

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.

Note 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. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Bureau. Compilers are strongly urged to provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of maps.

1. Name and address of the compiler of this form:

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

24 October, 2005

3. Country: JAPAN

4. Name of the Ramsar site:
Oku-Nikko-shitsugen

5. Map of site included:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps.

a) hard copy (required for inclusion of site in the Ramsar List): *yes* -or- *no*

b) digital (electronic) format (optional): *yes* -or- *no*

6. Geographical coordinates (latitude/longitude):

36°47'04"N, 139°26'04"E

7. General location: Tochigi Prefecture / Kanto region

Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

It is located in the north-western part of Nikko City (population: c. 17,000, area: c. 321 sq. km), which is approximately 45 km northeast of Utsunomiya City (the capital of Tochigi Prefecture, population: c. 440,000, area: c. 312 sq. km).

8. Elevation: (average and/or max. & min.)

Yuno-ko: 1,475 m

Senjogahara: 1,400 m
Odashirogahara: 1,410 m

9. Area: (in hectares)

Yunoko: 35.71ha
Yukawa: 5.3ha
Senjogahara: 174.68ha
Odashirogahara: 44.72ha

Total: 260ha

10. Overview:

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

Oku-Nikko-shitsugen is located in the northern part of Tochigi Prefecture. The site is composed of Senjogahara, Odashirogahara and Yunoko. Senjogahara is one of the largest high moors in Honshu Island. Vegetation of Odashirogahara shows the characteristics of both moor and grassland as succession is proceeding from moor to grassland. Yunoko is a freshwater lake with circumference of 3km. Hot water springs from the lake bed.

11. Ramsar Criteria:

Circle or underline 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).

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8

12. Justification for the application of each Criterion listed in 11. 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).

Criterion 1: Senjogahara is one of the representative high moors in Japan with high academic values. More than 100 species of swamp vegetation are found within the site. Odashirogahara, together with Senjogahara, features a rare landscape that is in the process of transition from a moor to grassland.

13. 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:

Japan

b) biogeographic regionalisation scheme (include reference citation):

Japan is recognized as single biogeographic region, because Japan is an island country which has unique and rich biota with many endemic species.

14. 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.

Climate: Cool climate and annual temperature fluctuation is large. Annual precipitation: 2,103 mm; annual mean temperature: +6.7 degrees Celsius; fluctuation of mean temperature in each month: -4.2 - +18.5 degrees Celsius (average of Oku-Nikko from 1971 to 2000)

[Yunoko]

Geomorphology: a dammed lake

Origins: Natural. It was formed when Yukawa River was dammed by the Mitsudake lava flow from the eruption of Mt. Mitsudake.

Hydrology: 2 inflow streams, 1 outflow fall named Yudaki.

Water quality: pH6.9(6.5 ~ 7.2) (1991), DO 6.9ppm(0.6 ~ 9.3) (1991), EC 142 μ s/cm(134 ~ 164) (1991), Alkalinity 24.7mg/L(24.1 ~ 34.6) (1991), COD 2.4ppm(2.1 ~ 2.6) (1991), T-N 0.39ppm(0.33 ~ 0.48) (1991), T-P 0.0031ppm(0.0014 ~ 0.080) (1991), Chl-a 8.4(3.0 ~ 13.8) (1991), Cl- 4.6ppm(4.4 ~ 4.7) (1991), SO₄²⁻ 25.2ppm(24.2 ~ 25.9) (1991), NH₄-N 0.09ppm(0.02 ~ 0.26) (1991), NO₃-N 0.14ppm(0.06 ~ 0.19) (1991), PO₄-P 0.016ppm (1991), Ca 13.0ppm(12.5 ~ 14.5) (1991), Mg 1.7ppm(1.6 ~ 1.8) (1991), Fe 0.036ppm(0.014 ~ 0.080) (1991), Al 0.001ppm(0.001 ~ 0.002) (1991), K 1.9ppm(1.8 ~ 2.3) (1991), Na 10.3ppm(9.6 ~ 12.2) (1991), acid degree 1.9ppm(1.8 ~ 2.3) (1991), SiO₂ 19.5ppm(18.4 ~ 21.6) (1991), HCO₃⁻ 32.3ppm(29.6 ~ 39.0) (1991)

Water depth: 5.2 m on average, 12.5 m at maximum

Water level fluctuation: None

[Senjogahara]

Geology: It consists of high moor, intermediate moor and low moor.

Geomorphology: a valley plain

Soil type: peat soil

Origins: Natural. A dammed lake created by eruption of Nantai-san was gradually filled with sand and volcanic products. It was further filled with aquatic plant residues such as common reed *Phragmites communis* and developed into a high moor.

Hydrology: Five inflow streams and two outflow streams; being fed by subsoil water, spring water and rain water

Water level fluctuation: None

[Odashirogahara]

Geology: swamp sediment, high moor

Geomorphology: a basin

Soil type: peat soil

Origins: Natural. A dammed lake created by eruption of Nantai-san was gradually filled with sand and volcanic products. It was further filled with aquatic plant residues such as common reed *Phragmites communis*. It is in the process of succession from moor to grassland. .

