FACTSHEET

Wetlands of Nepal

Nepal embarked up on the modern era of wildlife conservation with the enactment of National Parks and Wildlife Conservation Act in 1973. The Department of National Parks and Wildlife Conservation has a network of 9 national parks, 3 wildlife reserves, 3 conservation areas and 1 hunting reserve, including 9 buffer zones around the parks and reserves, covering a total of 28,585.67 sq.km. (19.42%) of the country's total landmass.

DNPWC's purpose is to conserve, protect and restore the rich and varied fauna, flora and landscape of the Himalayan Kingdom of Nepal.

Nepal became the contracting party to the Ramsar Convention on 1987. In Nepal, DNPWC is the implementing organization for the convention.

WWF is the world's largest and most experienced independent conservation organization, with almost 5 million supporters and a global network active in more than 90 countries.

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature by:

- conserving the world's biological diversity
- ensuring that the use of renewable natural resources is sustainable
- promoting the reduction of pollution and wasteful consumption

For further information:

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www.panda.org/freshwater

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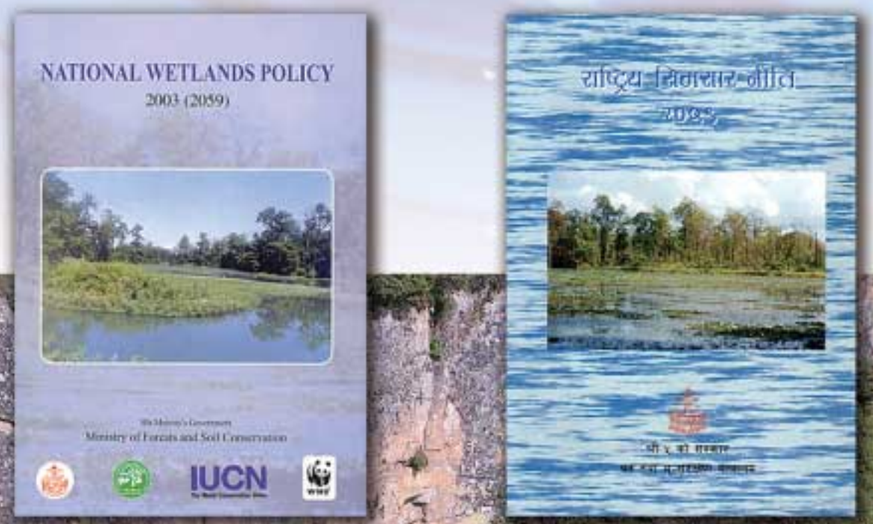
Wetlands are considered as fertile lands for agriculture and rich from the point of view of biological diversity. These wetlands provide habitat for several species of wildlife and lie within various ecosystems of high-mountain and lowland plains The Nepali term for wetlands is "Simsar", which means lands with perennial source of water. Swampy rice fields, water logged areas and ponds are also understood as wetlands in the country. There are about 50 different definitions of wetlands in the world.



According to the National Wetland Policy, 2003 of Nepal

Wetlands denote perennial water bodies that originate from underground sources of water or rains. It means swampy areas with flowing or stagnant fresh or salt water that are natural or man-made, or permanent or temporary. Wetlands also mean marshy lands, riverine floodplains, lakes, ponds, water storage areas and agricultural lands.

Goal

The primary goal of the National Wetlands Policy, 2003 (Nepal) is to conserve and manage wetlands resources wisely and in a sustainable way with local people's participation. The policy also aims to put the conservation and management aspects of wetlands conservation within the framework of broader environmental management.

Objective

The major objective of the policy is to involve local people in the management of Nepal's wetlands and conserve wetlands biodiversity with wise use of wetlands resources.

Other Objectives

- Identify Nepal's wetlands and prepare detailed management plans for each of them to prevent degradation and disappearance of wetlands with long-term conservation and development initiatives for wise use of wetlands resources by implementing the management plans on the basis of priorities, potentiality and urgency.
- Identify local people's knowledge, skill and practice regarding wetlands and promote their innovations and traditional research for the sustainable use of wetlands resources.
- Conserve and manage wetlands according to the needs and on the basis of scientific knowledge and technology.
- Promote women's participation for the conservation, management and wise use of wetlands.
- Gradually implement international treaties for wetlands conservation.
- Disseminate information to raise public awareness about wetlands.

