RIS for Site no. 2225, Sumeunmulbaengdui Ramsar Site, Republic of Korea

Summary

The 117.51 hectare Sumeunmulbaengdui is a natural mountainous peat wetland that occurs on the flatland in the middle of Halla Mountain, (or 'Hallasan') a shield volcano on Jeju Island and the largest mountain in Korea. The site is unique for the biogeographic region because of its geology and method of formation, and is also important for its role in the storage and recharge of groundwater.

Jeju island is volcanic and has several internationally important wetlands, including four Ramsar Sites, and each of them was formed by different types of volcanic activities. Two Ramsar Sites (Mulyeongari and Muljangori Wetland) were formed on the crater of two parasitic cones after the main volcanic Hallasan became dormant. The 1100 Altitude Ramsar Site is situated on a flank of Hallasan that was mainly formed by pyroclastic flow from the summit of the mountain. Sumeunmulbangdui, however, occurs on a flatland that was enclosed by six parasitic cones produced by flank eruptions. Such a formation is rarely found in the biogeographic region.

Sumeunmulbangdui plays an important role in storing and recharging groundwater since Jeju, being a volcanic island, is short of water throughout the year due to irregular precipitation and low infiltration rate. Mostly, water is recharged by groundwater from wetlands, including Sumeunmulbangdui and the other Ramsar Sites. The geographic features of these Ramsar Sites are different from each other. For instance, many watersheds, including the Dongbakdongsan Wetland Ramsar Site, occur in a low-lying area of Hallasan, whereas Sumeunmulbangdui occurs in the middle and this formation would not have occurred without the surrounding parasitic cones. And the water supply of Sumeunmulbangdui is more regular than other watersheds because of its function as natural sponges, while other patches of land have low water-retaining capacity and function as a natural filter.

The word Sumeunmulbaengdui means a field covered with water and hidden by parasitic volcanoes in the local dialect of the island, and reflects the rarity of the site and surrounding landscape.

In recognition of its social, cultural and ecological values, Hallasan was given a number of international designations, including World Heritage Site, Geo Park and Biosphere Reserve.
2. Data & location

2.1 - Formal data

2.1.1 - Name and address of the compiler of this RIS

<table>
<thead>
<tr>
<th>Name</th>
<th>Kyoung-Pyo Hong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institution/agency</td>
<td>Ministry of Environment</td>
</tr>
<tr>
<td>Postal address</td>
<td>339-012, Nature Policy Division, Ministry of Environment Building #6 Government Complex-Sejong 11 Doum 6-ro Sejong Special Self-Governing City Republic of Korea</td>
</tr>
<tr>
<td>E-mail</td>
<td><a href="mailto:amplest@korea.kr">amplest@korea.kr</a></td>
</tr>
<tr>
<td>Phone</td>
<td>+82-44-201-7229</td>
</tr>
<tr>
<td>Fax</td>
<td>+82-44-201-7235</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>From year</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>To year</td>
<td>2014</td>
</tr>
</tbody>
</table>

2.1.3 - Name of the Ramsar Site

| Official name (in English, French or Spanish) | Sumeunmulbaengdui Ramsar Site |
| Unofficial name (optional) | Sumeunmulbaengdui |

2.2 - Site location
2.2.1 - Defining the Site boundaries

b) Digital map/image

Boundaries description (optional)

The boundary delineated commences on the south-western corner of the Hallasan National Park (16.5% of the land of the island is within the boundary of the park). It follows the boundary naturally delineated by 5 parasitic cones that surrounds the site. About 1.5 kilometres east from the site to the national park, the 1100 Altitude Wetland, one of the 4 Ramsar Sites within the main island of Jeju, is abutting.

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?

Gwangryeong-ri (town) in Eaweol-eup (county) in Jeju City

2.2.3 - For wetlands on national boundaries only

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

Yes

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

Yes

2.2.4 - Area of the Site

Official area, in hectares (ha):

117.5

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

117.51

2.2.5 - Biogeography

Biogeographic regions
<table>
<thead>
<tr>
<th>Regionalisation scheme(s)</th>
<th>Biogeographic region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Udvardy's Biogeographical Provinces</td>
<td>Holarctic Region</td>
</tr>
</tbody>
</table>
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

Sumeunmulbangdui plays an important role in storing and recharging groundwater since Jeju, being a volcanic island, is short of water throughout the year due to irregular precipitation and low infiltration rate. Mostly, water is recharged by groundwater from wetlands, including Sumeunmulbangdui and the other Ramsar Sites. The geographic features of these Ramsar Sites are different from each other. For instance, many watersheds, including the Dongbakdongsan Wetland Ramsar Site, occur in a low-lying area of Hallasan, whereas Sumeunmulbangdui occurs in the middle and this formation would not have occurred without the surrounding parasitic cones. And the water supply of the Sumeunmulbangdui is more regular than other watersheds because of its function as natural sponges, while other patches of land have low water-retaining capacity and function as a natural filter. At Sumeunmulbangdui, the bedrock is pitted with a smaller number of cavities than the bedrock in other volcanic areas - a feature that enables the bedrock to store and replenish surface runoff to the wetland. This geological trait does not normally occur in volcanic areas, thus, makes the site an extremely rare wetland habitat type in the biogeographic region.

