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:

Ms. Noriko MORIWAKE
Wildlife Division, Nature Conservation Bureau,
Ministry of the Environment
1-2-2 Kasumigaseki, Chiyoda-ku,
Tokyo 100-8975, JAPAN
Phone: +81-3-5521-8284 Fax: +81-3-3581-7090
Email: wildlife@env.go.jp

FOR OFFICE USE ONLY.

DD MM YY

Designation date

Site Reference Number

2. Date this sheet was completed/updated:

24 October, 2005

3. Country:

JAPAN

4. Name of the Ramsar site:

Kushimoto Coral Communities

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):

Sabiura area: 33°28'25"N, 135°44'51"E
Shionomisaki seigan area: 33°27'23"N, 135°45'29"E
Tsuyashima area: 33°27'09"N, 135°48'55"E

7. General location: Wakayama Prefecture / Kinki 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 approximately 90 km southeast of Wakayama City (the capital of Wakayama Prefecture, population: c. 390,000, area: c. 209 sq. km), nearshore waters of Kushimoto-cho (population: c. 20,000, area: c. 136 sq. km) which is at the southern tip of Kii peninsula.

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

-20 - 0 m

9. Area: (in hectares)

574 ha (Sabiura area: 355 ha, Shionomisaki seigan area: 205 ha, Tsuyajima area: 14 ha)

10. Overview:

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

Kushimoto Coral Communities is located along the coast around the southern tip of Kii peninsula stretching out to the Pacific Ocean. The site is under strong influence of Kuroshio Warm Current and thus plenty of tropical organisms including coral communities are observed, although it is located in high-latitude non-coral reef area. Especially, the coverage and diversity of corals are high. Also, many scientifically important coral communities are recorded.

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: Natural environment remains along the coastline at the tip of Kii peninsula where Kushimoto is located. Kuroshio Current, the major warm current on the earth, touches the area which is the closest among main island of Japan. This allows only Kushimoto sea area to form peculiar warm environment supporting tropical organisms in main island of Japan. The most characteristic organism in the site is hermatypic corals and the varieties of corals make splendid marine landscapes. Furthermore, those corals function as the backbone of the ecosystem. There are approximately 120 coral species in the site and many of them form valuable communities. *Acropora hyacinthus* - the most dominant species is ecologically important that has high nutrition productivity and topography formation capacity, and also it is important as tourism resources because it forms beautiful tabular coral landscape. *Acropora Formosa, Acroporidae hyacinthus, Acropora cuneata, Merulina ampliata, Pavona cactus* and *Catalaphyllia jardinei* which form coral communities at the northernmost of the world are also scientifically important.

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.

Geology: General coral reefs are not observed around the site and base of the coral are mostly aqueous rocks.

Geomorphology: rias coast and corals are distributed at neritic area shallower than 20 m.

Origins: Natural

Hydrology: When Kuroshio Current moves up the Pacific Ocean off the Philippines and touches the tip of Kii peninsula, the branch current is formed which flows west-ward alongside the shore. Therefore, warm and clear tide flows through Kushimoto sea area. Salinity is also high.
Water quality: Sea water. Annual mean surface temperature: 21.1 degrees Celsius; fluctuation of mean surface temperature in each month: +16.3- +27.2 degrees Celsius; annual mean salinity: 35%; annual mean water transparency: 14.7 m
Water depth: 1-20 m
Water level fluctuation: fluctuation caused by sea tide
Sea tide fluctuation: c. -20-+200 cm
Climate: Mild climate affected by warm current. Annual precipitation: 2,534mm, annual mean temperature: 17.0 degrees Celsius, fluctuation of mean temperature in each month: +7.9- +26.5 degrees Celsius (average on Shionomisaki 1971-2000)

---

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).
No catchment

---

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

The remarkable coral communities in the sea area support the rich biodiversity in neritric area as nutrition and habitat sources, and also stabilize the neritic environment. Furthermore, with their rapid growing capacity, the coral communities form strong and large submarine topography that function as natural breakwaters.

