

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7, as amended by Resolution VIII.13 of the Conference of the Contracting Parties.

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DD	MM	YY

Designation date

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Site Reference Number

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2. Date this sheet was completed/updated:

June 26, 2008

3. Country:

Republic of Korea

4. Name of the Ramsar site:

Ganghwa Maehwamareum Habitat

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

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): yes

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

iii) a GIS file providing geo-referenced site boundary vectors and attribute tables

b) Describe briefly the type of boundary delineation applied:

The boundary follows a road and a waterway along rice paddies.

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

N 37° 38' 14' 90" E 126° 31'32' 93"

9. General location:

Maehwamareum is located at 560-1 Choji-ri, Gilsang-myun, Ganghwa-gun, Incheon Metropolitan City, with Ganghwa Tidal Flat on its west and a hot water stream on its north.

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

5 meters on average

11. Area: (in hectares)

0.3015 ha

12. General overview of the site:

Maehwamareum (*Ranunculus kazusensis makino*) are ever present in the water. Until the 1960s, Maehwamareum was so common that it could be easily collected throughout Korea, but with the destruction of ponds and wetlands and water pollution, it is now only found in 30 places, mainly in islands on the western coast. The Korea National Trust Foundation purchased the Maehwamareum habitat with funds donated by citizens.

This is the first rice paddy and also first artificial wetland which would be registered as Ramsar site in Korea. Different from nearby paddy fields, the eco-friendly farming has been conducted in this Maehwamareum habitat and as a consequence, it functions as a refuge for aquatic plants, aquatic insects, benthic invertebrates and fish. These living organisms move to nearby fields and become food sources for migratory birds.

13. Ramsar Criteria:

1 •	2 •	3 •	4 •	5 •	6 •	7	8	9
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14. Justification for the application of each Criterion listed in 13 above:

Criterion 2: The Maehwamareum (*Ranunculus kazusensis makino*) habitat is designated as a level 2 endangered flora by the Ministry of Environment for legal protection. According to the International Plant Names Index (IPNI), *Ranunculus kazusensis makino* is known to grow in Japan and Korea.

As for legally protected species, MoE-listed endangered species such as Korean golden frogs (*Rana plancyi chosonca*) and Manchurian-mouth frogs (*Kaloula borealis*) are found to inhabit here. Also about 10 individuals of IUCN Endangered Black-faced spoonbills (*Platalea minor*) were monitored in Choji-ri rice paddies, in March and April 2008.

Scientific Name	Common Name	IUCN	CITES	CMS	National
Animals					
<i>Platalea minor</i>	Black-faced spoonbill	EN	II	I	Level 1
<i>Rana plancyi chosonca</i> , <i>Pelophylax chosonicus</i>	Korean golden frog	VU			Level 2
<i>Kaloula borealis</i>	Manchurian-mouth frog, Boreal digging frog	LC			Level 2
Plants					
<i>Ranunculus kazuensis</i> <i>Makino</i>	Maehwamareum				Level 2
<i>Hydropotes inermis</i>	Water deer	VU			

Criterion 4: Due to eco-friendly farming, this area provides a refuge for aquatic plants, aquatic insects, benthic invertebrates and fish living in rice fields.

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

a) biogeographic region:

Holarctic region (Palearctic subregion), Oriental Deciduous Forest Province, Temperate Broadleaf Forest Biome

b) biogeographic regionalisation scheme (include reference citation):

Udvardy's Realms, Provinces, Biomes Scheme (A Classification of the Biogeographical Province of the World, Udvardy, 1975)

16. Physical features of the site:

(1) The Maehwamareum habitat is located in a rice paddy.

(2) Soil texture: sand content ratio is the lowest, clay content ratio is higher and silt content ratio is the highest.

- Soluble phosphorus : 0.30g/kg
- Cation concentration:
 - Na⁺:3.73g/kg, Mg²⁺:5.71g/kg, K⁺:2.87g/kg, Ca²⁺:13.96g/kg
 - Unlike other areas, Na⁺ content ratio is higher than K⁺ content ratio.

