Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 of the Conference of the Contracting Parties.

1. Date this sheet was completed/updated:
28 January 2002

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DD MM YY

Designation date | Site Reference Number

2. Country:
Nepal

3. Name of wetland:
Beeshazar and associated Lakes

4. Geographical coordinates: 27° 37'04.6" N, 84° 26' 11.3 E

5. Elevation: (average and/or max. & min.)286 m **6. Area:** (in hectares) **3200 ha**

7. Overview: (general summary, in two or three sentences, of the wetland's principal characteristics)

Forested wetlands having finger-like projection with series of associated lakes, meadows, swamps and marshes present. Rainwater impoundment and additional water supplied from Khageri Dam. The canal runs diagonally through the Tikauli forest which is a wildlife corridor for the animals moving from the Siwalik hill range to the Mahabharat mountains.

8. Wetland Type (please circle the applicable codes for wetland types; in the present document, the "Ramsar Classification System for Wetland Type" is found on page 9)

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)**

Please now rank these wetland types by listing them from the most to the least dominant:
Inland Wetlands : O, M, N, P, Xf, Tp, Ts
Human made: 9, 6, 2

9. Ramsar Criteria: (please circle the applicable Criteria; the *Criteria for Identifying Wetlands of International Importance* are reprinted beginning on page 11 of this document.)

(1) • (2) • 3 • 4 • 5 • 6 • 7 • 8

Please specify the most significant criterion applicable to the site: 1 and 2

10. Map of site included? Please tick *yes* √❒ -or- *no* ❒
(Please refer to the *Explanatory Note and Guidelines* document for information regarding desirable map traits).

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

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Please provide additional information on each of the following categories by attaching extra pages **(please limit extra pages to no more than 10):**

12. Justification of the criteria selected under point 9, on previous page. (Please refer to the *Criteria for Identifying Wetlands of International Importance* appended to this document)

Criterion 1: An extensive, typical oxbow lake system of the tropical Nepal Inner Terai, lying inside buffer zone of the Royal Chitwan National Park, a World Heritage site, providing excellent habitat conditions as a water hole and corridor for endangered wildlife species.

Criterion 2: Assemblage of some rare and endangered large mammals, reptiles and monogeneric plant species is important to conserve for conservation of genetic diversity.

Globally threatened and endangered species in the proposed ramsar site (IUCN, 2002)

Mammals: **Endangered:** Tiger(*Panthera tigris*), Rhinoceros unicornis(One horned rhinoceros) **Vulnerable:** Smooth-coated Otter *(Lutra perpiscillata*), Sloth Bear(*Melaurus ursinus*) **Least Risk :** Rhesus macaque *(Macaca mulatta)*, Hanuman Langur (*Semnopithecus entellus*) **Data Deficient:** Bengal Fox (*Vulpes bengalensis*)

Birds: **Critically Endangered**: White-rumped Vulture *(Gyps bengalensis)* **Vulnerable**: Lesser Adjutant Stork *(Leptotilos javanicus)* Ferruginous duck (*Aythya nyroca)* Band-tailed fish eagle (*Haileetus leucoryphus)* **Least Risk**: Ferruginous duck (*Aythya nyroca),* Painted stork*(Mycteria leucocephala)* Black-necked strok (*Ephippiorhynchus asiatcus)* Indian black vulture *(Sarcogyps calvus)* Black vulture (*Aegypius monachus)* Black- bellied tern (*Sterna acuticauda)* Great hornbill (*Buceros bicornis)*

Reptiles: **Endangered**: Gharial *(Gavialis gangeticus*); **Vulnerable**: Marsh Crocodile *(Crocodylus palustris);* **Least Risk**:: Asiatic Rock Python (*Python molurus)*

13. General location: (include the nearest large town and its administrative region)
The wetlands lie 7.2 km south from East West Highway following Khageri Canal, in Gitanagar and Bachauli VDCs, Bharatpur and Ratnanagar Municipilaties, 15 km from Narayanghat bazaar , Chitawan District , Narayani Zone, Nepal

14. Physical features: (e.g., geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; catchment area; downstream area; climate)
Bees Hazar is a surface and ground water fed natural fresh water lake. It is situated in the inner Terai valley (doon) of central Nepal in between the Mahabharat Mountain Range to the north and the Siwalik Range to the south. The lake bed is situated on the laterite soil. The seasonal water level fluctuation results in high water levels in the summer and low watern levels in the winter.