Hydrology: no inflow or outflow stream, rain water fed

Water level fluctuation: Usually it is a grassland but transient lakes appear after rain showers.

15. Physical features of the catchment area:

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

Surface area: 5,000 ha

General geology and geomorphological features: Nikko Volcanic Mountains is a quaternary volcanic mountain district that is composed of composite volcanoes including Nyoho-san and Akanagi-yama and Nantai-san, and lava domes including Tanze-yama, Taro-yama, Omanago-san, and Mitsudake. Broad volcano slopes and valleys, and at the base of the mountains, dammed lakes such as Lake Chuzenji-ko and swamps such as Senjogahara are distributed in the area.

General soil types: peat soil (swamps)

General land use: Lake Yunoko and Yukawa River are used for fishing from spring to fall. Also, nature walks are conducted at swamps in Senjogahara and Odashirogahara areas. The numbers of anglers visiting the site are 8,319 in Lake Yunoko and 4,408 in Yukawa River (2004). Both fishing from the boat and from the lake shore are allowed at Lake Yunoko.

Climate: Cool climate and annual temperature fluctuation is large. Annual precipitation: 2,103 mm; annual mean temperature: +6.7 degrees Celsius; fluctuation of mean temperature in each month: -4.2 - +18.5 degrees Celsius (average of Okunikko from 1971 to 2000)

16. Hydrological values:

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

17. Wetland Types

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*.

a) presence:

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

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

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

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.

U, O

18. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site.

Vegetation of Senjogahara and Odashirogahara consists of *Moliniopsis japonica* - *Sphagnum papillosum* community, *Carex thunbergii* v. *appendiculata* community, and *Eriophorum vaginatum* community. Also Japanese azalea *Rhododendron japonicum*, Willowleaf meadow-sweet *Spiraea salicifolia*, and *Cirsium oligophyllum* are found in the moor. The area is also an important breeding site for summer birds including Latham's Snip *Gallinago hardwickii* and Stonechat *Saxicola torquata*. Endangered algae *Nitella flexilis* var. *longifolia* and *Chara globularis* var. *globularis* grows in Yunoko. There is a small swamp on the east shore of Lake Yunoko and Tussock cotton-grass *Eriophorum vaginatum* and Small cranberry *Vaccinium oxycoccos* are observed.

The lake is also a wintering site for various waterfowls including Mallard *Anas platyrhynchos*, Wigeon *A. penelope*, Tufted Duck *Aythya fuligula*, and Smew *Mergus albellus*.

19. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. 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.*

Nitella flexilis [critically endangered species (CR)*1 + endangered species (EN)*1]

Chara globularis [critically endangered species (CR)*1 + endangered species (EN)*1]

Note: *1 Red List of Threatened Wildlife of Japan. Ministry of the Environment

20. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. 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.*

Haliaeetus albicilla albicilla (White-tailed Eagle) [endangered species (EN)*1] [near threatened species (NT)*2]

Accipiter gentiles (Goshawk) [vulnerable species (VU)*1]

Falco peregrinus japonensis (Peregrine Falcon) [vulnerable species (VU)*1]

Myotis ikonnikovi bosonoi (Shinano whiskered bat) [endangered species (EN)*1]

Murina leucogaster hilgendorfi (Japanese tube-nosed bat) [vulnerable species (VU)*1]

Glirulus japonicus (Japanese dormouse) [near threatened species (NT) *1]

Note: *1 Red List of Threatened Wildlife of Japan. Ministry of the Environment

*2 IUCN Red List of Threatened Animals (2004)

21. Social and 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.

Attractive Landscapes

22. Land tenure/ownership:

(a) within the Ramsar site:

Yunoko and Yukawa: Fishery Agency

Senjogahara(except Yukawa): Forestry Agency

Odashirogahara: Forestry Agency

(b) in the surrounding area:

Part of the lodges located in the northern edge of Yunoko and the farms located in the east of Senjogahara are private land. Other areas are mostly national land.

23. Current land (including water) use:

(a) within the Ramsar site:

Yunoko and Yukawa: fishing sites

Senjogahara and Odashirogahara: nature walks in the national park

(b) in the surroundings/catchment:

The northern edge of Lake Yunoko where Japanese-style inns and hot springs are located is designated as the facility complex of Nikko National Park. There are farms in the east of Senjogahara. Other areas are mainly forests (national forests).