---

17. 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/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.
C

---

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

The most dominant coral species is *Acroporae hyacinthus* that makes tabular community. Large pure communities with high density are observed in 1-5 m depth. The second dominant species is Faviidae species including *Montastrea valenciennesi* and *Cyphastrea serailia* but these species do not form high density communities like *Acropora hyacinthus*. Also, following species make gathered communities though their coverage is low: *Catalaphyllia jardinei, Acropora cuneata, Pavona cactus, Astreopora incrustans, P. decussate, Acropora tumida, A. formosa, Lithophyllon undulatum*, and *A. microphthalma.*

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.*

1. *Dudresnaya kuroshioensis*
2. *Predaea kuroshioensis*
3. *Zostera marina*

The type locality for 1 and 2 is the northern water of Shionomisaki Sumisaki (between Grass world and Andonohana, water depth: 10-20 m) and those have been found only in this area. Furthermore, same Rhodophyceae and also rare species such as *Scinaia cottonii*, *Chamaebotrys boergesenii*, *Chrysymenia okamurae Chrysymenia wrightii* are found in the same area specifically.

3 develops large *Zostera* bed (c. 2 ha) at water depth 2-4 m of the far-end of Takatomi bay. This community is significant as a primary producer and habitat for many marine organisms.

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.*

1. *Acropora tumida*
2. *Goniastrea bonsai*
3. *Hydnophora bonsai*
4. *Catalaphyllia jardinei*

1-3 are endemic to East Asian waters that the distribution is limited to Japan and adjacent sea area. These species are important for resource conservation. Especially, *Acropora tumida* which grows in inner bay may in decline due to habitat degradation.

Catalaphyllia jardinei is a rare species in Japan and seldom observed except in Kushimoto area. The large habitats of this species are only two: Shionomisaki Andonohana (43 colonies identified) and Tsuyajima Jizo-iwamae (187 colonies identified). The latter one is the largest colony in Japan and the northernmost distribtuion in the world.

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.

The sea area is highly valuable for fisheries, leisure fishing and tourism (scuba diving and under-water o bservation) resources.

Following are the details:
Fisheries (all area): Harvesting of seaweeds *Hizikia fusiforme*, *Gloiopeltis spp.* and *Porphyra spp.,* harvesting of *Sulculus supertexta* (Japanese abalone), gill net fishing of *Sepioteuthis lessoniana* (Bigfin squid), *Calotomus japonicus* (Japanese parrotfish), *Panulirus japonicus* (Japanese spiny lobster), *Haliotis varia* and *Conger myriaster* (Common Japanese conger) fishing, pole and line fishing and long line fishing.

Leisure fishing (all area): no restriction. Main targets are *Girella punctata* (Girella), *Girella melanichthys* (Smallscale blackfish), *Calotomus japonicus* (Japanese parrotfish), *Oplegnathus fasciatus* (Japanese parrotfish) and *Sepioteuthis lessoniana* (Bigfin squid).

Tourism: Scuba diving (all Kushimoto area), aquarium, marine observatory and grass-bottomed boat (Arita Sabiura).

22. Land tenure/ownership:
(a) within the Ramsar site:
Publicly-owned water body: 574ha

(b) in the surrounding area:
Publicly-owned water body (Ministry of Land, Infrastructure and Transport)
Prefectural land (Wakayama Prefecture)

23. Current land (including water) use:
(a) within the Ramsar site: No resident, fishery rights granted
Also see above section 21.

(b) in the surroundings/catchment: No resident in the sea area, fishery rights granted. Roads and broad leaf forests in terrestrial area

Also see above section 21.

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:

1. Natural factors
- Typhoon ocean waves: Corals are heavily damaged by high tidal waves by mega-sized typhoons that approach about once in ten years, but corals usually recover in several years.
- Abnormal low water temperature: When Kuroshio Current retreats from the shore, massive coral death are occasionally caused by abnormal low water temperature. After 1970, it occurred in 1980, 1982, 1984 and 2005. Corals also recover in several years.
- Feeding damages by coral-eaters: feeding damages are occasionally caused by crown-of-thorns starfish (in the 1970s and from 2004) and coral-eating gastropods (from 2000). However, serious damages have been prevented so far by extermination and natural extinction.