Result and findings of lake water analysis, sample taken on 14 July, 1997. Monsoon Season; Weather: Rainy morning; cloudy until mid-day and sunny afternoon.

- Sechi disc measurement diagnoses the lake as hypertrophic
- Total phosphorous content indicates that the lake is hypertrophic
- Total nitrogen content indicates that the lake is eutrophic
- Chlorophyll 'a' content shows that the lake is oligotrophic.
- Dissolved oxygen content is below the minimum international value (3 - 5 mg/L) for surface water.

The oligotrophic state of the lake is shown by the low content of Chlorophyll 'a'. The low content of chlorophyll 'a' is likely to be due to the rich growth of macrophytes which prevents the penetration of sunlight needed for photosynthesis. However, with respect to nutrient content and Sechi depth, the lakes can be considered to be eutrophic to hypertrophic. This conclusion is based on a one-time analysis during the summer season. The state of the lake may vary at other times of the year. Only detailed and regular long-term monitoring in every season can depict the actual trophic status of the lake.
This area features a monsoon climate characterised by a hot, rainy summer and a cool, dry winter .

15. Hydrological values: (groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.)
Water is received from direct precipitation during the monsoon and through inflow of the Khageri Canal. The lake water is supplied to the canal and the stream during the dry season. The catchment area helps to control flooding in the Khageri River and recharges the ground water or the streams.

16. Ecological features: (main habitats and vegetation types)
The Bees Hazar lake area lies in the Indo Malayan bio-geographical realm. This is characterised by the occurrence of Sal (*Shorea robusta*) forest surrounding the lake area. The area is known as Inner Terai or Doon, lying between the Mahabharat and Churia or Siwalik mountain range, in the central part of the Nepal Himalaya. It is characterised by a tropical vegetation type. Main habitat type includes: a) fresh water lake b) lacustrine swamp and c) lacustrine marsh. The vegetation types include: a) water hyacinth and water chestnut dominated floating aquatic vegetation b) Hydrilla dominated submerged vegetation c) marsh vegetation dominated by *Ipomea carnea* ssp. *fistulosa* and d) Sal forest.

The terrestrial vegetation is dominated by Sal (*Shorea robusta*) forest. The prominent associated species include Myrobalan (*Terminalia alata*) Silk cotton (*Bombax ceiba*) and Bot Dhainyaro (*Lagerstroemia parviflora*). The wetland vegetation consist of Sedge (*Cyperus spp*.), Common Reed (*Phargmites karka*), Morning Glory (*Ipomea carnea* ssp. *fistulosa*) and Mikania (*Mikania micrantha*). The aquatic vegetation is represented by extensive coverage of floating leafed species mainly water hyacinth (*Eichhornia crassipes*), Water Chestnut (*Trapa bispinosa*) followed by Evening Primrose (*Ludwigia adscendens*). The free floating species include Water Velvet (*Azolla imbricata*) and Duckweed (*Lemna spp*.). The abundant submerged species include Hornwort (*Ceratophyllum demersum*), Hydrilla (*Hydrilla verticillata*) and Water Nymph (*Najas minor*). In general, the vegetation is in floating leafed succession stage. Reed swamp formations are found in backwaters in finger like projections, characteristic of an ox-bow lake system. An extensive marsh meadow condition is found in the west, just outside the 'Khageri' irrigation canal corner. This indicates the eutrophic status of aquatic macrophyte cover and high sedimentation rate. This implies rapid succession toward meadow /forest condition and reduction in the life span of this ox-bow lake ecosystem.

17. Noteworthy flora: (indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc.)
Aquatic plants of tropical zone with unique physiological adaptation include water primrose and bladderwort. Bio-geographically important species in terms of being representative of the Indo Malayan realm include *Sal (Shorea robusta*), *and Terminalia alata*. Rare,endangered and abundant species are mentioned below.