According to the analysis of a soil map at the Agricultural Soil Information System of Korea <<http://asis.rda.go.kr/>>, the site is a coastal flat with its slope being quite level at 0 – 2%. The subsoil is very fine, and the surface soil is silt loam. The quality of drainage is somewhat poor.

- (3) Water depth: 0.5m or below
- (4) Range of fluctuation in water depth: ± 0.2m
- (5) Climate: four seasons of temperate climate

17. Physical features of the catchment area:

18. Hydrological values:

The water utilized at the rice fields helps adjust the humidity in the surrounding air through linking processes, such as evaporation and absorption, and functions as the source for rainfall as well as penetrating into the ground for drinking and service water. The excellent fresh water capacity of the paddy fields serves to adjust flood levels during the concentrated heavy rain season every year.

19. Wetland Types

a) presence:

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

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

b) dominance:

Human-made wetland – irrigated land – rice field

20. General ecological features:

- Habitat for Maehwamareum (*Ranunculus kazuensis Makino*), which is an endangered plant species
- Habitat for a diverse group of water plants and water insects
- Habitat for a diverse group of reptiles and amphibians, such as the Manchurian narrow-mouth frog (*Kaloula borealis*; IUCN Least Concern species), the Korean golden frog (*Rana plancyi chosonica*), a protected species in Korea, and the red banded snake (*Dinodon rufozonatum*)
- Feeding area for black-faced spoonbill (*Platalea minor*):

21. Noteworthy flora:

- Habitation of Maehwamarum (*Ranunculus kazusensis makino*), a level 2 endangered plant species, with legal protection by MOE's designation
- Flora
 - Vegetation: Jul (*Zizania latifolia*) and Mareum (*Trapa japonica*) are dominant. In addition, Nadogyoepul (*Leersia japonica*), Mahwamareum (*Ranunculus kazusensis Makino*), Keungorangi (*Scirpus tabernaemontani*), Aegibudeul (*Typha angustata*), Maejagi (*Scripus fluiatilis*), Mareum (*Trapa japonica*) are surveyed.
 - Land plants: Migukgamaksali (*Bidens frondosa*), Wanggodeulppaegi (*Lactuca indica* var *laciniata*), Daguijagngpul (*Commelina communis*), Ttuksaepul (*Alopecurus aequalis* var. *amurensis*), Mekkot (*Calystegia japonica*), Pporibangi (*Youngia japonica* L.DC), Poapul (*Poa sphondylodes trin*), Ssuk (*Artemisia princeps* var *orientalis*), Mangcho (*Erigeron canadensis*), Gaemangcho (*Erigeron annuus* L pers), Jilgyeongi (*Plantago asiatica*), Sorijaengi (*Rumex crispus* L), Aegimekkot (*Calystegia hederacea wall*), Soebyeolkkot (*Stellaria aquatica scop*), Soetteugi (*Equisetum arvense* L.), Tokkipul (*Trifolium repens* L), Seoyangmindeulre (*Taraxacum officinale weber*), Gomari (*Persicaria thunbergii* H gross ex nakai), Gaemil (*Agropyron tsukushiense* var *transiens ohwi*), Gaegurijari (*Ranunculus sceleratus* L), Yeokkui (*Persicaria hydropiper*), Jureumip (*Mazus pumilus steenis*), Gaegatnaengi (*Rorippa indica Hiern*), Byeoruknamul (*Stellaria alsine* var *undulata ohwi*), Wangjilgyeongi (*Plantago major* var *japonica miyabe*).
 - Waterside plants: Gaegatnaengi (*Rorippa indica* (L.) Hiern), Jilgyeongi (*Plantago asiatica*), Yeokkui (*Persicaria hydropiper*), Godeulppaegi (*Crepidiastrum sonchifolium* Pak & Kawano), Ttuksaepul (*Alopecurus aequalis* var *amurensis*), Sorijaengi (*Rumex crispus* L.)
 - Waterway plants: Maehwamareum (*Ranunculus kazusensis Makino*), Reed (*Phragmites communis*), Keungorangi (*Scirpus tabernaemontani*), Jul (*Zizania latifolia*), Mareum (*Trapa japonica*), Nadogyoepul (*Leersia japonica*), Maljeum (*Potamogeton crispus* L), Maejagi (*Scripus fluiatilis*), Jilgyeongitaeksa (*Alisma orientale juz*), Aegibudeul (*Typha angustata*), Yeokkui (*Persicaria hydropiper*), Bulrush (*Typha orientalis* C. Presl), Jomgaeguribap (*Lemna perpusilla torr*), Dropwart (*Oenanthe javanica*), Gomari (*Persicaria thunbergii* H. gross ex nakai), Japanese Iris (*Iris pseudocorus*).