Other ecosystem services provided

The lower layer of Sumeunmulbaengdui was formed by a lahar caused by volcanic landslides that flowed from the Hallasan.

The site has rich ecosystems that interact with its surrounding parasitic cones and their ecosystems. The water depth of the wetland varies, enhancing its aesthetic values.

Other reasons

The Sumeunmulbangdui is unique for the biogeographic region because of its geology and method of formation, and is also important for its role in the storage and recharge of groundwater.

Jeju island is volcanic and has several internationally important wetlands, including four Ramsar Sites, and each of them was formed by different types of volcanic activities. Two Ramsar Sites (Mulyeongari and Muljangori Wetland) were formed on the crater of two parasitic cones after the main volcanic Hallasan became dormant. The 1100 Altitude Ramsar Site is situated on a flank of Hallasan that was mainly formed by pyroclastic flow from the summit of the mountain.

Sumeunmulbangdui, however, occurs on a flatland that was enclosed by six parasitic cones produced by flank eruptions. Such a formation is rarely found in the biogeographic region.

Criterion 2: Rare species and threatened ecological communities
3.2 - Plant species whose presence relates to the international importance of the site
3.3 - Animal species whose presence relates to the international importance of the site

<table>
<thead>
<tr>
<th>Phylum</th>
<th>Scientific name</th>
<th>Common name</th>
<th>Species qualifies under criterion</th>
<th>Species contributes under criterion</th>
<th>Pop. Size</th>
<th>Period of pop. Est.</th>
<th>% occurrence</th>
<th>IUCN Red List</th>
<th>CITES Appendix I</th>
<th>CMS Appendix I</th>
<th>Other Status</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHORDATA / AMPHIBIA</td>
<td>Pelophylax nigromaculatus</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NT</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHORDATA / AVES</td>
<td>Pitta nympha</td>
<td>Fairy Pitta</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>VU</td>
<td></td>
<td></td>
<td></td>
<td>Class II Endangered Wildspecies, Wildlife Protection and Management Act in the Republic of Korea. CITES Appendix II</td>
</tr>
</tbody>
</table>

The Wildlife Protection and Management Act provides the legal protection for wildlife in Korea, especially Endangered Wild Species that are currently classified into two categories: Endangered Wild Species Class I and II. The Endangered Wild Species - Class I includes wild species whose numbers have drastically declined resulting from natural or anthropogenic factors. The Endangered Wild Species - Class II includes wild species whose numbers have significantly declined and which face threat of extinction in the near future in the event where current threatening factors are not eliminated or alleviated. The species listed in both Level I and Level II are designated by the Ministry of Environment in agreement with the head of the administrative agency concerned.

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

<table>
<thead>
<tr>
<th>Name of ecological community</th>
<th>Community qualifies under Criterion 2?</th>
<th>Description</th>
<th>Justification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pernis ptilorhynchus</td>
<td>Yes</td>
<td>CITES Appendix II and CMS Appendix II</td>
<td></td>
</tr>
</tbody>
</table>
4 - What is the Site like? (Ecological character description)

4.1 - Ecological character

The Sumeunmulbaengdui Wetland is located on the flatland in the middle of Halla Mountain, a shield volcano that has many parasitic cones, in Jeju Island. The site is situated in a long and narrow patch of land, and its total surface area is 117.5 ha and the perimeter is 2,472 m. Volcanic ash soils, together with the bedrock consisting mainly of trachybasalt occur in the site, storing and recharging water.

The site is home to various aquatic and wetland plants, including 30 wetland plant species that accounts for 16 percent of all plants inhabiting the site. This includes Utricularia yakusimensis, designated as Endangered Wild Species (EWS) by the Ministry of Environment.

The site accommodates a wide variety of wild birds species, including the species designated as Endangered Wildlife Species and/or endemic species, such as Pernis ptilorhynchus, Falco subbteo, Terpsiphone atrocaudata Cuculus saturatus, Cuculus poliocephalus and Ficedula zanthopygia.

