

Information Sheet on Ramsar Wetlands (RIS) – 2006-2008 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 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX.22 of the 9th 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 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
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:

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Designation date

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Site Reference Number

Neera Shrestha Pradhan

WWF Nepal Program

Baluwatar, Kathmandu, Nepal

Tel No-977-1-4434820

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Email: neera.pradhan@wwfnepal.org ; info@wwfnepal.org

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2. Date this sheet was completed/updated:

18 May, 2006

3. Country:

Nepal

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.

Rara Lake

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:

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 accurately ; or

ii) the area has been extended ; or

iii) the area has been reduced**

** **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): ;
- ii) an **electronic format** (e.g. a JPEG or ArcView image) ;
- iii) a **GIS file providing geo-referenced site boundary vectors and attribute tables** .

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 site mainly follows the National Park boundary along the catchment towards north and East, whereas catchment boundary for the rest of the boundary.

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.

82° 00'-82° 10' East Longitude and 29° 26'-29° 34' North Latitude

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.

It lies in the Mid-Western development region in Karnali Zone. The Administrative district is Mugu. The district and Park headquarter is Gamgadi. Gamgadi is the nearest town from where it takes 4 hour normal walk to reach Rara.

Rara National Park is located in the north-western Nepal, south of the main Himalayan range.

The Park borders Khamalie, Seri, Rara, Karkibada, Shreenaagr, and Pina VDCs of Mugu district and Bumramadi Chaur, Bota Malika, Kanaka Sundari VDS of Jumla District.

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

Average 2,900 m

11. Area: (in hectares)

Area with the catchment is 1,583 ha.

12. General overview of the site:

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

Lake is formed by the capture of river in distinct geographical location of central Himalaya.

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

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: A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region

Rara lake system is a unique and rare example of natural wetland type in the high Himalayan biogeographic region. It is largest lake in Nepal, lies in the central Himalaya at an altitude of 2,900m. It provides water to the Karnali river, one of the four major river of the country in Nepal.

Criteria 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities

The area has developed unique floral and faunal assemblages with number of rare and vulnerable fauna and flora species

List of endangered and vulnerable fauna found in Rara Lake

S.No	Scientific name	Vernacular name	IUCN Red List	Government of Nepal	CITES
1	<i>Uncia uncia</i>	Snow leopard	EN	Protected	I
2	<i>Moschus moschiferus</i>	Musk deer	LR\nt	Protected	I
3	<i>Gallinago nemoricola</i>	Wood Snipe	VU		
4	<i>Ailurus fulgens</i>	Red panda	EN		I
5	<i>Catrius wallichii</i>	Cheer pheasant	EN		I

Snow leopard (*Uncia uncia*) occasionally passes through the upper part of the catchment area. The musk deer (*Moschus moschiferus*) uses the catchment and edge of the lake towards Chuchemara ridge. The globally threatened bird cheer pheasant (*Catrius wallichii*) VU-IUCN Redlist 2007 is found in the

rangeland (Millichaur) and forest habitat of the catchment. Similarly, the other globally threatened bird Wood Snipe (*Gallinago nemoricola*) VU – IUCN Redlist 2007 is the resident bird of Rara with rare status (5% chance) (Giri 2005)

List of birds threatened in Rara lake , (based on Giri 2005).