22. Noteworthy fauna:**- Mammals**

A total of 3 orders, 4 families, 4 species: raccoon dog (*Nyctereutes procyonoides*), mole (*Talpa micrura coreana*), small-eared cat (*Felis bengalensis manchurica*), etc.

- Birds

A total of 10 orders, 18 families, 23 species, a total of 107 individuals have been observed in the area of Maehwamareum habitat: the most dominant species are 45 individuals of the black-tailed gull (*Larus crassirostris*) (47.8%), the second most populated species is 12 individuals of the tree sparrow (*Passer montanus*), followed by 6 individuals (6%) of each of the brown-eared bulbul

(*Hypsipetes amaurotis*), a grey starling (*Sturnus cineraceus*), a spot-billed duck (*Anas poecilorhyncha*) and a black-billed magpie (*Pica pica*).

One of the legally protected species is also present, one individual of the common kestrel (*Falco tinnunculus*), which is Number 323-8 of the National Natural Monuments designated by Cultural Heritage Administration of Korea.

- Land Insects

A total of 8 orders, 24 families, 29 species of land insects are found in Maehwamareum habitat at Choji-ri, Gilsang-myun, Ganghwa-gun.

The waterway in this area allows observation of dragonflies and damselflies. Furthermore, the large copper butterfly (*Lycaena dispar*, IUCN Near Threatened) has also been seen, which is known to inhabit only the north of Seoul and Gyeonggi; thus its presence calls for the management of the surrounding areas.

- Fish

The waterway in Maehwamareum habitat is of a relatively small size but has formed a spawning ground for crucian carp (*Carassius auratus*), asiatic ricefish (*Oryzias latipes*), etc. Species of these fish groups have been developed in this area. There also has been appearance of a relatively diverse group of the species representative of plain regions. Presumably, the relatively stable maintenance of the fish group is due to the introduction of environmentally-friendly farming techniques.

- Fresh water non-vertebrates

A total of 3 phyla, 4 classes, 9 orders, 13 species of macro benthic non-vertebrates have been found. As for non-insects, a total of 5 species, 3 species of mollusc and 2 species of Annelida, have appeared.

As for water insects, a total of 8 species, 1 species of the Ephemeroptera, 4 species of the Odonata, 1 species of aquatic Hemiptera, 1 species of aquatic Coleoptera, and 1 species of aquatic Diptera, have been recorded.

The water insects take up about 61.5% of the total taxa of macro benthic non-vertebrates.

Of 3 phyla, 4 classes, 9 orders, 13 species of macro benthic non-vertebrates, there is no legally protected or endangered species, but the survey has confirmed the habitation of one kind of damselfly (*Lestes sponsa*), which requires government approval for export.

The Ministry of Environment designated Maehwamareum as an endangered wild flora on February 26, 1998. The following May, the endangered flora Maehwamareum habitat was discovered at a paddy field located at Choji-ri, Gilsang-myun, Ganghwa-gun by Mr. Hyun, Jin-oh, of the Research Division of Korea National Trust Foundation.