2. Artificial factors
- Harbour improvement: In Arita bay, coral communities are damaged and stressed by sea water blockage and destruction of sea bed caused by workboat anchors due to harbour improvement.
- Fish poaching: Fish for appreciation, live rock and corallum are illegally taken occasionally.
- Fishing: fishing may be a significant affect on the ecosystem.

(b) in the surrounding area:
Same as (a)

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: 573.7 ha (Marine Park Zone: 39.2 ha, Ordinary Zone: 534.5 ha) (The Natural Parks Law)
* Current park area is applied from December 19, 1975. (The park was first designated in 1936.)

In the marine park zone, activities such as erecting structures, reclamation, mining minerals, collecting soil and stone, reforming seabed, mooring and draining sewage water by using drain facility require permission from the Minister of the Environment. In the ordinary zone, when exceed certain measure, erecting

structures, reclamation, mining minerals, collecting soil and stone and reforming land and seabed require notification to the Minister of the Environment.

Management plans: Park Plan of Yoshino-Kumano National Park and Yoshino-Kumano National Park Kumano Area Management Plan are implemented.

26. Conservation measures proposed but not yet implemented:
e.g. management plan in preparation; official proposal as a legally protected area, etc.

National Park, Marine Park Zone: 13.7 ha (The Natural Parks Law)

27. Current scientific research and facilities:
e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Scientific researches:

- Scientific survey on Marine Parks of Wakayama Prefecture(1960:The Nature Conservation Society of Japan) :Basic survey of Marine Park Zones
- National Survey on the Natural Environment (Ministry of the Environment, from 1978): Monitoring survey on intertidal organisms in Wakayama Prefecture including Sabiura, Kushimoto-cho was conducted by Kushimoto Marine Park Center.
- Survey on sea area in front of Inamura Environment Management Center discharging point (1990-:Kushimoto-cho): Environmental Impact Assessment on sewage treatment plant build in Inamurazaki, Arida, Kushimoto-cho. Implemented by Kushimoto Marine Park Center.
- Survey on sea area in front of waste disposal plant in Kushimoto-town (2000-: Kushimoto-cho): Environmental Impact Assessment on incinerator and reclamation site constructed in Tanami Area, Kushimoto-cho. Implemented by Kushimoto Marine Park Center.
- Coral reef monitoring project in "Monitoring sites 1000" Coral reef monitoring in Kushimoto sea area Wakayama Prefecture (2003 ~ : Ministry of the Environment): 15 sites are established in Kushimoto sea area (11sites within the site) and monitoring on coral reef communities are conducted by using spot-check method once a year in autumn. Implemented by Kushimoto Marine Park Center.
- Survey on crown-of-thorns starfish in Kushimoto sea areas (2005: Ministry of the Environment): Survey on distribution of crown-of-thorns starfish implemented by Kushimoto Marine Park Center
- Conservational activities in marine park zone, Survey on Yoshino-Kumano National Park Kushimoto Marine Park and its surrounding sea area (2002: Ministry of the Environment): Survey on status of Kushimoto Marine Park Zone and Survey of crown-of-thorns starfish in Kushimoto sea areas, implemented by Kushimoto Marine Park Center.
- Survey on status of marine park zone, Survey on Yoshino-Kumano National Park Kushimoto Marine Park and its surrounding sea area (2003: Ministry of the Environment): Survey on status of Kushimoto Marine Park Zone and Survey on crown-of-thorns starfish in Kushimoto sea areas, implemented by Kushimoto Marine Park Center.
- Study on development of management policy, status of marine organisms in Kushimoto Marine Park Zone (2004: Ministry of the Environment): A complementary survey on status of Kushimoto Marine Park Zone (Survey on distribution of *Catalaphyllia jardinei*) and Survey on crown-of-thorns starfish in Kushimoto sea areas, implemented by Kushimoto Marine Park Center.

Facilities established for research:

- Institute of Sabiura Marine Park, Kushimoto Marine Park Center: Established in 1971. Conducts taxonomical and ecological studies, research and education on neretic organisms in Kushimoto.
- Wakayama Prefectual Institute of Fisheries: Established in 1969. Conducts surveys on fishery resources in Wakayama Prefecture.