SN	Common Name	Scientific name	CMS (2004)	IUCN Red list (2007)
ANSERIFORMES				
Anatidae				
1	Greylag Goose	<i>Anser anser</i>	II	LC
4	Gadwall	<i>Anas strepera</i>	II	LC
5	Eurasian wigeon	<i>Anas Penelope</i>	II	LC
6	Mallard	<i>Anas platyrhynchos</i>	II	LC
7	Northern Shoveler	<i>Anas chrypeata</i>	II	LC
8	Northern Pintail	<i>Anas acuta</i>	II	LC
9	*Baikal teal	<i>Anas formosa</i>	I	Vu
10	Common Teal	<i>Anas crecca</i>	II	LC
11	Red crested pochard	<i>Rhodonessa rufina</i>	II	LC
12	Common Pochard	<i>Aythya ferina</i>	II	LC
13	@Ferruginous pochard	<i>Aythya nyroca</i>	I/II	NT
14	Tufted Duck	<i>Aythya fuligula</i>	II	LC
15	Common golden eye	<i>Bucephala clangula</i>	II	LC
16	Common Merganser	<i>Mergus merganser</i>	II	LC
Gruidae				
17	Demoiselle crane	<i>Grus virgo</i>	II	LC
Rallidae				
18	Common coot	<i>Fulica atra</i>	II	LC
19	Common Moorhen	<i>Gallinula chloropus</i>		LC
CICONIIFORMES				
Scolopacidae				
22	*Wood Snipe	<i>Gallinago nemoricola*</i>		Vu
24	Common Redshank	<i>Tringa totanus</i>	II	LC
25	Common greenshank	<i>Tringa nebularia</i>	II	LC
26	Green Sandpiper	<i>Tringa ochropus</i>	II	LC
27	Wood Sandpiper	<i>Tringa glareola</i>	II	LC
28	Common Sandpiper	<i>Actitis hypoleucos</i>	II	LC
29	Little stint	<i>Calidris minuta</i>	II	LC

31	Temminck's Stint	<i>Calidris temminckii</i>	II	LC
32	Red-necked Phalarope	<i>Phalaropus lobatus</i>	II	LC
35	Pallas's Gull	<i>Larus ichthyaetus</i>	II	LC
Ardeidae				
44	Great Egret	<i>Casmerodius albus</i>	II	LC
46	Great Bittern	<i>Botaurus stellaris</i>	II	LC

List of threatened plant species in Rara lake

SN	Scientific name	Local Name/English name	GoN protected species list	CITES species
1.	<i>Dactylorhiza hatagirea</i>	Panchoule	*	
2.	<i>Nardostachys grandiflora</i>	Jatamanshi	✓**	
3.	<i>Podophyllum hexandrum</i>	Laghupatra		II
4.	<i>Taxus wallichiana</i>	Louth salla	✓**	II
5.	<i>Ceropegia sp</i>			II
6.	<i>Juglans regia</i> +	Okhar	✓***	
7.	<i>Valeriana jatamansii</i>	Sugandhawal	✓**	
8.	<i>Abies spectabilis</i>	Talispatra	✓**	
9.	<i>Lichens</i>		✓**	
10.	Silajit (Rock exudate)		✓	

+ Okhar of National forests only.

*Ban for collection, use, sale and distribution, transportation and export

** Banned for export except processed with permission of department of forests

*** Banned for transportation, export and felling for commercial purpose

Dactylorhiza hatagirea, *Nardostachys grandiflora* and *Neopicrorhiza scrophulariflora* are among the most threatened non-timber forest product species found based on the availability and field assessment

The government ban is a legal instrument for the country of concern and mentioned in a gazette. Hence is a threatened in legal sense and thus is kept as it is.

Criteria 3: A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region

The wet alpine pasture, moraines and damp river/stream banks along the lake area including Karnali River catchments are the natural habitats for endemic species of plants. The area encompasses high diversity endemism of species.

The endemic plants confirmed from this area include Nirbishi (*Delphinium himalayai*) but the Kyasar (*Meconopsis regia*), *Primula poluninii* (terrestrial) and *Cirsium flavisquamatum* (Aquatic) are potential endemic species to be found in the catchment.

Endemic Amphibian Rara paha (*Paa rarica*) Dubois and Matsui 1983) is described from Lake Rara (2900-3020m) and reported from only one more location of Central region, Annapurna Conservation Area. In Rara it is scarce (Shah and Tiwari 2004).

Criteria 4: A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.

Resting site of at least 49 species of water birds including Bar-headed Goose (*Anser indicus*)-Passage migrant, Common teal (*Anas crecca*)-Winter visitor, Tufted duck (*Aythya fuligula*)- Winter visitor,, Common merganser (*Mergus merganser*)- Winter visitor,, Northern pintail (*Anas acuta*)-Passage migrant with breeding by Ruddy Schelduck (*Tadorna ferruginea*)-Possibly passage migrant, Eurasian woodcock (*Scolopax rusticola*)-resident and Brown dipper (*Cinclus pallasi*)-resident.

Criteria 7: A wetland should be considered internationally important if it supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity

Three endemic species of snow trout, Asala macha (*Schizothorax macrophthalmus*, *S.nepalensis*, *S.raraensis*) are found in the lake out of total 8 endemic fish species of Nepal and they are nowhere than the Lake Rara. The distinct features of these endemic fish are due to internal fin structure and size among these species.

