



# Ramsar Information Sheet

Update version, previously published on : 18 November 2006

## Republic of Korea Mulyeongari-oreum Ramsar Site



Designation date	18 November 2006
Site number	1648
Coordinates	33°22'07"N 126°41'32"E
Area	31,00 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

Mulyeongari-oreum Ramsar Site is a crater lake on top of an oreum (a parasitic cone in the local dialect) located on Jeju Island. Of all 368 parasitic cones in the island, 91% are scoria cones and among them, only 9, including the Site, have one or more watersheds. At the volcanic edifice, an external feature of a volcanic mountain in which wetlands are rarely formed, this wetland occurs at the crater bottom due to natural processes, including weathering and mass movement that has increased its impermeability. Despite being an isolated environment, the site is linked with surrounding ecosystems, which plays an important role in providing habitats and maintaining biodiversity of about 767 species. The site provides habitats for 24 endemic species, including *Asarum sieboldii*, *Cardamine anhuiensis*, *Gryllotalpa orientalis*, *Hynobius quepaertensis* and *Apodemus chejuensis*.

The Site also provides habitat to the globally vulnerable *Pitta nympha* and *Falco peregrinus*, as well as other nationally threatened species such as *Aegypius monachus*, *Aquila chrysaetos*, *Pernis ptilorhynchus*, *Terpsiphone atrocaudata*, *Kaloula borealis* and *Prosopocoilus astacoides*. The site is culturally significant as the name Mulyeongari-oreum also known as "Su-ryeong-ak: or Suyeongak" means a hill with holy water.

## 2 - Data & location

### 2.1 - Formal data

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

##### Compiler 1

Name	Kyoung-Pyo Hong
Institution/agency	Ministry of Environment
Postal address	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	2001
To year	2014

#### 2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish)	Mulyeongari-oreum Ramsar Site
Unofficial name (optional)	Mulyeongari-oreum

#### 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  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? Not evaluated

## 2.2 - Site location

### 2.2.1 - Defining the Site boundaries

b) Digital map/image  
<2 file(s) uploaded>

Former maps 0

#### Boundaries description

The boundary of Mulyeongari-oreum Ramsar Site follows the boundary of the Wetland Protected Area of Mulyeongari-oreum(0.309 square kilometers) designated by the Ministry of Environment on 5 December 2000.

### 2.2.2 - General location

a) In which large administrative region does the site lie?	Jeju Special Self-Governing Province
b) What is the nearest town or population centre?	San 189-1, Sumang-ri, Namwon-eup, Seogwipo-si, Jeju-do, Korea

### 2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes  No

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes  No

### 2.2.4 - Area of the Site

Official area, in hectares (ha):

Area, in hectares (ha) as calculated from GIS boundaries

### 2.2.5 - Biogeography

#### Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Udvardy's Biogeographical Provinces	Holarctic Region - Eastern Asiatic Region Palearctic

#### Other biogeographic regionalisation scheme

### 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

Other ecosystem services provided

Water in the Mulyeongari-oreum assists to maintain the characteristic plant ecology and provides a feed space of wildlife.

Other reasons

Mulyeongari-oreum Ramsar Site includes one of the 368 parasitic cones in Jeju Island and its crater lake atop at 508 meters above sea level. It is believed that the cone was created by volcanic eruptions that occurred about 120 million years ago. Of all 368 parasitic cones in the island, 91% are scoria cones and among them, only 9, including the site and Muljangori oreum Ramsar Site, have one or more watersheds. Scoria cones are mostly composed of water-permeable basalt, and unlike other scoria cones, the site retains a plentiful amount of water due to the following reasons; as the surface of the slope of the site's cone was weathered and became less steep, fine-textured soils moved onto the cone's crater, which made the bottom of the crater less permeable to water and created the wetland. Despite being an isolated watershed, the site is linked with surrounding ecosystems, which plays an important role in providing habitats and maintaining biodiversity.