24. 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:

Senjogahara:

- sediment inflow
- reduction of influent quantity
- construction of facilities that disconnect the water system in upstream area
- development of drainages
- development of intake facilities

- human entry (stomp)
- invasion of alien plants
- feeding damage and stomp by animals (especially deer)

(b) in the surrounding area:

Feeding damage by deer

25. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

National Park:

Special Protection Zone: 247 ha (Yudaki 1 ha, Senjogahara 201 ha, Odashirogahara 45 ha)

Class I Special Zone: 375 ha (Yunoko 117 ha, Senjogahara 258 ha)

Class II Special Zone: 3,253 ha (part of Nikko Volcanoes 8,445 ha)

(The Natural Parks Law) * From December 4, 1934

On September 18, 1997, the classification of special zone was changed. On December 2001, Nikko National Park Nikko Area Management Plan was amended. The Park Plan of Nikko region, Nikko National Park was partially amended on July 12, 2005.

In the special zone, activities such as erecting structures, felling trees, mining minerals, and reclamation require permission from the Minister of the Environment. In the special protection zone, further activities such as planting trees and bamboos, grazing livestock, collecting and stocking products outside, firing, picking and catching plants and animals also require permission from the Minister of the Environment.

26. Conservation measures proposed but not yet implemented:

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

None

27. Current scientific research and facilities:

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

Scientific research:

- National Survey on the Natural Environment (Ministry of the Environment)
- Vegetation survey of Nikko Senjogahara (Tochigi Prefecture, 1967)
- Landforms and geology of Oku-Nikko Senjogahara and its vicinity (National Parks Association of Japan, 1970)
- Vegetation survey of Senjogahara-shitsugen (Tochigi Prefecture, 1978)
- Study on the current status of and the countermeasures against drying of Senjogahara-shitsugen, Nikko National Park (Environment Agency, 1979)
- Study on the protection and use of small animals in the natural parks – a case study of Senjogahara (Environment Agency, 1981, 1982)
- Study on the drying and the current status of Senjogahara, Nikko National Park (Environment Agency, 1982)
- Study on the conservation measures of Senjogahara-shitsugen (Tochigi Prefecture, 1989, 1990)
- Feasibility study on the restoration facilities (including nature experience field) of Senjogahara, Nikko National Park (Environment Agency, 1998)
- Study on the management of wildlife as a disturbing factor of wetland ecosystem (Ministry of the Environment, 2001)
- Monitoring of the effects of deer fence on the vegetation in Senjogahara, Nikko National Park (Ministry of the Environment, 2004)

Facilities established for research:

- Field research: Okunikko Field Research Station, National Institute for Environmental Studies
- Fisheries Research: Freshwater Fisheries Research Division, National Research Institute of Fisheries Science, Fisheries Research Agency

28. Current conservation education:

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Various local organizations promote activities listed below at and around Nikko-Yumoto Visitor Center (at Yunoko)

- Nature walks
- Removal of alien plants
- Wrapping nets around the trees to prevent feeding damage caused by dears
- Training of interns

Development of nature trails (at Yukawa, Senjogahara and Odashirogahara)

29. Current recreation and tourism:

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

Yunoko: fishing, cruising, camping and picnic

Senjogahara: walking along the nature trails, camping, hiking, fishing

Odashirogahara: walking along the nature trails

Note: the number of visitors to Nikko City is 6.02 million in 2004.

30. Jurisdiction:

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

[Territorial]

Yunoko and Yukawa: National land (Fishery Agency)

Senjogahara and Odashirogahara: National land (Forestry Agency)

[Functional]

Ministry of the Environment (National park)

Forestry Agency (Sanctuary Forests: Senjogahara and Odashirogahara)

31. 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

Kanto Regional Environment Office,
Ministry of the Environment
11-2, Shintoshin, Chuo-ku, Saitama City,
Saitama, 330-6018 JAPAN
Tel: +81-48-600-0516
Fax: +81-48-600-0517

32. Bibliographical references:

scientific/technical references only. If biogeographic regionalisation scheme applied (see 13 above), list full reference citation for the scheme.

- Environment Agency 1993 “The Fourth National Surveys on the Natural Environment Report on Lake and Marsh Survey”
- Environment Agency 1995 “The Fifth National Survey on the Natural Environment Report on Wetland Survey”
- Ministry of the Environment Nature Conservation Bureau 2002 “500 Important Wetlands in Japan”
- HEIBONSYA “WILD FLOWERS OF JAPAN HERBACEOUS PLANTS”
- HEIBONSYA “WILD FLOWERS OF JAPAN WOODY PLANTS”
- The Ornithological Society of Japan 2000 “Check-list of Japanese Birds Sixth Revised Edition”
- NACS-J/ WWF Japan 1996 “RED DATA BOOK of PLANT COMMUNITIES IN JAPAN”
- Environment Agency 2000 “Threatened Wildlife of Japan -Red Data Book 2nd ed. - Volume 9, Bryophytes, Algae, Lichens, Fungi”
- Environment Agency of Japan 2000 “Threatened Wildlife of Japan -Red Data Book 2nd ed. - Volume 8, Vascular Plants
- Ministry of the Environment 2002 “Threatened Wildlife of Japan –Red Data Book 2nd ed.- Volume 2, Aves”
- Ministry of the Environment 2002 “Threatened Wildlife of Japan –Red Data Book 2nd ed.- Volume 1, Mammalia”

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