Criteria 8: A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend

Dytiscid beetle, mayfly (Ephemeroptera) and caddis fly larvae are well represented aquatic fauna. Water shrimp (*Gammarus sp.*), Aquatic beetles, hemipterans, snail (*Limnea and Planorbis*) and ram's horn (*Planorbis*) are abundant and serve as food for snow trout and migratory wildfowl.

(Note: As a group or genera, the provided information is the only info that is available and none of them are specific as species.)

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: Western Himalayan Temperate Forest (88)

b) biogeographic regionalisation scheme (include reference citation):

WWF Global 200 Ecoregions

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.

Rara lake area lies in Higher Himalayan Zone, ranges above 2900m asl. Physiographically this zone has moderate steeply to steeply sloping mountains terrain. Geologically, the Himalayas were formed by the collision between Indian subcontinent and Eurasian continent, which started in Paleogene time and even continues today.

Origin: One school of thought is that the formation of the lake is believed to be the capture of the River Mugu Karnali to the north once flowed through the lake (Hagen 1969). The River was thus diverted and continued to erode its bed leaving its old course the lake and the Nisa khola, high above it. The gorge of the Nisa khola today makes it difficult to believe that it could have been a cut to such a depth simply by the overflow of the lake.

The other school of thought is that it was a glacier. The assumption does not show any signs of moraine type deposits.

The third school of thought is that a catastrophic earth quake or flood might have placed a huge amount of land mass in a wide stream valley that dammed the previous outlet and the lake was then formed. The flat area in the north east and on the south west location are probably due to debris deposits (DOHM 1998).

Down stream area: The down stream of the Rara lake is basically National Park area till the Majhgoan towards the right bank but continues along the left bank of Khatyar Khola (Park boundary river up to Serachaur (Rara VDC). The river passes through the proposed buffer zone to meet Mugu Karnali River.

General climate: The long winter is quite pronounced with light ground frosts occurring from October and snow falling from December through April and the minimum temperature falling below freezing point. Average annual temperature in the last 10 years (1994-2003) is about 11 °C. Monthly maximum temperature is 27°C and minimum temperature is 4°C. April normally sees the start of the warmer season which steadily increases to a pleasant temperature until September. The monsoon is short, occurring between the months of July and October. Average annual rainfall is 800 mm in 10 years (1994-2003).

Water quality: Both the samples were found contaminated with coliform bacteria and the sample of the outlet is turbid thus are not suitable for human drinking purpose without proper treatment and filtration (Annex 1 provides the laboratory analysis of water on Lake Rara).

As the depth of lake goes down the water temperature and dissolved oxygen reduced below 32 m suggesting the lower depths below 32 m are of low value to fish and other life forms that require

sufficient oxygen and temperature (Annex 2 provides Physico-chemical information in different depth levels in Rara lake.)

Source and link with ground water: The source of the water is mainly rain in the form of water and snow during summer and winter respectively. The amount of rain and snow determines the flow of the lake and it is usually low during the snow melting season (Feb/March).

17. Physical features of the catchment area:

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

General land-use: The catchment area is mainly forest, shrub land, grassland, and rocks.

General climate (including types: Similar to section no 14

Most of the area is forest, shrub land, grassland, rock and Boulders.

18. Hydrological values:

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

The wetland is source of fresh water for down stream.

As the catchment of the lake is among the sources of Karnali River, the wetland forms the regular source of water. Due to the main water storage, it regulates flooding down stream and provides permanent source of water for ground water recharge. The sediments coming to the lake from the sloppy catchment area are deposited in the base of the lake.

The clean, unpolluted and regular supply of water down stream from Rara lake is important to the people other than from Park and Buffer zone for drinking, irrigation, hydropower and other domestic purpose as well.

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/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.

○ (Permanent freshwater lakes over 8 ha)

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

About 245 species of plants have been recorded from the Rara NP area during survey period (June 2006) including Tilailo (*Acer acuminatum*), Tilailo (*Acer caesium*), Bikh (*Aconitum spicatum*), Pangar (*Aesculus indica*), Ban kurilo (*Asparagus filicinus*), Atis (*Delphinium himalayai*).