Table: Important floral species found in Bees Hazar Lake

Botanical name	Common name	Status
Aerides odorata	Orchid	Endangered species: CITES Appendix III
Acacia catechu	Cutch tree	HMG /Nepal's gazetted species banned for transport, export and felling (Shrestha and Joshi, 1996)
Shorea robusta	Sal tree	HMG /Nepal's gazetted species banned for transport, export and felling (Shrestha and Joshi, 1996)

Botanical name	Common name	Status
Alstonia scholaris	Chatiwan	Rare plant species (Shrestha and Joshi, 1996).
Ceratophyllum demersum	Coontail	Monogeneric species (Shrestha and Joshi, 1996), Troublesome aquatic weed (Spence and Bowes, 1993)
Trapa bispinosa	Water chestnut	Monogeneric species (Shrestha and Joshi, 1996).
Eichhornia crassipes	Water hyacinth	Troublesome aquatic invasive
Hydrilla verticillata	Hydrilla	Troublesome aquatic weed (Spence and Bowes, 1993)
Pistia stratiotes	Water cabbage	Troublesome aquatic weed (Spence and Bowes, 1993
Najas minor	Water Nymph	Abundant submerged species
Ludwigia alscendens	Water Primrose	Floating leafed with respiratory root
Ipomea carnea	Morning Glory	Common "exotic" weedy shrub
Potamogeton nodosus	Pond Weed	Submerged and abundant
Utricularia australis	Bladderwort	Carnivore, submerged species

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18. Noteworthy fauna: (indicating, e.g., which species are unique, rare, endangered, abundant or biogeographically important; include count data, etc.)

One hundred and eighty five fish species have been described from Nepal (BPP, 1995), out of which 17 species been recorded from Bees Hazar. A hill fish species (*Channa striatus*) has also been reported from this lake which it is fed by the Khageri hill stream. Ecologically, Bees Hazar Reservoir is an eutrophic waterbed. The upper surface of the reservoir supports species such as *Notopterus notopterus*. The middle layer of the lake is often dominated by coarse fishes such as *Chana spp*, *Xenetodon cancila and Mystus spp*. The bottom layer is dominated by *Heteropneustis fossilis*.

Table: Important fish species recorded from Beeshazar Lake

Scientific name	Local name	Status
Notopterus notopterus	Patara, Patali	found only in Terai
Cirrhinus reba	Reba	do
Puntius chola	Sidre	Threatened (Susceptible category)
Oxygaster bacaila	Chalwa	found in Terai only
Mystus bleckeri	Tengeri	do
Chana marulius	Sauri	do
C. striatus	Bhoti	do
C. gachua	Bhoti	Abundant
Nandus nandus	Dhewari	do
Colisa fasciatus	Khesara	do
Mastacembulus punctatus	Kathgainchi	do
Heteropneustes fossilis	Singhe	Abundant

Reptiles

This area supports the largest number of Marsh Crocodile outside the core protected area. The population is estimated to be around 15 - 20 individuals (BPP, 1995). It also supports small population of Indian Rock Python and several species of turtles. The water Snake and Rat Snake are commonly found and are the food source of the resident Crested Serpent Eagle.

Scientific name	Common name	Remarks
Turtles		
Aspideretes gangeticus	Indian Soft Shell Turtle	
Crocodile		
Crocodylus palustris	Marsh Crocodile	15 - 20 (BPP 1995)
Lizards		
Varanus flavescens	Golden Monitor Lizard	HMG Protected; IUCN Indeterminate
V. bengalensis	Bengal Monitor Lizard	
Calotes versicolor	Common Garden Lizard	
Snakes		
Python molurus	Indian Rock Python	HMG Protected

Amphiesma stolata	Buff Striped Keel Back	common
Xenochropis piscator	Chequered Keel Back	do
Ptyas mucosa	Rat Snake	do

Birds

A total of 273 species belonging to 61 families have been recorded from Bees Hazar, of which 60 species are wetlands-dependant. The lesser adjutant stork, great spotted eagle, black-bellied tern, ferruginous duck and Pallas fish eagle are globally threatened species. The forested wetland habitat provides a refuge for a significant number of storks, ibises, fishing eagles and a large number of lesser whistling teals. The meadows provide a good opportunity for egrets, herons and serpent eagle to forage upon snakes. Some significant bird species and their numbers observed randomly within a decade are mentioned below.