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:

- production of rice; sales of environmentally-friendly, organic farming products help to improve local economy
- capable of controlling floods through the fresh water capacity of paddy fields
- excellent landscape

i) Representative site for wise use of wetlands; traditional knowledge and management methods, utilization while maintaining the ecological features of the site

- the most representative human-made wetland
- production of food resources along with wetland conservation
- formation of a wetland ecosystem from the biodiversity of paddy fields

ii) Special cultural traditions with influence on the ecological features of the wetland, or records of previous civilization

- human-made wetland which is most efficiently used for production of food
- Local culture has developed well to establish its traditions, such as farm music (Nong-ak) and indigenous music (Hyang-ak), based on the settled farming lifestyle.

iii) Ecological features of the wetland are subject to change depending on interactions with the local community or local residents

- the artificial nature of the wetland requires consistent maintenance
- use of chemical fertilizers and agricultural chemicals should be avoided to maintain biodiversity

In the surrounding areas are paddy fields that employ environmentally-friendly farming techniques.

24. Land tenure/ownership:

a) within the Ramsar site:

- Owner: The Korea National Trust Foundation (Former president: Kim, Sangwon)

b) in the surrounding area: owned by the local residents of Choji-ri, Ganghwa-gun

25. Current land (including water) use:

a) within the Ramsar site: Reservoir and farming.

b) in the surroundings/catchment: Reservoir and 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:

- Physical factors: destruction of habitats due to development activities, such as road expansion and construction
- Chemical factors: potential pollution of soil and water from the use of agricultural chemicals and chemical fertilizers; currently, efforts are underway to transfer to organic farming
- Change of plant groups: deterioration of habitat conditions of indigenous species due to rapid propagation of exotic species: yellow flag iris (*Iris pseudocorus*) and evening primrose (*Oenothera odorata*)

b) in the surrounding area: Same as above.

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.

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

Ia ; Ib ; II ; III ; IV ; V ; VI

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

- entered into the "Agreement on the Conservation of Ganghwa Maehwamareum Habitat" by and between Ganghwa-gun, local residents, and Korean NT on October 21, 2000

d) Describe any other current management practices:

- To designate the Ramsar site, the in-depth survey has been conducted.

28. Conservation measures proposed but not yet implemented:

Not applicable

29. Current scientific research and facilities:

- Research on the ecological features of Maehwamareum (The Ecology Research Centre, Seoul National University, 2008)

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

- Maehwamareum Observation Event (early May every year)
- Manual Rice-Planting of Maehwamareum (late May or early June every year)
- Maehwamareum Harvest (October every year)
- International Youth Exchange Event for the Conservation of Maehwamareum (August and November every year)
- Plan is underway for establishing an education centre for the conservation of Maehwamareum.

31. Current recreation and tourism:

Not for tourism but for educational visits. From May to October, about 400- 500 group visitors participate in educational events and if individual visitors are counted, about total 700 people visit annually.

32. Jurisdiction:

This is a privately owned land. But if the Maehwamareum habitat is damaged, the Wildlife Protection Act can be applied to punish a perpetrator.

33. Management authority:

- Mr. SAH, Jae-gu, Ganghwa Maehwamareum Committee, 348 Choji-ri, Gilsang-myun, Ganghwa-gun, Incheon Metropolitan City, 417-843 Republic of Korea
- Tel: +82-(0)2-739-3131
- Fax:+82-(0)2-739-9598
- Email:ntrust@nationaltrust.or.kr
- Korea National Trust Foundation, Woori Bldg 4th Fl., 72-4 Myungryun-dong 4 ga, Jongro-gu, Seoul, 110-524 Republic of Korea

34. Bibliographical references:

- A research paper on the ecological features of Maehwamareum pending, 2008

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Relevant Pictures of Flora and Fauna



Korean Golden Frog (*Rana plancyi chosonica*)