28. Current conservation education:
e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

At Sabiura Marine Park Institute of Kushimoto Marine Park, taxonomical and ecological researches around Kushimoto neritic region are conducted and the results are publicized in the journal "Marine Pavilion" and other academic journals and reports. Awareness activities are carried out through marine school for local elementary school students and marine guide tours in the marine park. Also there are several experience programs including feeding program in the aquarium, rocky shore exploration, snorkeling, scuba diving, and whales and dolphins watching.

---

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

Estimated annual visitors:
1. leisure fishing: several thousands
2. scuba diving: about 35,000, 80% are concentrated around Shionomisaki Sumisaki area.
3. grass-bottomed boat (Arita Sabiura): about 30,000
4. aquarium, marine observatory (Arita Sabiura): about 200,000

---

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

[Functional]
Ministry of the Environment (National Park)
Kushimoto Fishermen Association and Wakayama Prefecture Fishery Division (coastal marine resources)
Wakayama Prefecture (Port area)

---

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

Kinki Regional Environment Office,
Ministry of the Environment
1-7-31, Otemae, Chuo-ku,
Osaka City, 540-6591 JAPAN
Tel: +81-6-4792-0700
Fax: +81-6-4790-2800

---

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

- Kajimura, M., 1994. *Dudresnaya kuroshioensis* sp. nov. (Dumontiaceae, Rhodophyta) from Japan. Phycologia, 33(5): 343-350.
- Kajimura, M., 1995. *Predaea kuroshioensis* sp. nov. (Nemastomataceae, Rhodophyta) from Japan. Phycologia, 34(4): 293-298.
- Environment Agency, 1997. Park Plan of Yoshino-Kumano National Park.
- Kushimoto Marine Park Center, 2003: "Survey on state of Kushimoto Marine Park Zone. Report on conservational activities in marine park zone." 43-66. Nature Conservation Division Ministry of the Environment .

・ Kushimoto Marine Park Center, 2005." Investigation report on management policy of Kushimoto Marine Park Zone(Survey on state of marine organism). 60pp. Nature Conservation Division Ministry of the Environment .

・ Kushimoto Marine Park, 2005. Website of Kushimoto Marine Park Center http://www.kushimoto.co.jp/

・ Saburo Nishimura1992 "Biographic region of the sea around Japan"

・ Creatures of Sea Shore 1, HOIKUSYA

・ Keiichi Nomura 2004 "Kii-Hanto"

・ Ministry of the Environment, Japanese Coral Reef Society 2004, "Coral Reefs of Japan"

・ Tsuyoshi Tamuraet.al. 1966 "Scientific survey on Marine Park of Wakayama Prefecture" The Nature Conservation Society of Japan, Survey Report (27), 126pp, The Nature Conservation Society of Japan, Tokyo

・ Shinsuke Ui 2002 "Misterious Zone, Sea Area with Unique Seaweed Vegetation" Marine Pavilion, 31:26-27

・ Nature Conservation Division Ministry of the Environment 2004 " Investigation report on management policy "Nature Conservation Division Ministry of the Environment 2004 " Investigation report on management policy"

・ Nature Conservation Division Ministry of the Environment 2003 "Report on conservational activities in marine park zone"

・ Nature Conservation Division Ministry of the Environment , 2005 . Study on development of management policy, status of marine organisms in Kushimoto Marine Park Zone Nature Conservation Division Ministry of the Environment 2005 "Investigation report on management policy of Kushimoto Marine Park Zone(Survey on state of marine organism) "

・ Moritaka Nishihira, J.E.N.Verson 1995 "Hermatypic Coral of Japan" Kaiyusya.

・ Ichthyological Society of Japan "DICTIONALY OF JAPANESE FISH NAMES AND THEIR FOREIGN EQUIVALENTS"

・ HEIBONSYA"THE ENCYCLOPAEDIA OF ANIMALS 14 Aquatic Animals"

・ Japan Wildlife Research Center "Checklist of Species of Wildlife of Japan"