Table: Important bird species recorded from Beeshazar lake

Bird Name	Dec. 1987	Oct. 1988	Jan / Feb. 1995	Jul. 1997	Remarks
Phalacrocoracidae (Cormorants)					
Oriental Darter (*Anhinga melanogaster*)	3		4		Resident/Vulnerable
Ardeidae (Herons and Egrets)					
Night Heron (*Nyctycrorax nyctycrocax*)			125	10	Resident
Ciconidae (Storks)					
Open-bill Stork (*Anastomus oscitans*)	10		10	4	Resident/Threatened
White-necked Stork (*Ciconia episcopus*)	3		2	1	Resident/Threatened
Lesser Adjutant Stork (*Leptoptilus javanicus*)	2		5	5	Resident/Vulnerable
Black Ibis (*Pseudibis papillosa*)			18		Resident/Vulnerable
Anatidae (Ducks and geese)					
Lesser Whistling Duck (*Dendrocygna javanica*)	450		500	20	Resident
Common Teal (*Anas crecca*)	150				Migratory
Northern Pintail (*A. acuta*)	200				Migratory
Accipitrididae (Birds of Prey)					
Gray Headed Fishing Eagle (*Ichthyophaga ichthyaetus*)	2		2	1	2 nesting 12 Oct. 1988/ Vulnerable
Rallidae (Rails, coot and waterhens)					
White-breasted Waterhen (*Amaurornis phoenicurus*)				8	Resident
Common Moorhen (*Gallinula chloropus*)	10		64		Resident
Common Coot (*Fulica atra*)	6		22		Migratory
Jacanidae (Jacana)					
Pheasant Tailed Jacana *(Hydrophasianus chirurgus*)			20		Migratory
Bronze-winged Jacana (*Metopidus indicus*)	10		21		Resident
Charadridriidae (Waders)					
Green Shank (*Tringa nebularia*)	100				Partial migrant
Alcedinidae (Kingfishers)					
White-breasted Kingfishers (*Halcyon smyrnensis*)	2		2	7	Resident
Stork-billed Kingfisher (*Pelargopsis capensis*)	2		2	2	Resident
Common Kingfisher (*Alcedo atthis*)	2		2	3	Resident

Mammals

The Tikauli forest is an important corridor and refuge for the movement of large mammals from the Royal Chitawan National Park between the Churia Hills and the Mahabharat ranges. Currently this forest supports a few Royal Bengal Tiger, and a number of resident Spotted Leopards. The wetlands and the forest supports a small population of Great One Horned Rhinoceros. Spotted Deer are in found in herds numbering more than one hundred individuals in a single herd. There is also a small population of Sloth Bear residing in the forest. The Smooth-coated Otter and the Fishing Cat are important small wetland-dependent carnivores residing in this wetland.

Table: Important mammal species occurring around Bees Hazar Lake

Scientific name	Common name	Remarks

Macaca assamensis	Assamese Macaque	Legally protected
Melursus ursinus	Sloth Bear	IUCN Vulnerable; CITES I
Lutrogale perscipillata	Smooth-coated Otter	Common
Canis aureus	Golden Jackal	Common
Prionailurus viverrinus	Fishing Cat	CITES II
P. bengalensis	Leopard Cat	Legally protected
Pardofelis nebulosa	Clouded Leopard	Legally protected
Panthera pardus	Common Leopard	CITES I
Panthera tigris	Bengal Tiger	Legally protected, IUCN Endangered
Axis axis	Spotted Deer	Common
Muntiacus muntjak	Barking Deer	Common
Rhinoceros unicornis	Great One horned Rhino	Legally protected; IUCN Endangered; CITES I

19. Social and cultural values: (e.g., fisheries production, forestry, religious importance, archaeological site, etc.)
Annual fish harvesting is practiced by awarding contracts to private entrepreneurs. The surrounding forest has a high potential for timber exploitation but this is not practiced due to the possible hazard to wildlife.

20. Land tenure/ownership of: (a) site (b) surrounding area
a. Site: State owned, Department of Forest, at present under the jurisdiction of DNPWC after the enaction of the Buffer Zone Act 1997.
b. Surrounding area: privately owned cultivation.