Plant Diversity

The forest of Rara can be categorized into four types. The edges of the forestland have a number of berry-bearing plant species like *Berberis*, *Cotoneaster*, *Rosa*, etc. The lake is comprised of patches of marsh and reeds.

Blue pine forest

The park is dominated by conifers. The area surrounded by lake is dominated by the blue pine, Rani sallo (*Pinus wallichiana*) and this dominance continues up to 3200m, rhododendron, Laligurans (*Rhododendron arboretum*), black juniper, Dhupi (*Juniperos wallichiana*), west Himalayan spruce, Jhule salla (*Picea smithiana*), oak, Khasru (*Quercus semecaprifolia*), and Himalayan cypress (*Cupressus torulosa*) and other associated species. Above this elevation, the vegetation is replaced with mixed coniferous forest of pine, spruce and fir. At about 3350m, pine and spruce give way to fir, oak and birch forest. Other deciduous tree species such as Indian horse chestnut, Pangro (*Aesculus indica*), walnut, Okhar (*Juglans regia*) and Himalayan poplar, Lekh Pipal (*Populus ciliata*) are also found.

Fir forest

The dominant coniferous forest is between 3,200 m to 3,600 m comprised of fir (*Abies spectabilis*). *Quercus semecaprifolia* is commonly associated with it and becomes dominant towards the top of hillside. Together with Bhoj Patra (*Betula utilis*), Indian-horse chestnut (*Aesculus indica*), walnut (*Juglans regia*) and Himalayan Poplar are other associates as in the lower altitudinal zone.

Birch-Rhododendron forest

Above 3,600m fir forest is replaced by birch (*Betula utilis*) forest. Above 3,700m, birch tends to be dwarf and is mixed with Rhododendron, Nilo Chimal (*Rhododendron campanulatum*) forming a continuous cover. The other associated species are Ban Painyu (*Prunus rufa*), Bajradanti (*Potentilla fructifosa*), Khiraunla (*Polygonatum cirrhifolium*), and dwarf Bhale Sunpate (*Rhododendron lepidotum*) as well as Dhupi (*Juniperos indica*).

Alpine meadow

The alpine vegetation occurring in this area above tree line mainly comprises of alpine scrub (3,700-4,400) m that consists of Dhupi (*Juniperos indica*) and alpine grasses (4,200-5,000) that consists of

Syankh (*Aletris pauciflora*), Ghans (*Carex atrofusca*), Ghans (*Jucus himalensis*), Ghans (*Kobresia dutchiei*), Mamira (*Parnassia nubicola*), and *Polygonum* sp.

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.*

Lake margin is surrounded by reeds Narkat (*Phragmites*), bushes(*Juncus*) and sedges(*Fimbristylis*). There are Phytoplanktonic algae and aquatic plants in the Lake water. Leathery leaves of *Polygonum* form oily floating layers and sessile plants (*Myriophyllum*) cover shallow area of Lake.

Some of the noteworthy flora of the catchment are Kutki (*Neopicrorhiza scrophulariflora*), Satuwa (*Paris polyphylla*,), Bikh (*Aconitum spicatum*), Pakhanbed (*Bergenia ciliata*), Karkati Shringi (*Pistacia chinensis*), Jangali Painyu (*Prunus carmesina*)

22. 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.*

The birds found in this sites are Baikal teal (*Anas formosa*)- vagrant species and status is unknown; Common Teal (*Anas crecca*), Gray Heron (*Ardea cinerea*), Great Egret(*Casmerodius albus*) - winter visitor, passage migrant , rare and have about 15% chance to see them in Rara. Demoiselle crane (*Grus vigor*), and Heuglin's Gull (*Larus heuglini*) are passage migrant with less than 5% of chance to see them in Rara (Please refer to Annex no 3 for list of birds.).

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:

The wetland is source of ecotourism and has religious importance.

Thakur Babas temple is located towards the South East corner of the lakes 500m upwards. It is believed that Thakur god thrown an arrow to discharge the water of lake to reduce the potential damage by over flooding/damming.