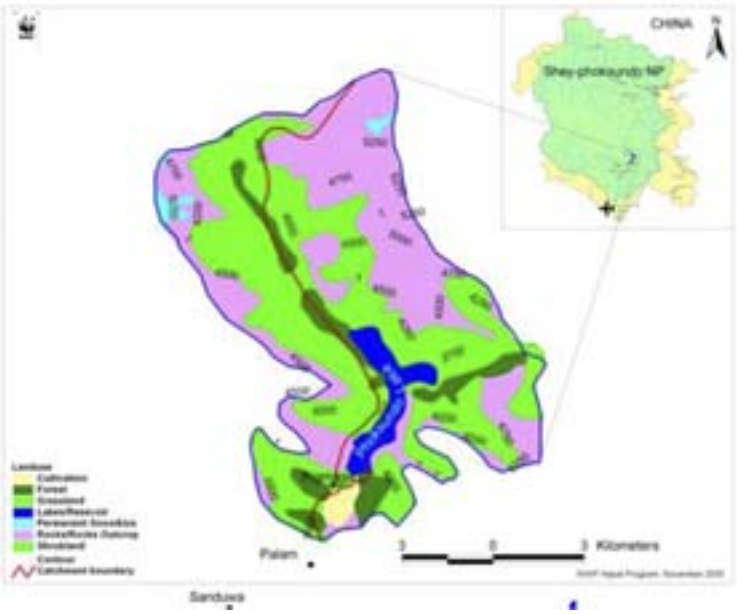
The National Wetlands Policy 2003, Nepal also addresses:

1. Wetlands Management Policy Based on Local Participation
2. Classification of Wetlands and Management Policy
3. Policy Regarding the Wise Use of Wetlands
4. Policy Regarding the Promotion of Awareness
5. Prevention, Control and Management of Invasive Species
6. Institutional Policy Regarding Wetlands Management
7. Policy Regarding Prohibition of Works with Adverse Impacts on Wetlands
8. Policy Regarding Disappeared or Disappearing Wetlands
9. Immediate Works Pertaining to Wetlands Conservation and Management
10. Future Works Regarding Wetlands Conservation and Management

FACTSHEET

Phoksumdo Wetland Series

Shey-Phoksumdo National Park



Coordinates: 82°55' - 83°00' Et Longitude and 29°10'-29°15' N Latitude

Area: The Length 5.15 km and breadth 800m. The area is 494 hectare

Elevation: 3611.5 m

OVERVIEW:

It is y- shaped alpine fresh water oligotrophic lake. It drains to Phoksundo Rive at south and water is supplied by Sagar, Phoksundo, Chisa, Baulaha, Dekhutaichu, Jagatilumba and Chollapu rivers.

HYDROLOGICAL VALUE:

The water volume is 408.599 MCM and discharge is 3.715 cu.m/sec.

BIODIVERSITY VALUES:

Flora: About 155 species of flowering plants have been recorded from the catchment. *Other threatened species according to IUCN categoty are Neopicrorhiza scrophulariifolia* (VU), *Dactylorhiza hatagirea Dioscorea deltoidea (CT), Aconitum spicatum (*VU), *Nardostachys grandiflora* (VU), *Podophyllum hexandrum* (VU), *Megacarpea polyandra* (VU).

HIGH ALTITUDE WETLANDS OF NEPAL

Fauna: Wetlands birds found are Red-crested Pochard and Ruddy Shelduck. Other wetlands birds recorded downstream are Common Moorhen, Common Coot, Eurasian Wigeon and Bar-headed Goose Other birds dependent on water includes Brown dipper, White-throated Dipper White-throated Redstart.

The catchment is the winter habitat of snow leopard and musk deer.

■ SOCIO-CULTURAL AND RELIGIOUS VALUES:

More than 20 Chhottens in southern belt and one Gumba in eastern site of the lake where annual prey and worship is occurred. Traditional Tibetan culture in upper Dolpo and Buddhism and ancient culture of Tibet called Bon-Po religion in lower Dolpo including Ringmo (Tsho) village.

