# 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 8<sup>th</sup> Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9<sup>th</sup> 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: FOR OFFICE USE ONLY. Mr. Jung Uisuk Deputy Director, Nature Policy Division, Nature Conservation Bureau, Ministry of Environment, DD MM YY Government Complex, Joongang-dong 1, Designation date Gwacheon-si, Gyeonggi-do, Republic of Korea Site Reference Number Site Reference Number Site Reference Number 2. Date this sheet was completed/updated: February 24, 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.

# Dongbaekdongsan

# 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: $\Box$

# 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 accuratelyii) the area has been extendediii) the area has been extended

iii) the area has been reduced\*\*  $\hfill\square$ 

\*\* **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):  $\checkmark$ ;

ii) an electronic format (e.g. a JPEG or ArcView image): ✓

iii) a GIS file providing geo-referenced site boundary vectors and attribute tables  $\checkmark$ .

#### 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 of the site follows the Wetland Conservation Area

#### 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.

Approximate center coordinates: 33°31'N 126°43'E

North Latitude: 33°30'47.3" ~ 33°31'15" East Longitude: 126°42'41.1" ~ 126°43'25.6"

#### 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.

Jurisdictionally located at Seonheul-ri, Jocheon-eup, Jeju-si(city), Jeju-do Province, Jeju Island, Republic

of Korea.

10. Elevation (in metres: average and/or maximum & minimum): 92 -147 meters above sea level.

#### 11. Area (in hectares): 59.0083ha (0.590083 km²)

#### 12. General overview of the site:

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

The name Dongbaekdongsan is attributed to the presence of camellia woods. Dongbaekdongsan is the center of Seonheul Gotjawal. Seonheul Gotjawal is a district rich in ecological resources, with grasslands, lava caverns, natural wetlands, and communities of rare animal and plant species. Seonheul Gotjawal is one of the many Gotjawals on Jeju Island.

Dongbaekdongsan consists of various sizes of volcanic rocks, forming continuous depressions and valleys. Dongbaekdongsan is a mixture of wetland and forest located at the center of Seonheul. Wetlands are rare at Dongbaekdongsan due to the presence of volcanic rocks which have low water retention capacity. The area consists of Aa Lava and Pahoehoe Lava rock types (Song and Yun, 2002). Pahoehoe Lava has fewer cracks, and can retain rainwater, allowing the formation of natural ponds on rock surfaces, while Aa Lava, is porous allowing rainwater to seep through rocks, crevices and lava tubes.

Gotjawal forests and Dongbaekdongsan forests are important ecosystems in Dongbaekdongsan. The Gotjawal Forest is unique to Jeju Island. Gotjawal is a local name which refers to a forest covering the rocky areas of Aa Lava. Got' means depressions like the main center of lava and 'jawal' means infertile lands where many rocks and many thornbushes are present. Surface water is not found in Gotjawal forest areas, however, Gotjawal forests are important for the recharge of ground water (this is discussed further in criteria 1). Surface water (ponds) is found in Dongbaekdongsan forest areas, and unlike Gotjawal forests, these areas provide water to support the biological diversity of Dongbaekdongsan wetland. These ponds are said to be the main reason for a large breeding population of Black Paradise Flycatcher/ Japanese Paradise-flycatcher (*Terpsiphone atrocaudata*) in Dongbaekdongsan (Kim et al, 2010). Dongbaekdongsan wetlands can be classified into three categories: streams, ponds, and vernal pools.

Each wetland has specific plant associates. The Lacebark Elm (*Ulmus parvifolia*) community is associated with streams, the Water Snowflake (*Nymphoides indica*) is found in ponds and *Persicaria hastato-auriculata* and *Sparganium stoloniferum* grow on the edge of ponds. Although the name 'Dongbaekdongsan' is associated with camellia woods, the most dominant species in the area are oak trees, while camellia trees are dominant at the subcanopy layer (Han et al. 2007).

#### 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
$\checkmark$	$\checkmark$	$\checkmark$					

# 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).

**Criteria 1:** Jeju is a volcanic island with porous rocks which makes it difficult for rainwater to be retained at the surface. Aa Lava areas at Dongbaekdongsan is composed of numerous cracks and lava tubes which allow rainwater to seep directly underground. In addition, Gotjawal forest which grows successfully on Aa Lava covers about 12% of the island (Song, 2000). The rainwater recharge rate is found to be

especially high in Gotjawal forest areas. The combination of geology and Gotjawal forests, make Dongbaekdongsan an important site for the recharge and conservation of groundwater.