Shrawan Purnima(August) sees gathering of local people near the temple in Lamachaur. During the festival people visit here mainly from Pina and Rara VDCs. Women also gather here and pray during the Teej (Last August/Early Sep) (festival celebrated by women when they fast for one day for the long life of their husband) in this temple. The Chapru Mahadev temple is located about 500 m south of the Park office about 300m upwards in the catchment. This is the temple of Chapru

village (one of the two relocated village from Rara) where people still come. Nepal Army performs puja during the main Hindu festivals. A deep tap in the relocated village in Rara used by the local royalty before their resettlement in tarai is said to be ancient and unique.

People of this area speak a different dialect which is the former or original form of Nepali language. Some stone sculptures are seen in few places before reaching village with archeological scripts (Rara village, Murma village).

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:

The land is owned by the Government and the local authority is Rara National Park.

The area is under the Governments ownership as Rara National Park. The Ministry of Forest and Soil Conservation, Government of Nepal, is the legal authority. The park is governed by the National Parkas and Wildlife Conservation Act 2029 BS (1973) and Himali Rastriya Nikunja Niyamawali (Mountain National Parks Regulation) 2036 B.S (1979).

b) in the surrounding area:

The catchment is completely owned by the Government. The area is legally managed by the Rara National Park.

25. Current land (including water) use:

a) within the Ramsar site:

It's mainly a seasonal grazing land by the local people and mostly a rangeland with herb, shrub. Most of the area is forest. The rangeland is dominated by rock, forest, shrub and grasses.

b) in the surroundings/catchment:

Catchment if mostly forest followed by, bush and shrub land, and grassland.

Collecting timber and non timber forest product is banned except for local people with permission from the chief conservation officer. Local people are allowed to construct hotels and run cattle sheds on their private land.

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:

Grazing, tourism and domestic use related pollution, soil erosion
(The similar kind of problem persists as in the surrounding area.)

b) in the surrounding area:

Grazing: The regulation on grazing has been slowly uncontrolled as a result large number of sheep, goat, cow and buffalo are seen grazing in the margin of lake and catchment area. The defecation is directly reached or washed in to the lake which is the major source of pollution.

Overuse of Timber and Non-timber Forest products: The district headquarter, Mugu is also partially dependent on the timber and fuelwood use from the catchment of Rara lake. The growing collection of Guchi Chyau (morchella sp.) by local people creates pressure to the biodiversity during its collection season after rain.

Pollution: The main sources of pollution are human waste and domestic sewages of the park and army personnel. Rara lake is the major tourists' destinations in Rara National Park, and some of environmental and socio-economic problems have also been identified. The defecation by livestock adds on this. The fuelwood collection and solid waste from the visitors and festivals creates environmental consequences whereas by visitors refusing to employ local residents as porter, guide and service providers creates socio-economic problems which needs to be taken care through the training and other capacity building and entrepreneurship development supports.

Unclear park boundary: The boundary towards northeast side coincides with the community forests and the clear natural boundary do not exists there. The conflict with local community exists with the park but the proposed Ramsar boundary is not extended to that extent.

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 ; \sqrt{II} ; III ; IV ; V ; VI

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

d) Describe any other current management practices:

The park was gazetted in 1976.

28. Conservation measures proposed but not yet implemented:

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

We can provide the draft management plan but was not officially forwarded for approval as the gazette to handover NP to NGO was nullified by the new Government.

29. Current scientific research and facilities:

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

The study is limited to some anecdotal bird listing.

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.

The visitor information centre of Hutu provides the information to tourists. Park brochure is provided free of cost while buying entry permits either in Kathmandu or at entry points of the park.

31. Current recreation and tourism:

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

The Rara lake is the favoured destination of the tourist visiting Rara National Park.

The highest number of tourist 560 individuals received was in 1997/98 which was declined and reached as low as only 5 in 2004/05 and now slowly picking up with 28 in 2005/06. We expect it to grow as the situation has improved and Rara festival was organized in early 2007 to promote domestic and international visitors.

32. Jurisdiction:

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

Territorial-State owned (Ministry of Forest and Soil Conservation). Functional-Department (Department of National Parks and Wildlife Conservation).

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.

Conservation Officer Mr.Durga Poudel

Rara National Park, Hutu, Mugu.