It is a freshwater source for down stream people.

■ THREATS:

- Pollution due to resident local people due by habit of open toilet and other domestic use.
- Over grazing is mainly during when the livestock's are kept in home.
- Unsustainable collection of NTFPs for traditional and illegal theft.

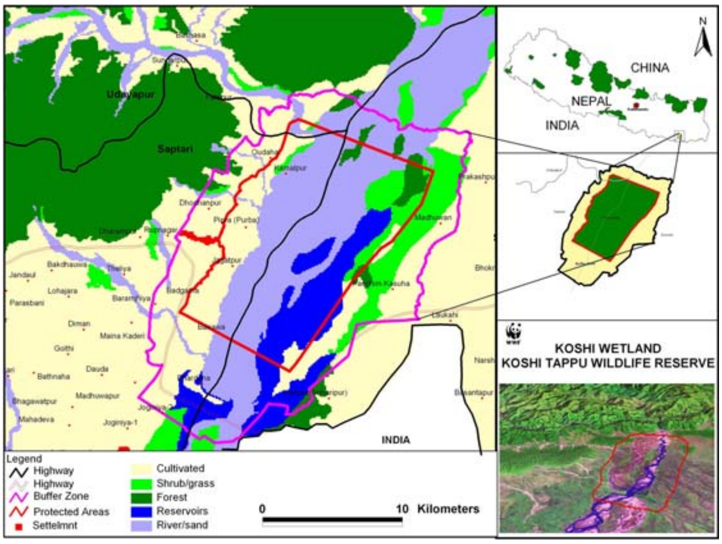
■ CONSERVATION MEASURES:

User committees and groups are formed under the buffer zone program. Amchis groups are formed for the farming, conservation and sustainable use of NTFPs. Local people are managing camping site and home stay tourism.

FACTSHEET

Koshi Tappu Wildlife Reserve

Sunsari



Ramsar Designation Date: 17-12-1987
Coordinates: 26°39'00"N 86°59'00"E
Area: 17,500 ha
Length : 24 KM
Elevation: 75 m - 81 m

■ OVERVIEW:

Koshi Tappu Wildlife Reserve is a freshwater, natural and permanent river system located on the flood plains of Sapta Koshi River. It is a major river system in Nepal that originates in the Central Himalayas. Koshi Tappu is a rectangular shaped reserve and was formed by the Koshi barrage near Nepal-India border on the east-west Mahendra National Highway.

■ HYDROLOGICAL VALUE:

The floodplain is a periodically flooded flat area between the river channel and the terrace or plateau delimiting the plain. The Koshi Tappu floodplain gradually dries up during the post-flooding period, although it remains saturated with water in certain places, while in other places it dries out to a loose sandy, semi-arid condition. The floodplain is also characterized by grassy marshes, oxbow lakes, back swamp lakes and many other depressions which retain water throughout the year.

Flora: The existing vegetation consists of diverse physiognomic types as submerged and floating aquatic plants, tall reed stands, seasonally flooded grassland/ savannah and structurally complex forest communities in various conditions of spatial arrangements. Among 514 species of plants, *Dalbergia sissoo, Bombyx ceiba, Saccharum* sp, *Phragmites* sp., *Typha* sp., *Imperata* sp., *Valisneria* sp., *Eichornia* sp., *Hydrilla* sp., *Azolla* sp., *Lotus* sp. are common species found in the wetlands. Six species of plants found in this area, *Rauwolfia serpentina, Alstonia scholoris, Oroxylum indicum, Acacia catechu, Butea monosperma* and *Dalbergia latifolia,* are listed in the different threat categories and appendices of IUCN and CITES respectively. Except *Acacia catechu,* other 5 species are sparse in the area. Lacustrine habitat like oxbow lake such as Kamal Daha harbors 28 species of plants.

Fauna: Among 485 species of birds, notable birds recorded in the site include *Gallicrex cinerea, Caprimulgus asiaticus, Bubo coromandus, Coracina melanoptera, Saxicola leucura* and *Megalurus palustris*. At least 114 species are water birds, 176 species breed in the reserve and 180 species are passage migrant or winter visitors. It is the only area in Nepal where water cock, *(Gallicrex cinerea)* and Abbott's babbler are found. Out of these 485 species of birds, 12 species are Globally threatened and 101 species are nationally threatened.

