in August 2004 and the National Park Act in December 1981, both of which prevent the harmful impacts of human activities.

## 5.1.2 - Management authority

Please list the local office / offices of any	Yeongsan River Basin Environmental Office
agency or organization responsible for	
managing the site:	
Provide the name and title of the person or	Hee-cheol Lee, Head of Yeongsan River Basin Environmental Office
people with responsibility for the wetland:	-
Postal address:	Yeongsan River Basin Environmental Office 31, Gyesu-ro, Seo-gu, Gwangju, Republic of Korea 502-788
	31, Gyesu-ro, Seo-gu, Gwangju, Republic of Korea 502-788
E-mail address:	hclee17@korea.kr

# 5.2 - Ecological character threats and responses (Management)

## 5.2.1 - Factors (actual or likely) adversely affecting the Site's ecological character

Human settlements (non agricultural)

affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Housing and urban areas	Low impact	Low impact		No change	<b>2</b>	No change
Nater regulation						
Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Drainage	Low impact	Low impact		No change	✓	No change
latural system modification				I		
affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Unspecified/others			✓			
Pollution						
Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes

## Please describe any other threats (optional):

The land used to be used to graze domesticated goats. Since the designation as a National Park and National Wetland Conservation Area given to the whole island area and to the site respectively, however, no human activities have occurred in the site, except ecotourism programmes which place limits on human access and focus on ecological monitoring and eco-friendly management of the area. With the leagl protection by the National Park Law, efforts have made by the local people to protect the site and its water supply.

 $\checkmark$ 

#### 5.2.2 - Legal conservation status

National legal designations

Unspecified

Designation type	Name of area	Online information url	Overlap with Ramsar Site
National Park	Tadohae-Haesang National Park	http://dadohae.knps.or.kr	partly
National Wetland Conservation Area	National Wetland Conservation Area	http://wetland.go.kr	whole

# 5.2.3 - IUCN protected areas categories (2008)

la Strict Nature Reserve	]
lb Wilderness Area: protected area managed mainly for wilderness protection	)
II National Park: protected area managed mainly for ecosystem protection and recreation	]
III Natural Monument: protected area managed mainly for conservation of specific natural features	]
IV Habitat/Species Management Area: protected area managed mainly for conservation through management intervention	)
V Protected Landscape/Seascape: protected area managed mainly for landscape/seascape conservation and recreation	)
VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems	)

<no data available>

# 5.2.4 - Key conservation measures

Legal protection

20ga: p. 0.000.0.1		
Measures	Status	
Legal protection	Implemented	

#### Habitat

Measures	Status
Hydrology management/restoration	Implemented

# Human Activities

Tiditidit / Datiaco		
Measures	Status	
Management of water abstraction/takes	Partially implemented	
Livestock management/exclusion (excluding fisheries)	Implemented	

# 5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site? Yes **1** No O

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning Yes O No 

processes with another Contracting Party?

# 5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No, the site has already been restored

# 5.2.7 - Monitoring implemented or proposed

3 1	
Monitoring	Status
Water regime monitoring	Implemented
Plant community	Implemented
Plant species	Implemented
Animal community	Implemented
Animal species (please specify)	Implemented
Birds	Implemented
Soil quality	Implemented

# 6 - Additional material

## 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

- Choi, B.K., Kim, J.W., Kim, S.Y. and Lim, J.C.(2012). Vegetation of Jangdo island. Korean journal of environment and ecology. 26: 512-527.
- Kim, J.Y., Yang, D.Y., and Lee, D.Y., (1998), "The natural Environment in the Daeamsan high moor," The Journal of Quaternary Research, vol. 12(1), 55~62.
- Ministry of Environment & National Institute of Environmental Research, (2004), A Report of Natural Ecosystem in Jangdo Island high moor.
- National Park Service, (1999), A Report of Natural Ecosystem in Odaesan Mountainous Wetland.
- Park, E.J., (2004), "A Study on the Classification and Formation of Wetland Ecosystem in the ROK", The Journal of Korea Professional Geographers, vol. 37(4), 256~268.
- Park, E.J., and Kim. Y.T., (2004), "The Formation of Island Mountainous Wetland in the ROK Case Study of Jangdo high moor", The Journal of Korea Wetland Society (in press).
- Park, S.J., Burt, T.P., and Bull, P.A., (1996), "A soil-landscape continuum on a three-dimensional hill slope, Quantock Hills, Somerset," M.G. Anderson and S.M. Brooks (eds), Advance in Hillslope Processes, Vol. 1, 367~396, John Wiley and Sons.
- Song, H.K., Park, G.S., Park, H.R., So, S.K., Kim, H. J., Kim, M. Y.(2006). Vegetation and Soil Properties of a Forest Wetland in Jangdo, Sinan-Gun. Journal of Korean Society of Environment & Ecology. 20:407-414.
- U.S.G.S., 1999, Wetland Inventory Summary of U.S.A; Identification and Application of Wetland Ecosystems, National Water Supply Paper, 2425.

#### 6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<no file available

ii. a detailed Ecological Character Description (ECD) (in a national format)

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

vi. other published literature

<no file available

#### 6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site



site view ( Ministry of Environment, 15-03-2012 )



site view ( Ministry of Environment, 17-08-2013 )



site view ( Ministry of Environment, 22-07-2013



site view ( Ministry of Environment. 22-07-2013



site view ( Ministry of Environment, 23-09-2013



site view ( Ministry of Environment, 17-08-2013 )

# 6.1.4 - Designation letter and related data

#### **Designation letter**

Date of Designation 2005-03-30