- Criterion 2 : Rare species and threatened ecological communities

- Criterion 3 : Biological diversity

Justification

In Mulyeongari-oreum, the surveyed biota were 767 species. The nationally endangered species were 2 species (*Aquila chrysaetos* and *Falco peregrinus*) for class I and 8 species (*Aegyptius monachus*, *Pernis ptilorhynchus*, *Pitta nympha*, *Terpsiphone atrocaudata*, *Kaloula borealis*, *Prosopocoilus astacoides*, *Copris tripartitus* and *Lethocerus deyrollei* for class II.

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

Scientific name	Common name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
<i>Calanthe striata</i> 		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	National Red List - VU	
<i>Nymphoides coreana</i> 		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	National Red List - EN	

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

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence 1)	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
<b>Birds</b>																		
CHORDATA/AVES	<i>Aegypius monachus</i>	Cinereous Vulture	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT 	<input type="checkbox"/>	<input type="checkbox"/>	Naitonal Red List-VU / Endangered Wildlife II	
CHORDATA/AVES	<i>Aquila chrysaetos</i>	Golden Eagle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Naitonal Red List-EN / Endangered Wildlife I	
CHORDATA/AVES	<i>Falco peregrinus</i>	Peregrine Falcon	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Naitonal Red List-EN / Endangered Wildlife I	
CHORDATA/AVES	<i>Pernis ptilorhynchus orientalis</i>	Oriental Honey Buzzard	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	Naitonal Red List-VU / Endangered Wildlife II	
CHORDATA/AVES	<i>Pitta nympha</i>	Fairy Pitta	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>	Naitonal Red List-VU / Endangered Wildlife II	
CHORDATA/AVES	<i>Terpsiphone atrocaudata</i>	Japanese Paradise Flycatcher	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				NT 	<input type="checkbox"/>	<input type="checkbox"/>	Naitonal Red List-VU / Endangered Wildlife II	
<b>Others</b>																		
ARTHROPODA / INSECTA	<i>Copris tripartitus</i>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	Naitonal Red List-VU / Endangered Wildlife II	
CHORDATA/AMPHIBIA	<i>Kaloula borealis</i>	Boreal Digging Frog	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				LC 	<input type="checkbox"/>	<input type="checkbox"/>	Naitonal Red List-VU / Endangered Wildlife II	
ARTHROPODA / INSECTA	<i>Prosopocoilus astacoides blanchardi</i>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	Naitonal Red List-VU / Endangered Wildlife II	

1) Percentage of the total biogeographic population at the site

Vuillefroy (*Lethocerus deyrollei*) - Nationally VU/Class II Endangered Wildlife

### 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

Mulyeongari-oreum Ramsar Site is a freshwater lake located at 508 meters above sea level on Halla Mountain on Jeju Island. The parasitic cone within the Site's boundary covers 30.9 hectares of land area with its diameter reaching 252 meters at the maximum and is 41 meters deep. The wetland receives an annual average precipitation of 1,844 millimeters and an annual temperature of 13.7 degree Celsius. Sediments which are composed of 87% of silt and clay, and organic matters flow down from the slopes around the watershed to its center and accumulate at the bottom of the crater. The Site is home to 767 animal and plant species, including 255 plant species, 31 benthic invertebrate species, 364 inland insect species, 11 reptile and amphibian species, 41 bird species, 6 mammal species and 59 plankton species.

### 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 > Lakes and pools >> Tp: Permanent freshwater marshes/ pools	Mulyeongari-oreum	1	30.9	Unique

### 4.3 - Biological components

#### 4.3.1 - Plant species

##### Other noteworthy plant species

Scientific name	Common name	Position in range / endemism / other
<i>Asarum sieboldii</i>		Endemic species
<i>Cardamine anhuiensis</i>		Endemic species