Photo © WWF Nepal/Neera Shrestha PRADHAN

Photo © Hem Sagar BARAL

Of the 31 species of mammals recorded, Nepal's last remaining population of wild water buffalo *(Bubalus arnee)* inhabit the area and the Gangetic dolphin *(Platanista gangetica)* has been recorded in the Koshi river. Large mammals like gaur *(Bos gaurus)* and blue bull *(Boselaphus tragocamelus)* are almost disappearing from the area. Other mammals found are Wild Elephant (Elephus maximus), wildboar *(Sus scrofa)*, hog deer *(Axis porcinus)*, spotted deer *(Axis axis)*, smooth coated otter *(Lutra perspicillata)* and Jackal *(Canis aureus)*. Of the 200 species of fishes, 91 species are resident, 21 species are local migratory and 5 species are migratory. Of these, 9 species are listed in the different threatened categories, 8 species as vulnerable and 1 species as endangered. 11 Amphibian (2 toads and 9 frogs) and 24 reptiles (2 crocodiles, 11 turtles, 6 lizards and 5 snakes) are recorded till now. 17 species of herpetofauna are nationally threatened out of which 6 species are globally threatened. 77 species of butterfly are recorded in the area.

■ SOCIOCULTURAL AND RELIGIOUS VALUES:

People living in nearby villages depend on the buffer zone for energy, fodder, livestock grazing, building materials and other products. Fish farming in the artificial pond and use of wetland vegetation for the construction of local items has become increasingly prominent for income generation. Koshi Tappu Wildlife Reserve is one of the important tourist destinations in Nepal where migratory and resident birds can be seen at the barrage and on the main river channel. Several Himalayan peaks including Mount Makalu (8,475 m) the world's fifth highest mountain, can be seen during the period of cooler clear weather. Other tourist attractions include rafting and sightseeing of Gangetic River dolphins. The reserve is also used for social and religious purposes. It is a popular picnic spot, used for the holy bath during Chhat Festival (worship of God in winter using Sun as a symbol) and also for cremation of dead bodies.

■ THREATS:

- High dependency on forest and wetland resources
- Over harvesting like fishing, grazing etc.
- Flooding and siltation
- Poisoning birds and fishes
- Poaching and illegal hunting / bird trapping
- Increasing developmental projects

Photo© Hem Sagar BARAL

■ CONSERVATION MEASURES:

The site was nationally designated as a Wildlife Reserve in 1976. The site is under jurisdiction of the Department of National Parks and Wildlife Conservation and managed by the Koshi Tappu Wildlife Reserve Office. Buffer zone of 173 sq.km^2 has been declared in 2004 incorporating 16 VDCs of 3 districts around the reserve. Buffer Zone Management Committee has already been formed with User committees and user groups from 10,693 households of the buffer zone. A reserve headquarters with five guard posts and Royal Nepal Army were established to prevent encroaching in the reserve. A management plan has been prepared for Koshi Tappu Wildlife Reserve and is under the process of approval.

Acknowledgement: DNPWC and WWF acknowledges the support of IUCN for preparation of Ramsar Information Sheet.