**Criteria2:** This site supports the critically endangered *Isoetes sinensis (*F: Isoetaceae) and the near-threatended Dark-spotted Frog/Black-spotted Frog (*Pelophylax nigromaculatus*, formerly *Rana nigromaculata*).

**Criteria 3:** Dongbaekdongsan supports species endemic to Korea, like the Jeju Salamander (*Hynobius quelpartensis*) and *Mankyua chejuense* (F: Ophioglossaceae). Other unique species include the Black-headed Snake/Many-Toothed Snake (*Sibynophis chinensis*), which is thought to be endemic to Taiwan and *Isoetes sinensis* (F: Isoetaceae), a recently discovered genus (Sun, 2002) recorded as being endemic to China. Jeju Island is the only place in Korea where the Black-headed Snake and *Isoetes sinensis* (Moon, 2007) is found.

**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:

Holarctic floristic kingdom - East Asiatic Floristic Region

b) biogeographic regionalisation scheme (include reference citation): Yoshoka, K. 1973. Plant Geography. pp.10~19. Konglip Publishing Co., Tokyo. Yamazaki, T. 1983. Outline of Biology (Higher Plants A1), pp.79-96. Nakayama Sho. Tokyo.

#### 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.

# Hydrogeology

Jeju is an elliptic volcanic island, and its geology consists of early Quaternary Seogwipo formation. Jeju Island is located at the boundary of Eurasia Plate and the Philippine Plate, where there is a fracture zone under east-westward compressive stress.

Over 90% of Jeju Island is covered with basalt. Most rivers or streams on Jeju don't flow at the surface because of the permeability of basalt. Particularly, Gotjawal consists of big basalt rocks so it is very easy for rainfall seep into the ground.

The sediment in Dongbaekdongsan pond is composed of 5% sand, 34% silt and 61% clay. Total nitrogen: 24,670 ppm, organic carbon: 258,100 ppm, and total phosphorus: 2,539.4 ppm, with a 6.0 pH.

# Climate

Annual precipitation in Jeju is higher than that of the mainland. Average precipitation: 1,457mm, average annual temperature: 15.5°C, average temperature of the hottest month (August): 26.5°C, average temperature of the coldest month (January): 5.6°C, average annual relative humidity: 73.3%, average annual percentage of sunshine: 43%, average annual evaporation: 1,258mm.

# 17. Physical features of the catchment area:

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

Same as 16.

#### 18. Hydrological values:

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

Dongbaekdongsan is very important for groundwater recharge.

#### 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/coa	istal	l: A	•	В	•	С	•	D	•	Ε	•	F	•	G	•	Η	•	Ι	•	J	•	K	•	Zk	a(a)
Inland:	L Vt	•	M W	•	N X1	•	O Xl	•	P Y	•	Q Zg	•	R Zl	• <u>s(b</u> )	Sp	•	Ss	•	T <sub>]</sub>	р	T۹	ş •	U	•	Va•
Human-ma	de:	1	•	2	•	3	•	4	•	5	•	6	•	7	•	8	•	9	•	Z	k(c)	)			
b) dominan	<b>~~·</b>																								

## 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.

#### Xf, Zk(b)

#### 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.

#### Vegetation

Apart from the plant communities mentioned in section 12, other plants include: *Scirpus triangulatus* community, *Triadenum japonicum*, *Juncus papillosus*, *Deinostema violacea*, Sneezewort (*Centipeda minima*), Clasping-leaved Dogbane (*Apocynum sibiricum*), and Swamp Millet (*Isachne globosa*).

73 Families, 138 Genera, and 166 Species, were observed in the Dongbaekdongsan. The total number of hydatophytes (hydrophyte) (HH) consisted of 30 taxa and accounted for 18.1%, giving them the highest percentage. Hydatophytes are followed by the therophytes (Th), and geophyte (G) etc. The mega-hydatophytes include Watershield (*Brasenia schreberi*) J. F. Gmel, *Isoetes sinensis* T. C. Palmer, etc which consists of 36 taxa. The emerged plants consist of 20 taxa, the floating leaved plants consists of 3 taxa, and the submerged plants consist of 1 taxon.

#### Phytoplankton

A total of 101 taxa were identified. Among these taxa, the most significant algal group is Chlorophyceae (63 taxa), followed by Euglenophyceae (16 taxa), Bacillariophyceae (9 taxa), Cyanophyceae (8 taxa), Dinophyceae (3 taxa) and Synurophyceae (2 taxa). The number of species varies from 29 taxa (the min. number) in April to 83 taxa (the maximum number) in July. The phytoplankton community was characterized by a higher percentage (62.1 - 62.7%), particularly, an abundant number of Chlorophyceae (especially desmids) were collected.