#### 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
ARTHROPODA/INSECTA	<i>Acrida cinerea</i>					Endemic species
ARTHROPODA/INSECTA	<i>Anapodisma beybienkoi</i>					Endemic species
ARTHROPODA/INSECTA	<i>Anechura japonica</i>					Endemic species
ARTHROPODA/INSECTA	<i>Atractomorpha lata</i>					Endemic species
ARTHROPODA/INSECTA	<i>Auzata minuta</i>					Endemic species
ARTHROPODA/INSECTA	<i>Blattella nipponica</i>					Endemic species
ARTHROPODA/INSECTA	<i>Gryllotalpa orientalis</i>					Endemic species
CHORDATA/AMPHIBIA	<i>Hynobius quepaertensis</i>					Endemic species
ARTHROPODA/INSECTA	<i>Locusta migratoria</i>					Endemic species
ARTHROPODA/INSECTA	<i>Loxoblemmus arietulus</i>					Endemic species
ARTHROPODA/INSECTA	<i>Maladera infuscata</i>					Endemic species
ARTHROPODA/INSECTA	<i>Oedaleus infernalis</i>					Endemic species
ARTHROPODA/INSECTA	<i>Phaneroptera falcata</i>					Endemic species
ARTHROPODA/INSECTA	<i>Phaneroptera nigroantennata</i>					Endemic species
ARTHROPODA/INSECTA	<i>Phraortes illepidus</i>					Endemic species
ARTHROPODA/INSECTA	<i>Shirakiacris shirakii</i>					Endemic species
ARTHROPODA/INSECTA	<i>Teleogryllus emma</i>					Endemic species
ARTHROPODA/INSECTA	<i>Tetrix japonica</i>					Endemic species

##### Optional text box to provide further information

Additional species endemic to Korea but not registered in the RSIS database and IUCN Red List:

*Metriopectera bonneti*  
*Baculum elongatum*  
*Chejuanomala queiparta*  
*Apodemus chejuensis*

### 4.4 - Physical components

4.4.1 - Climate

Climatic region	Subregion
C: Moist Mid-Latitude climate with mild winters	Cwa: Humid subtropical (Mild with dry winter, hot summer)

Average annual rainfall is 1,844.2 mm, average annual evapotranspiration 953.5 mm, excess moisture 890.7 mm. Climatological water balance has been maintained in a stable state.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

a) Maximum elevation above sea level (in metres)

- Entire river basin
- Upper part of river basin
- Middle part of river basin
- Lower part of river basin
- More than one river basin
- Not in river basin
- Coastal

4.4.3 - Soil

Mineral

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

Organic

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

No available information

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

Please provide further information on the soil (optional)

Soil of the crater-lake is composed of volcanic ashes and ejecta. After volcanic eruptions, crater-lake has been in an equilibrium condition. Soil particles resulted from weathering and erosion rolled down in and out of the crater-lake forming surface soil. Various vegetation grew depending on hydrological conditions and growth periods. Sediment composition is 87% of silt and clay, porosity is a very high proportion of fine-grained material and porosity as 77.3 to 86.4%.

4.4.4 - Water regime

Water permanence

Presence?	Changes at RIS update
Usually permanent water present	
Usually seasonal, ephemeral or intermittent water present	

Stability of water regime

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

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology.

The Mulyeongari-oreum water supply is dependent on the amount of rainfall. In the dry seasons, water penetrates surface or evaporates and the water level is kept at 1 m in the middle of the wetland. The total inflow quantity is 0.01806 x 106 m3/year. The total water quantity at 50.1% is evaporates from being lost to the atmosphere, and 49.9% of the remaining amount is leaked into groundwater or leaching groups around. Climatological water balance has been maintained in a stable state.