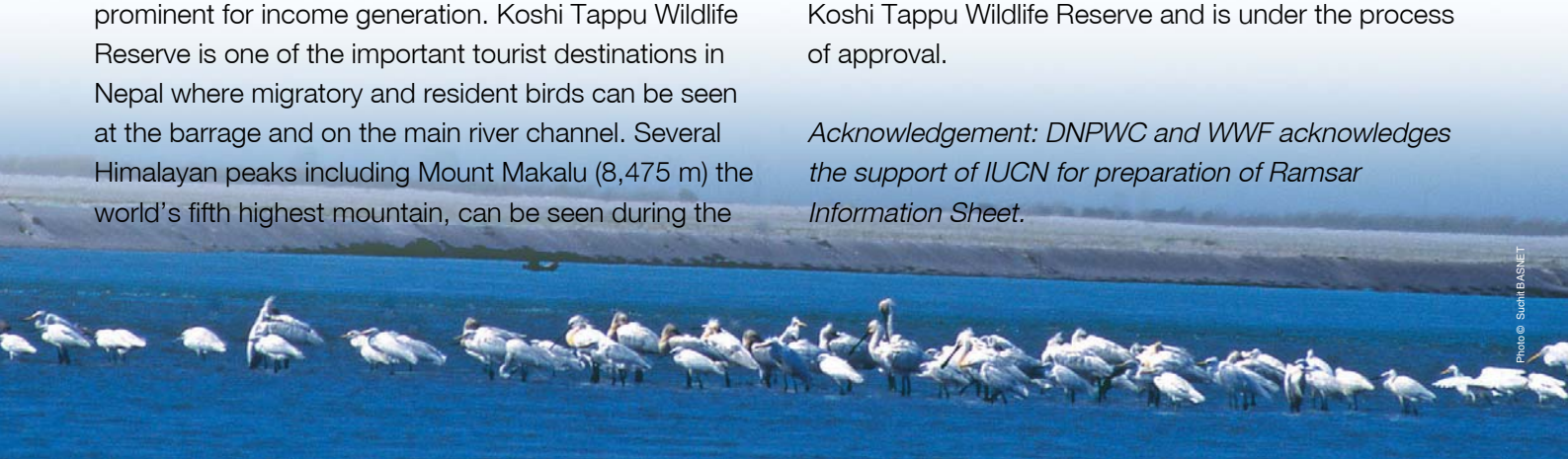
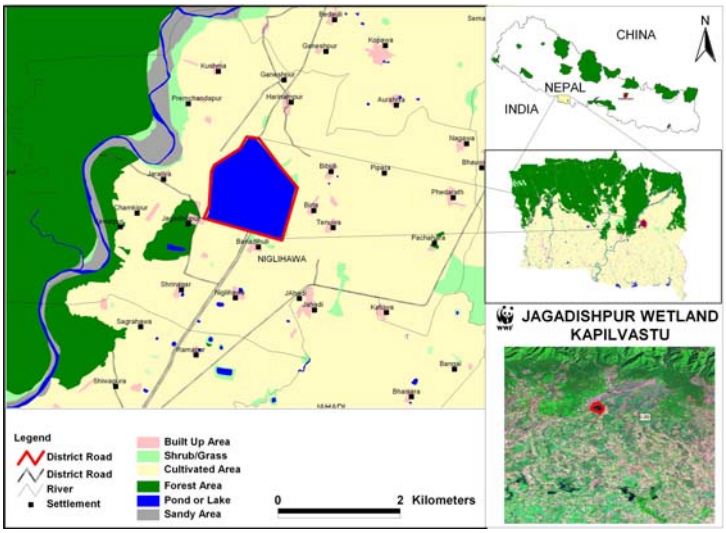


Photo © Sushil BASNET

FACTSHEET

Jagadishpur Reservoir

Kapilvastu



Ramsar Designation Date: 13-08-2003
Coordinates: 27° 35' 00.0" N; 83° 05' 00.0" E
Area: 225 Hectares
Elevation: 197 m.

■ OVERVIEW:

Jagadishpur Reservoir was constructed for irrigation purpose and is harnessed by rock-fill dike. An earthen dike runs north to south from the centre of the reservoir. The eastern part has shallow water body whereas the western part of the reservoir is deeper and completely covered by water.

■ HYDROLOGICAL VALUE:

Its depth varies during the summer and winter crop plantation period (2 - 7 m). The Jagadishpur Reservoir was constructed in the early 1970s over the Jakhira lake and agricultural land for irrigation purposes. A dike was built in the early 1980s. The water is fed from the Banganga Lake and river in the Churia catchment. Silts and nutrients coming from the inlet are deposited in the reservoir's mouth which results in reed growth, thus providing habitat for water birds. Secchi disc and phosphorus content indicate the water as hypertrophic and the nitrogen concentration as eutrophic. Chlorophyll "A" content of the surface water is low (3-5 mg/l) indicating oligotrophy due to a rich macrophytes growth. The diversion of the water from the source of the Banganga River reduces flooding and irrigates the cultivated area. The waterbed recharges the groundwater of the surrounding cultivation.