Spot-billed Duck (*Anas poecilorhyncha*) near
Maehwamareum community



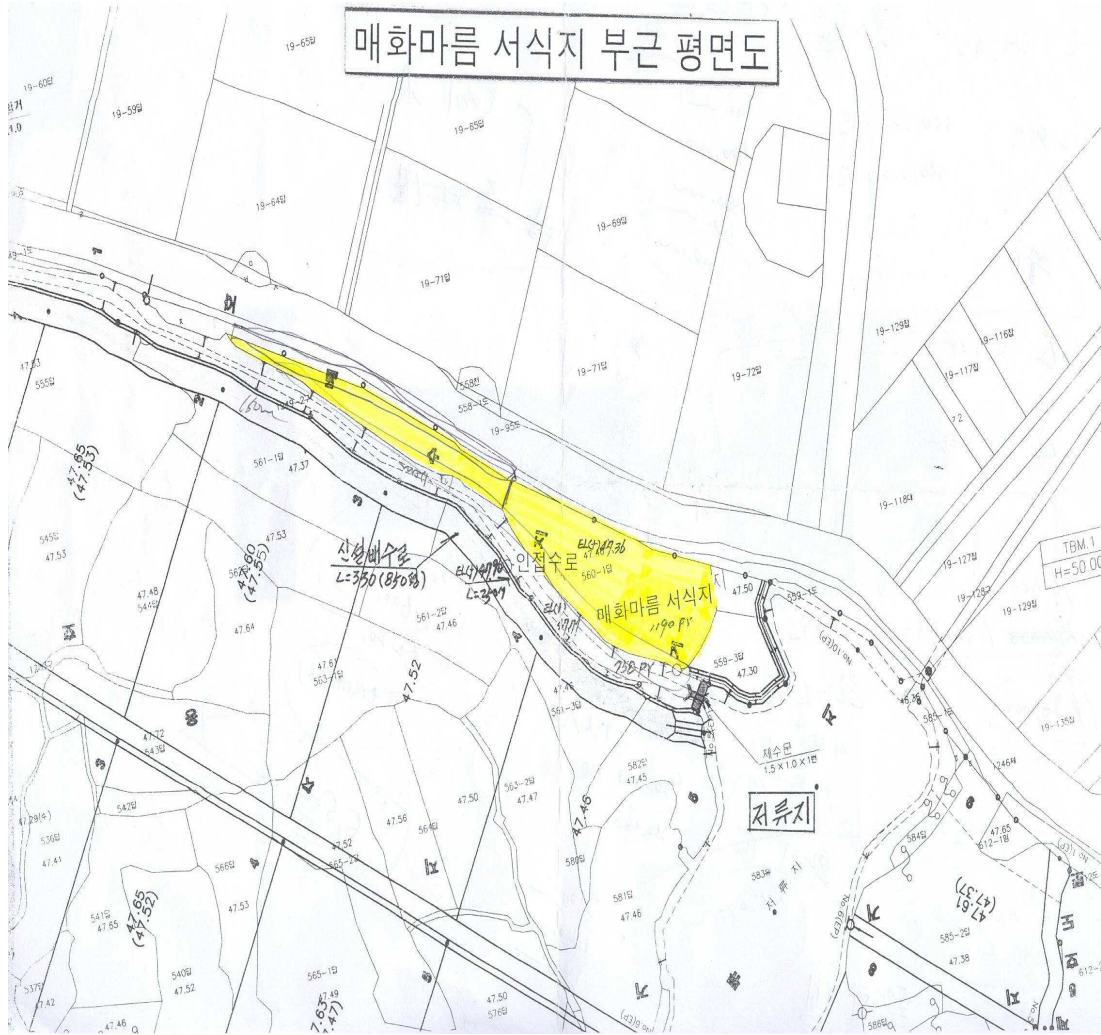
A nest of a spot-billed duck near Maehwamareum
community



Large Cooper Butterfly (*Lycaena dispar*)



Lestes sponsa



Plane figure of the vicinity of Maehwamareum habitat



Satellite image of Maehwamareum habitat