Nepal Ph-+977-019450101 (Address for the DNPWC is also acceptable)

34. Bibliographical references:

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

Karki,J.B. 2002.National report on status of high altitude wetlands. Lakes and other water bodies above 3500 m in Nepal. Presented in the first workshop of High altitude wetland conservation, 5-9 Aug,2002 Urumqi, China.

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Annex 1. Laboratory Analysis of the water of Rara Lake of Rara National Park

Physical	Unit	WHOGV	Result	
			Rara outlet	Rara lake near office
Turbidity	NTU	5.0	123	<1.0
Suspended Solids	Mg/l	1000	263	<1.0
Chemical				
pH		6.5-8.5	7.0	7.4
Total Alkalinity	Mg/l as CaCO ₃	500.0	104	86
Chloride	Mg/l	250	3.92	3.92
Total Phosphate	Mg/l as CaCO ₃		0.43	0.03
Total nitrogen	Mg/l as CaCO ₃		0.14	1.12
Acidity	Mg/l as CaCO ₃		<2.0	2.0
Bio-Chemical				
Biological oxygen Demand (BOD)	Mg/l		2.8	1.56
Bacteriological				
Coliforms	MPN/100 ml	Nil	1100+	28

(Result are based on the test was conducted by Water Engineering and training center (p) Ltd., Dillibazar, Kathmandu)

Annex 2. Physico-chemical Information in different depth levels in Rara lake.

Parameters	0m	8m	16m	32m	60m	120m	160m	167m
Water temperature (°c)	12.1	11.9	11.3	9.2	8.3	8.3	8.3	-
Electrical conductivity (µScm ⁻¹)	137	131	129	126	120	120	119	-
Alkalinity/Acidity-pH	8.48	8.52	8.56	8.6	8.4	8.36	8.3	-
Dissolved oxygen (mg/l)	7.5	7.59	7.93	8.06	6.91	6.58	6.52	4.84
Dissolved oxygen (%)	99.6	100.4	103.5	100.2	84.2	80.1	79.4	58.2
Total nitrogen(µg/l)	-	30	27	27	24	18	21	-
Silica (Mg/l)	0.68	0.62	0.70	0.73	0.73	0.76	0.73	-

EDTA Hardness (mg/l as CaCO ₃)	97	93	100	99	96	92	94	-
Chlorophyll a (Mg/m ³)	0.06	0.125	0.16	0.381	0.46	-	0.04	-

(Source: Okino and Sato 1986)

Annex 3 : Wetland dependent birds of Rara lake, Rara National Park (based on Giri 2005).

SN	Common Name	Scientific name	Status	CMS (2004)	IUCN Red list (2007)
ANSERIFORMES					
Anatidae					
1	Greylag Goose	<i>Anser anser</i>	m3	II	LC
2	Bar-headed Goose	<i>Anser indicus</i>	m3		LC
3	Ruddy Shelduck	<i>Tadorna ferruginea</i>	m?2		LC
4	Gadwall	<i>Anas strepera</i>	w,m1	II	LC
5	Eurasian wigeon	<i>Anas Penelope</i>	m1	II	LC
6	Mallard	<i>Anas platyrhynchos</i>	w,m1	II	LC
7	Northern Shoveler	<i>Anas clypeata</i>	w3	II	LC
8	Northern Pintail	<i>Anas acuta</i>	m1	II	LC
9	*Baikal teal	<i>Anas formosa</i>	v5	I	Vu
10	Common Teal	<i>Anas crecca</i>	w,m4	II	LC
11	Red crested pochard	<i>Rhodonessa rufina</i>	w,m	II	LC
12	Common Pochard	<i>Aythya ferina</i>	m	II	LC
13	@Ferruginous pochard	<i>Aythya nyroca</i>	m	I/II	NT
14	Tufted Duck	<i>Aythya fuligula</i>	w,m	II	LC
15	Common golden eye	<i>Bucephala clangula</i>	w,m	II	LC
16	Common Merganser	<i>Mergus merganser</i>	w	II	LC
Gruidae					
17	Demoiselle crane	<i>Grus virgo</i>	m,5	II	LC
Rallidae					
18	Common coot	<i>Fulica atra</i>	w,m1	II	LC
19	Common Moorhen	<i>Gallinula chloropus</i>	m,1		LC
CICONIIFORMES					
Scolopacidae					
20	Eurasian Woodcock	<i>Scolopax rusticola</i>	r5		LC