Flora: The vegetation is mainly in a submerged succession stage with patches of floating species and reed swamp formations. Marsh meadows and extensive mudflat fringed by marsh lies in the northern part. The terrestrial vegetation is dominated by Sisoo *(Dalbergia sisoo)* and Khair *(Acacia catechu)* along the dike. The wetland vegetation consists of Morning Glory *(Ipomea carnea ssp. fistulosa)* and Cattail *(Typha angustifolia)*. The aquatic vegetation is represented by extensive coverage of floating leaf species mainly Lotus *(Nelumbo nucifera)* followed by Wild Rice *(Hygrorhiza aristata)* and Pondweed *(Potamogeton nodosus)*. The free floating species include Water Velvet *(Azolla imbricata)* and Duckweed *(Lemna spp.)*. The abundant submerged species include Water Nymph *(Naja minor)*, Hydrilla *(Hydrilla verticillata)* and Hornwort *(Ceratophyllum demersum)*.

RAMSAR SITES IN NEPAL

Photo © WWF NP/Krishna SIGDEL

Photo© Rajendra SUWAL

Fauna: 25 fish species of 12 families and 7 orders including lowland Terai endemics (e.g. *Notopterus notopterus, Oxygaster bacaila*), threatened *(Puntius chola)* and common species being prey for waders and waterbirds are recorded. The reservoir is surrounded by smaller lakes (e.g. Sagarhawa and Niglihawa) serving as a buffer zone for bird movements of 42 recorded species. The site provides important resident, wintering and stopover habitats for waders, other water-birds, and small passerines. Noteworthy are the grebes, cormorants, herons and egrets (including the rare bittern *Ixobrychus cinensis*), storks, ducks and geese, terns and gulls, birds of prey, rails, coot and waterhens, Jacanas, as well as cranes and kingfishers. Due to its position being surrounded by cultivated land and its moderate size, it is not a suitable site for large mammal conservation. Though it could support small population of Smooth Coated Otter and other common species such as Jungle Cat, Golden Jackal, Indian Fox, etc.

■ SOCIOCULTURAL AND RELIGIOUS VALUES:

The site is owned by the state. The surroundings are privately owned. Current uses of the reservoir by the local population include fishing, grazing, fuel wood and fodder collection, domestic use (e.g. laundry), harvesting of wetland products, recreation (e.g. have a picnic, bathing) and supply of water for irrigation in 6,200 ha of surrounding cultivated land. The water body has a great potential for commercial stock fish production. Its surroundings are mainly used for farming.

■ THREATS:

- Invasion of exotic plant species including the extensive growth of aquatic macrophytes (particularly of lotus, water nymph and hornwort), water hyacinth
- Exploitation of wetland birds
- Water pollution from agricultural chemicals (fertilizers and pesticides)

Photo © Aquabird ARCHIEVE

■ CONSERVATION MEASURES:

The authorities of the Department of Irrigation, Kapilvastu District Office are responsible for the management of the irrigation system. The outside forest area is managed by District Forest Office with the help of local community. Conservation measures include green belt plantations around the reservoir, maintenance of the water level by a dike and a sluice, as well as the construction of an irrigation canal. Resident stork species (*Anastomus oscitans* and *Ciconia episcopus*) are recommended for protection due to their susceptibility to become endangered through anthropogenic impacts. It has been proposed to designate the site as bird sanctuary. Further proposed conservation measures include leasing the reservoir to local people for fishing purposes, and to develop it as a tourist destination.

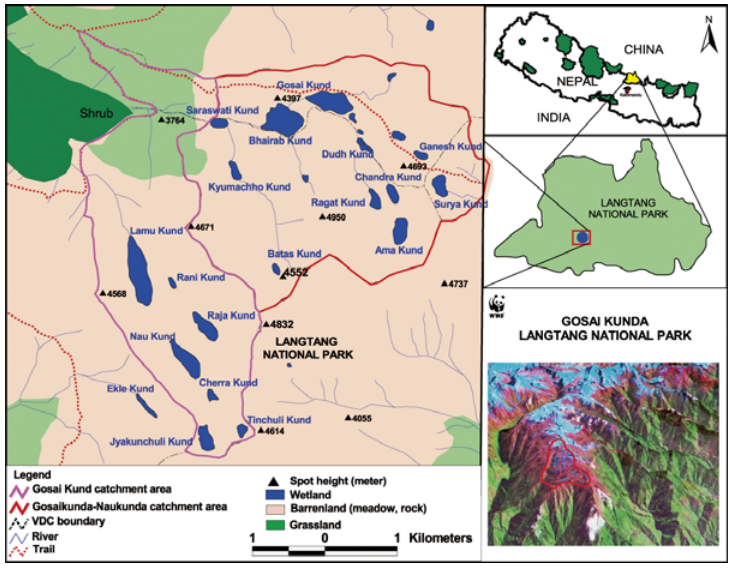
Acknowledgement: DNPWC and WWF acknowledges the support of IUCN for preparation of Ramsar Information Sheet.