The standing crops were observed as 34 cells/ml, 3,387 cells/ml and 2,112 cells/ml in April, June and July, respectively. The phytoplankton communities were characterized by Euglenophyta of a large biomass and an abundant species composition of Chlorophyta during the summer.

# Zooplanktons

In a survey of zooplankton in a small pond at Donbaekdongsan, 3 species of rotifers, 11 species of cladocerans (water fleas), and 4 species of copepods were identified. The water flea *Daphnia pulex*, and the copepod, *Acanthodiaptomus pacificus*, were found to be the dominant zooplankton. Surprisingly, unlike other areas in Korea, *Daphnia pulex* is active during winter too.

# Macroinvertebrates

21 species in 23 genus, 14 families, 9 orders, 4 classes, and 3 phyla were identified. Ephemeroptera (EPT) richness is low, BMWP<sup>1</sup> was between 14 and 34, species diversity index was from 0.2249 to 1.7389, and the dominant index was in the range of 0.85-0.99. Tubificidae and Chironomidae are dominant in Dongbaekdongsan.

# **Amphibians and Reptiles**

The total number of amphibians observed: 2 orders, 5 families, and 5 species and the total number of reptiles: 1 order, 4 families, and 8 species. For amphibians, *Hynobius quelpartensis* is dominant, followed by *Rana dybowskii, Pelophylax nigromaculatus* (formerly *Rana nigromaculata*), Japanese Tree Frog (*Hyla japonica*) and *Kaloula borealis*. Reptiles observed, Tiger Keelback (*Rhabdophis tigrinus tigrinus*) is dominant, followed by *Agkistrodon ussuriensis*, Mountain Grass Lizard (*Takydromus wolteri*), Japanese Keelback (*Amphiesma vibakari ruthveni*), *Elaphe dione*, Tsushima Ground Skink (*Scincella vandenburghi*), *Sibynophis chinensis* and *Zamenis spinalis*. The species richness, general diversity and evenness of amphibians were 0.727, 1.447 and 0.899, whereas for reptiles, the numbers were 1.438, 1.700, and 0.818. Nationally endangered species observed include *Sibynophis chinensis* and *Kaloula borealis*. These species are protected through conservation and management.

# Birds and Mammals

A total of 48 bird species and 3 mammal species are observed. For more information see section 22.

# 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.* 

Nationally endangered flora such as Watershield (*Brasenia schreberi*) J.F. Gmel, *Isoetes sinensis* T. C. Palmer, *Caldesia parnassifolia* (Bassi ex L.) Parlat. *Ottelia alismoides* L. Pers, and Level II<sup>2</sup> endangered wild plant *Brasenia schreberi* J.F. Gmel is found at this site.

# 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*.

The site has several landbirds, reptiles and amphibians which are designated Natural Monuments<sup>3</sup> and several have Level II national endangered status.

<sup>&</sup>lt;sup>1</sup> BMWP: The biological monitoring working party is a procedure for measuring water quality using species of macroinvertebrates as biological indicators

<sup>&</sup>lt;sup>2</sup> Level II on the endangered list of species.

<sup>&</sup>lt;sup>3</sup> Species considered to have cultural heritage and is protected under national law

Common	Scientific name	IUCN	CMS	CITES	Natural	Nationally								
name					Monument	endangered								
						species								
-	Land Birds													
Mandarin	Aix galericulata	LC	-	-	$\checkmark$									
Duck	_													
Chinese	Accipiter soloensis	LC	-	-	$\checkmark$									
Sparrowhark/														
Chinese														
Goshawk														
Peregrine	Falco peregrinus	LC	-	AppI	$\checkmark$									
Falcon				~ ~										
Common	Falco tinnunculus	LC	-	-	$\checkmark$									
Kestrel														
Eurasian	Accipiter nisus	LC	-	-	$\checkmark$	$\checkmark$								
Sparrowhark														
Oriental	Pernis ptilorhynchus				-	$\checkmark$								
Honey														
Buzzard														
Fairy Pitta	Pitta nympha	VU	-	AppII	$\checkmark$	$\checkmark$								
Paradise Fly-	Terpsiphone				-									
catcher	atrocaudata													
Reptile														
Black-headed	Sibynophis chinensis	-	-	-	-	$\checkmark$								
Snake/ Many-														
toothed Snake														
Amphibian														
Boreal Digging	Kaloula borealis	LC	-	-	-	$\checkmark$								
Frog														

Ponds in the area are considered to be an important body of water for the spawning of mountain frogs, howerver, more scientific study needs to be conducted to provide more information.