21	Solitary Snipe	<i>Gallinago solitaria</i>	w5		LC
22	*Wood Snipe	<i>Gallinago nemoricola*</i>	r?5		Vu
23	Common snipe	<i>Gallinago gallinago</i>	m3		LC
24	Common Redshank	<i>Tringa totanus</i>	m2	II	LC
25	Common greenshank	<i>Tringa nebularia</i>	m4	II	LC
26	Green Sandpiper	<i>Tringa ochropus</i>	m4	II	LC
27	Wood Sandpiper	<i>Tringa glareola</i>	m4	II	LC
28	Common Sandpiper	<i>Actitis hypoleucos</i>	m2	II	LC
29	Little stint	<i>Calidris minuta</i>	m3	II	LC
31	Temminck's Stint	<i>Calidris temminckii</i>	m3	II	LC
32	Red-necked Phalarope	<i>Phalaropus lobatus</i>	m3	II	LC

33	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	m3		LC
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Laridae

34	Heuglin's Gull	<i>Larus heuglini</i>	m5		-
35	Pallas's Gull	<i>Larus ichthyæetus</i>	m1	II	LC
36	Brown-headed Gull	<i>Larus brunnicephalus</i>	m4		LC
37	Black-headed Gull	<i>Larus ridibundus</i>	m3		LC
38	#Gull-bellied Tern	<i>Gelochelidon nilotica</i>	m3		LC

Podicipedidae

39	Little Grebe	<i>Tachybaptus ruficollis</i>	r?2		LC
40	Great Crested Grebe	<i>Podiceps cristatus</i>	r?w1		LC
41	Black-necked Grebe	<i>Podiceps nigricollis</i>	r?w1		LC

Phalacrocoracidae

42	Great Cormorant	<i>Phalacrocorax carbo</i>	s?1		LC
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Ardeidae

43	Grey Heron	<i>Ardea cinerea</i>	m4		LC
44	Great Egret	<i>Casmerodius albus</i>	m4	II	LC
45	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	S3		LC
46	Great Bittern	<i>Botaurus stellaris</i>	m3	II	LC

PASSERIFORMES**Cinclidae**

47	Brown Dipper	<i>Cinclus pallasii</i>	r1		LC
48	White-throated dipper	<i>Cinclus cinclus</i>	+		LC

+ source: Chaudhary, RD 2003.

Key to codes

1 =Common, > 75% Chance 2 =Fairly common, > 50% chance 3=Occasional,>25%Chance 4

=Uncommon, 15% chance 5 rare, 5% chance

r=resident, s=summer visitor, mostly breeding birds w=winter visitor, m=passage migrant,
v=vagrant,?=status uncertain

Annex 4. List of plants from the Rara lake

SN	Scientific name	Vernacular name	Characteristics
1.	<i>Delphinium himalayai</i>	Atis	Ecologically threatened, Endemic
2.	<i>Rheum australe</i>	Akashechuk	
3.	<i>Arnebia benthamii</i>		
4.	<i>Betula utilis</i>	Bhojpatra	Locally threatened due to domestic use
5.	<i>Jurinea dolomea</i>		
6.	<i>Aconitum ferox</i>	Bisma, Seto Bikh	
7.	<i>Allium hypsistum</i>	Jimbu	
8.	<i>Arisaema costatum</i>	Kal	
9.	<i>Astilbe rivularis</i>	Ganegurjo	
10	<i>Cedrus deodara</i>	Debdar	Rare, ethnobotanically important religious species
11	<i>Cypridium himalaicum</i>	Ladies slipper Orchid	
12	<i>Hippophae salicifolia</i>	Bhuichuk	
13	<i>Lilium nepalense</i>	Khiraula	
14	<i>Meconopsis grandis</i>		Rare ecologically threatened
15	<i>Osmunda sp</i>		Archaic pteridophyte
16	<i>Rheum moorcroftianum</i>	Padamchal	
17	<i>Rhododendron lepidotum</i>	Bhale Sunpati	
18	<i>Rubia manjith</i>	Majitho	
19	<i>Salix calyculata</i>	Bainsh	
20	<i>Trillidium govianum</i>		
21	<i>Tsuga dumosa</i>	Thinghe Salla	Rare good habitat for lichens

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