The Wildlife Protection and Management Act provides the legal protection for wildlife in Korea, especially Endangered Wild Species that are currently classified into two categories; Endangered Wild Species Class I and II. The  Endangered Wild Species Class I  includes wild species whose numbers have drastically declined resulting from natural or anthropogenic factors. The  Endangered Wild Species Class II  includes wild species whose numbers have significantly declined and which face threat of extinction in the near future in the event where current threatening factors are not eliminated or alleviated. The species listed in both Class I and Class II are designated by the Ministry of Environment in agreement with the head of the administrative agency concerned.

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

Inland wetlands

<table>
<thead>
<tr>
<th>Wetland type (code and name)</th>
<th>Local name</th>
<th>Ranking of extent (1: greatest - 4: least)</th>
<th>Area (ha) of wetland type</th>
<th>Justification of Criterion 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>U: Permanent Non-forested peatlands</td>
<td></td>
<td></td>
<td>117.5</td>
<td>Rare</td>
</tr>
</tbody>
</table>
### 4.3 - Biological components

#### 4.3.1 - Plant species

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Common name</th>
<th>Position in range / endemism / other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cirsium rhinoceros</td>
<td>Utricularia uliginosa</td>
<td>National red list - VU</td>
</tr>
</tbody>
</table>

#### 4.3.2 - Animal species

<table>
<thead>
<tr>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phylum</td>
</tr>
<tr>
<td>--------------</td>
</tr>
<tr>
<td>CHORDATA/AVES</td>
</tr>
<tr>
<td>CHORDATA/AVES</td>
</tr>
<tr>
<td>CHORDATA/REPTILIA</td>
</tr>
<tr>
<td>ARTHROPODA/INSECTA</td>
</tr>
<tr>
<td>CHORDATA/AVES</td>
</tr>
<tr>
<td>CHORDATA/MAMMALIA</td>
</tr>
<tr>
<td>ARTHROPODA/INSECTA</td>
</tr>
<tr>
<td>CHORDATA/AVES</td>
</tr>
<tr>
<td>CHORDATA/AVES</td>
</tr>
<tr>
<td>CHORDATA/REPTILIA</td>
</tr>
<tr>
<td>ARTHROPODA/INSECTA</td>
</tr>
<tr>
<td>ARTHROPODA/INSECTA</td>
</tr>
<tr>
<td>CHORDATA/AVES</td>
</tr>
<tr>
<td>Phylum</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>CHORDATA/AVES</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<tr>
<td>CHORDATA/REPTILIA</td>
</tr>
<tr>
<td>CHORDATA/AMPHIBIA</td>
</tr>
<tr>
<td>ARTHROPODA/INSECTA</td>
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<td>CHORDATA/MAMMALIA</td>
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<td>ARTHROPODA/INSECTA</td>
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<td>ARTHROPODA/INSECTA</td>
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<tr>
<td>ARTHROPODA/INSECTA</td>
</tr>
<tr>
<td>CHORDATA/REPTILIA</td>
</tr>
<tr>
<td>CHORDATA/REPTILIA</td>
</tr>
<tr>
<td>Phylum</td>
</tr>
<tr>
<td>-----------------------</td>
</tr>
<tr>
<td>CHORDATA/REPTILIA</td>
</tr>
<tr>
<td>CHORDATA/MAMMALIA</td>
</tr>
</tbody>
</table>
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)

The average annual temperature of the site ranges from 15.6 to 1.6 degree Celsius. The average temperature of the coldest months stands at 0.9 degree Celsius and that of the warmest months at 21.3. The site is under the influence of a mild, maritime climate. The average precipitation of the Jeju Island in depth is 1,842 mm per year, with the average monthly rainfall of 153.5 mm.

4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)
976

a) Maximum elevation above sea level (in metres)
984

Not in river basin

4.4.3 - Soil

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Organic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)?

Yes

Please provide further information on the soil (optional)
4.4.4 - Water regime

Water permanence

<table>
<thead>
<tr>
<th>Presence?</th>
<th>Changes at RIS update</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usually permanent water present</td>
<td>No change</td>
</tr>
</tbody>
</table>

Source of water that maintains character of the site

<table>
<thead>
<tr>
<th>Presence?</th>
<th>Changes at RIS update</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water inputs from rainfall</td>
<td>No change</td>
</tr>
<tr>
<td>Water inputs from surface water</td>
<td>No change</td>
</tr>
<tr>
<td>Water inputs from groundwater</td>
<td>No change</td>
</tr>
</tbody>
</table>

Water destination

<table>
<thead>
<tr>
<th>Presence?</th>
<th>Changes at RIS update</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feeds groundwater</td>
<td>No change</td>
</tr>
<tr>
<td>To downstream catchment</td>
<td>No change</td>
</tr>
</tbody>
</table>

Stability of water regime

<table>
<thead>
<tr>
<th>Presence?</th>
<th>Changes at RIS update</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water levels largely stable</td>
<td>No change</td>
</tr>
</tbody>
</table>