# 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:

Wetlands at Dongbaekdongsan were used as drinking water for people and livestock. Trees at Dongbaekdongsan were used for charcoals for heating during winter.

**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:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

## 24. Land tenure/ownership:

a) within the Ramsar site: Owned by the government: 69% Private: 31%

b) in the surrounding area: Private

### 25. Current land (including water) use:

a) within the Ramsar site: Groundwater at Dongbaekdongsan is used as one of the many groundwater sources for half a million people on Jeju Island.

b) in the surroundings/catchment:

Agriculture – paddy farming

# 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: N/A

<u>Past</u>: surface water at Dongbaekdongsan was previoulsy used as drinking water for people and livestock, Trees at Dongbaekdongsan were previoulsy used for charcoals for heating during winter.

b) in the surrounding area: <u>Present</u>: the area surrounding Dongbaekdongsan is under development (e.g tourism complex and golf course) plans.

# 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.

National category: Wetland Conservation Area International category: N/A

Dongbaekdongsan, has the largest evergreen broad leaved tress and was designated a Monument of Jeju Provincial Government in 1981. A Monument is a legally protected area.

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

Ia  $\Box$ ; Ib  $\Box$ ; II  $\Box$ ; III  $\Box$ ; IV  $\Box$ ; V  $\Box$ ; VI  $\Box$ 

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

# N/A

d) Describe any other current management practices:

After 1990s, the Gotjawal Natural Trust civil grous, experts and governmental officials recognized the importance of natural resources and advocted for donating voluntary funds for purchasing private land within Gotjawal as well as for the development of eco-conservation facilities and eco-tours at the site. As a result, Gotjawal is a representative eco-conservation area in Korea.

# 28. Conservation measures proposed but not yet implemented:

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

N/A

# 29. Current scientific research and facilities:

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

N/A

# 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.

Jeju Branch of Friends of the Earth conduct education programs regularly at the site. Some schools conduct ecological learning programs for students. There are notice boards set up by local government explaining the ecological and geological features of the site.

#### 31. Current recreation and tourism:

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

The number of visitors increases sharply because Dongbaekdongsan has large evergreen broad leaved forests, rare plants and endangered species.

# 32. Jurisdiction:

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

Territorial jurisdiction: Jeju Special Self-Governing Province Functional jurisdiction: Ministry of Environment, Korea Forest Service

# 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.

#### Mr. Yang-bo Kim

Director, Department of Environmental Policy, Jeju Special Self-Governing Province

- Address: 12 Munyeon-ro, Jeju city, Jeju Special Self-Governing Province.
- Zip code: 690-700
- Tel: +82-(0)64-710-6010
- Email: ladore@jeju.go.kr

#### Mr. Seung-man Yang

Director, Department of Environmental Management, Jeju city, Jeju Special Self-Governing Province

• Address: 2 Ido, Jeju city, Jeju Special Self-Governing Province.

- Zip code: 690-701
- Tel: +82-(0)64-728-3120
- Ysm8225@jeju.go.kr

#### 34. Bibliographical references:

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

• Bong-Ho Han, Jong-Yup Kim, In-Tae Choi, Kyong-Jae Lee, Vegetation Structure of Evergreen Broad-Leaved Forest in Dongbaekdongsan(Mt.), Kor. J. Env. Eco. 21(4): 336-346. 2007

- Ministry of Environment, UNDP/GEF Korea Wetland Project, 2005, 2005 National Inland Wetland Survey
- Ministry of Environment, 2005, Endangered Wild Plants and Animal Photo book
- Jeju Province, Jeju KFEM, 2001, Wetland in Jeju
- Jeju KFEM, 2005, Forest of life, Seonheul Gotjawal
- Song, Shi-tae, 2000, Distributions and Lithology of the Aa Rubble Flows in Cheju Island, Korea, Pusan University, Ph.D. Dissertation.

• Song S.T. and S. Yun, 2002. Lavas in Gotjawal terrain, Jeju island, Korea(1) : Jocheon-Hamdeok Gotjawal terrain. Journal of the Geological Society of Korea 38(3) : 377-389

- Yong-Ho Kim, Hong-Shik Oh, Yong-Chang Jang, Su-San Choi, Nest Environment Selection of Black Paradise Flycatcher, Korean Journal of Ornithology Vol. 17, No. 1, 11-19, 2010
- Yong-Chang Jang, Chan-won Lee, Gotjawal Forest in Jeju Island as an Internationally Important Wetland, Korean Journal of Wetland, Vol. 11, No. 1, 99-104, 2009

Please return to: Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • e-mail: ramsar@ramsar.org