21. Current land use: (a) site (b) surroundings/catchment

a) Within the proposed Ramsar site, the areas of various landuses are as follows:
Forest Land: 2800 ha; Grassland:320 ha; Bush and Shrubs: 20 ha; Sand: 5 ha; River: 30 ha; Pond: 20 ha.Four Village

b) Development Committees (VDC) and one municipality circumscribe the forest area which houses the Beesh Hazar lake. The total population is 99,299 with 10,918 households (IUCN, 1998). Farming is the principal occupation and other human activities in the forest surrounding the wetland include grazing and fuelwood collection. Fishing is commonly practiced in the lakes. Once a year a fishing contract is awarded to the public. The area lying outside the forest is predominantly under private cultivation.

22. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land use and development projects: (a) at the site (b) around the site
Major development projects are the Mahendra Highway and the Khageri canal running diagonally through the forest. Some industries (beer, coke, steel factory), have been established and human settlement has increased in recent years at the periphery of the forest. Whilst this does not pose a major threat currently, could advesely affect the site in future if proper attention to this issue is not given.

Unsustainable use of natural resources from wetlands and surrounding areas could pose a threat but there has been heightened awareness of the importance of the wetlands here and hence improved protection. One potential threat to the site is water allocation between the wetlands and for irrigation in future when there is more intensification of agriculture in the area and more need for water.

Water hyacinth and other invasive species have started to pose some threat to the wetlands here but are being manually removed by local communities and authorities of the Royal Chitwan National Park.

Leaching of inorganic fertilizer and pesticide from farmlands into the water of the wetlands could pose a threat to the wetlands in future if sustainable local landuse practices are not promoted.

The factors affecting the ecological character in the surrounding area are similar to the issues discussed above. Reduced fetility of farmlands, loss and degradation of forest lands are some other key factors.

23. Conservation measures taken: (national category and legal status of protected areas - including any boundary changes which have been made: management practices; whether an officially approved management plan exists and whether it has been implemented)

- Legal status - This forest acts as a corridor for the movement of wildlife from the Churia to the Mahabharat ranges. Recently, the government has shifted the jurisdiction of the Forest Department to the Department of National Parks and Wildlife Conservation after designated as a buffer area for wildlife residing in the Royal Chitawan National Park.
- Management category - as a buffer zone of the Royal Chitwan National Park
- Management practices - armed forest guards to control poaching and land encroachment.
- Buffer Zone Management Committee constitued for participatory management of the buffer zone.
- District Irrigation Office manages Khageri canal

24. Conservation measures proposed but not yet implemented: (e.g., management plan in preparation; officially proposed as a protected area, etc.)

The Department of Irrigation is keen to increase the water level of the canal to make the lake perennial. A detailed hydrological study is required to determine the water level required to preserve the ecosystem. The Chitwan District Development Committee interested to develop as eco-tourism center .

25. Current scientific research and facilities: (e.g., details of current projects; existence of field station, etc.)

There is no permanent research station established at present although biodiversity research is being carried out by KMTNC/NCRTC.
Wetland survey by Biodiversity Profiles Project/DNPWC 1995
Wetland Survey by IUCN Nepal 1993 - 1997 on a random basis.

26. Current conservation education: (e.g., visitors centre, hides, info booklet, facilities for school visits, etc.)

There is a Training Centre for Armed Forest Guards/Ministry of Forest and Soil Conservation which was formerly known as the Rhino Patrol.
Visitor center established at the Royal Chitwan National Park, Saurah

27. Current recreation and tourism: (state if wetland is used for recreation/tourism; indicate type and frequency/intensity)

Has great potential but as yet such activity has not been allowed.

28. Jurisdiction: (territorial, e.g. state/region, and functional, e.g. Dept of Agriculture/Dept. of Environment, etc.)

Royal Chitwan National Park, Kasara, Chitwan, Nepal

29. Management authority: (name and address of local body directly responsible for managing the wetland)

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30. Bibliographical references: (scientific/technical only)

- Biodiversity Profiles Project. 1995. Biodiversity Assessment of Terai Wetlands (W. J. M. Verheugt, Editor). Biodiversity Profiles Project Publication no. 1.
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