4.4.5 - Sediment regime

Sediment regime unknown

4.4.6 - Water pH

Acid (pH < 5.5)

4.4.7 - Water salinity

Fresh (<0.5 g/l)
4.4.8 - Dissolved or suspended nutrients in water

Dystrophic

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

4.5 - Ecosystem services

4.5.1 - Ecosystem services/benefits

<table>
<thead>
<tr>
<th>Ecosystem service</th>
<th>Examples</th>
<th>Importance/Extent/Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance of hydrological</td>
<td>Groundwater recharge and discharge</td>
<td>High</td>
</tr>
<tr>
<td>regimes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Erosion protection</td>
<td>Soil, sediment and nutrient retention</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climate regulation</td>
<td>Local climate regulation/buffering of change</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cultural Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recreation and tourism</td>
<td>Nature observation and nature-based tourism</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supporting Services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Supports a variety of all life forms including plants, animals and</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>microorganisms, the genes they contain, and the ecosystems of which</td>
<td></td>
</tr>
<tr>
<td></td>
<td>they form a part</td>
<td></td>
</tr>
<tr>
<td>Soil formation</td>
<td>Accumulation of organic matter</td>
<td>Low</td>
</tr>
</tbody>
</table>

Within the site:
Outside the site:

30000

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

<no data available>

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Within the Ramsar Site</th>
<th>In the surrounding area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public ownership</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

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

The Korea Forest Service, a national agency specializing in forestry that is overseen by the Ministry for Food, Agriculture, Forestry and Fisheries, holds the ownership of the land within and surrounding the Ramsar Site.

5.1.2 - Management authority

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

Yeongsan River Basin Environmental Office, Ministry of Environment

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

Water regulation
### Factors adversely affecting site

<table>
<thead>
<tr>
<th></th>
<th>Actual threat</th>
<th>Potential threat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drainage</td>
<td>Low impact</td>
<td>Low impact</td>
</tr>
<tr>
<td>Agriculture and aquaculture</td>
<td>Low impact</td>
<td>Low impact</td>
</tr>
<tr>
<td>Livestock farming and ranching</td>
<td>Low impact</td>
<td>Low impact</td>
</tr>
<tr>
<td>Human intrusions and disturbance</td>
<td>Low impact</td>
<td>Low impact</td>
</tr>
<tr>
<td>Recreational and tourism activities</td>
<td>Low impact</td>
<td>Low impact</td>
</tr>
</tbody>
</table>

### 5.2.2 - Legal conservation status

<table>
<thead>
<tr>
<th>Designation type</th>
<th>Name of area</th>
<th>Online information url</th>
</tr>
</thead>
</table>
5.2.3 - IUCN protected areas categories (2008)

II National Park: protected area managed mainly for ecosystem protection and recreation

5.2.4 - Key conservation measures

<table>
<thead>
<tr>
<th>Measures</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal protection</td>
<td>Implemented</td>
</tr>
<tr>
<td>Habitat</td>
<td></td>
</tr>
<tr>
<td>Land conversion controls</td>
<td>Implemented</td>
</tr>
<tr>
<td>Other:</td>
<td></td>
</tr>
</tbody>
</table>

The Jeju Biosphere Reserve Management Plan was developed in 2005 and has been implemented since then. Under the plan, the site is situated within the boundary of the buffer zone that surrounds the core zone. The plan implements the wise use concept while keeping the impacts of it at the lowest level, include activities, such as environmental education and eco-toursim programmes. At the same time, research programmes have been implemented.

5.2.5 - Management planning

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

No

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

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

There is no tourist trail or scenic route within the boundary of the site, which limits the access of tourists into the site. The site is covered by an across-the-island research conducted on a regular basis. A CEPA plan is being prepared by the local government.
5.2.6 - Planning for restoration

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

5.2.7 - Monitoring implemented or proposed

<table>
<thead>
<tr>
<th>Plant species</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Animal species (please specify)</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The local government put in place a monitoring program that is conducted on a regular basis and covers all wetlands and the associated ecosystem services.
### Additional reports and documents

#### Bibliographical references

- Jeju Environmental Resources Research Institute (2009), Natural Environment of Mt. Halla pp. 218-219;

#### Additional reports and documents

1. Taxonomic lists of plant and animal species occurring in the site (see section 4.3)
   - [No file available]
2. A detailed Ecological Character Description (ECD) (in a national format)
   - [No file available]
3. A description of the site in a national or regional wetland inventory
   - [No file available]
4. Relevant Article 3.2 reports
   - [No file available]
5. Site management plan
   - [No file available]
6. Other published literature
   - [No file available]

#### Photograph(s) of the Site

Please provide at least one photograph of the site:
6.1.4 - Designation letter and related data

Designation letter

Date of Designation

2015-05-13