4.4.5 - Sediment regime

Sediment regime unknown

<no data available>

4.4.6 - Water pH

Unknown

4.4.7 - Water salinity

Fresh (<0.5 g/l)

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

Unknown

4.4.8 - Dissolved or suspended nutrients in water

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 site itself: i) broadly similar  ii) significantly different

- Surrounding area has greater urbanisation or development
- Surrounding area has higher human population density
- Surrounding area has more intensive agricultural use
- Surrounding area has significantly different land cover or habitat types

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

Regulating Services

Ecosystem service	Examples	Importance/Extent/Significance
Erosion protection	Soil, sediment and nutrient retention	Medium

Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Nature observation and nature-based tourism	Medium
Spiritual and inspirational	Spiritual and religious values	Low
Scientific and educational	Long-term monitoring site	High
Scientific and educational	Educational activities and opportunities	Medium

Supporting Services

Ecosystem service	Examples	Importance/Extent/Significance
Biodiversity	Supports a variety of all life forms including plants, animals and microorganisms, the genes they contain, and the ecosystems of which they form a part	Medium
Soil formation	Accumulation of organic matter	Medium
Nutrient cycling	Storage, recycling, processing and acquisition of nutrients	Medium
Pollination	Support for pollinators	Low

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

4.5.2 - Social and cultural values

- 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
- ii) the site has exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland

Description if applicable

Mulyeonghari-oreum is known as "Su-ryeong-ak: or Suyeongak" which literally means a hill with holy water. The name has connection with contained water in the crater. There was an old fable about wetland. A boy was searching for his missing cow and fell asleep near the crater. He dreamt about an old man with long white beard. The old man told him not to worry about his missing cow. When he woke up, he found his cow drinking water at the crater.

- 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

<no data available>

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

### 5.1 - Land tenure and responsibilities (Managers)

#### 5.1.1 - Land tenure/ownership

Public ownership

Category	Within the Ramsar Site	In the surrounding area
National/Federal government	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

#### 5.1.2 - Management authority

Please list the local office / offices of any agency or organization responsible for managing the site:

The head of Yeongsan River Basin Environmental Office have the responsibility of management of the wetland based on the phrase 18, Wetland Conservation Act.

Provide the name and title of the person or people with responsibility for the wetland:

Hee-cheol Lee, Head of Yeongsan River Basin Environmental Office

Postal address:

Yeongsan River Basin Environmental Office, 21 Gyesoo-ro, Seo-gu, Gwangju-si, Republic of Korea  
Tel. +82-62-410-51114  
Fax. +82-55-211-1605

E-mail address:

hellodolly@korea.kr

### 5.2 - Ecological character threats and responses (Management)

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

Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	Changes	In the surrounding area	Changes
Livestock farming and ranching			<input type="checkbox"/>		<input checked="" type="checkbox"/>	

#### 5.2.2 - Legal conservation status

National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
Wetland Conservation Area			whole

#### 5.2.3 - IUCN protected areas categories (2008)

- Ia Strict Nature Reserve
- Ib 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

#### 5.2.4 - Key conservation measures

Legal protection

Measures	Status
Legal protection	Implemented

Human Activities

Measures	Status
Regulation/management of wastes	Implemented
Fisheries management/regulation	Implemented
Harvest controls/poaching enforcement	Implemented
Regulation/management of recreational activities	Implemented
Communication, education, and participation and awareness activities	Implemented
Research	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  No

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes  No

### 5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No need identified

### 5.2.7 - Monitoring implemented or proposed

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

The National Wetland Centre executes an Intensive Survey on the Wetland Conservation Areas every five years, supported by the Ministry of Environment. The survey covers 12 fields that include terrain, geology, vegetation, flora, terrestrial insects, benthic macroinvertebrates, fish, amphibians, reptiles, birds, mammals, zooplankton, phytoplankton etc.

Regular monitoring of the wetland is conducted twice a year by Yeongsan River Basin Environmental Office covering geology and ecology of the wetland ecosystem.

## 6 - Additional material

### 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

2nd Intensive Survey on Wetland Protected Areas, 2013, National Institute of Environmental Research

#### 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)

<no file available>

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

<1 file(s) uploaded>

vi. other published literature

<no file available>

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

Please provide at least one photograph of the site:



Landscape of Mulyeongari-oreum ( *ministry of Environment, 25-09-2013* )

#### 6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation 2006-11-18