Photo© WWF NP/Krishna SIGDEL

FACTSHEET

Gosaikunda Wetland Series

Langtang National Park



Coordinates: 28° 5.00' E
85° 24.96' N
Area: 13.80 ha
Length: 625.55m
Elevation: 4000m-4700m

■ OVERVIEW:

Gosaikunda, relating to saint and wetland, is an alpine freshwater oligotrophic lake series with alpine meadows, bogs, lakes/ponds, streams, wet steep slopes creating a unique and representative wetland in the high Himalayan Paleoartic biogeographical region. It is one of the world's highest freshwater lake system, is an important source of water for Trisuli River originating from trishul dhara in gosaikunda. It produces 20 MW electricity (from 2 power houses at Trishuli and Devighat), on which a large downstream population including that of Kathmandu valley depends.

■ HYDROLOGICAL VALUE:

The water volume is 1.472 million cubic meter and discharge in outlet is 60 Lit/sec whereas the inlet discharge is 35 Lit/sec.

■ BIODIVERSITY VALUES:

Flora: About 100 species of flowering plants have been recorded from the Gosainkund catchment. It also holds endemic species of plants like *Meconopsis dhwojii, M.taylorii, Heracleum lallii, Primula aureata, P.sharmae, Pedicularis pseudoregeliana*, *Rhododendron cowanianum*. Other threatened species according to IUCN category are *Aconitum spicatum* (Vulnerable), *Heracleum lallii* (Endangered), *Jurinea dolomiaea* (Near Threatened), *Meconopsis dhwojii* (Near Threatened), *Nardostachys grandiflora* (Vulnerable), *Neopicrorhiza scrophulariifolia* (Vulnerable), *Rheum australe* (Vulnerable), *Rheum moorcroftianum* (Near Threatened), *Swertia multicaulis* (Data Deficit). Gosaikunda is one of the most important sites for collection of type specimens of plants for botanical purpose.

Fauna: Phytoplankton 1,548 units/ml. (6 m. depth) with higher *Merismopedia* sp. followed by *Chlorobotrys* sp., *Ankistrodsmus* sp., D*inobryon* sp., *Glenodium* sp., *Aphanotheca* sp.,and *Planktosphaeria sp.*

Zooplankton were found 6.4x10^6 ind./m^3 (20 m depth) - *Daphnia sp.* 52%, *Cyclops sp.* 35%, *and Napuliar larvae of Cyclops* 11%.

HIGH ALTITUDE WETLANDS OF NEPAL

Wetlands birds recorded in Gosaikunda are Brahminy Duck (*Tadorna ferruginea)* and common teal *(Anas crecca)*. Potential wetland birds listed on that area are Bar- headed Goose (*Anser indicus) Brahminy duck (Tadorna ferruginea),* Common Tea (*Anas crecca),* Tufted duck (*Aythya fuligula),* Common merganser (*Mergus merganser),* Northern Pintail (*Anas acuta*) and Brown Dipper (*Cinclus pallasii)*

Other birds dependent on water in the catchment includes Brown dipper *(Cinclus pallasii)*, white-capped water redstart (*Chaimarrornis leucocephalus*) and Plumbeous water redstart (*Rhyacornis fuliginosus)*. The lower section of the catchment is the winter habitat of red panda and musk deer.

■ SOCIO-CULTURAL AND RELIGIOUS VALUES:

Hindu mythology mentions Gosaikunda as a residing place of Hindu deities like Lord Shiva and Goddess Gauri. Hindu scriptures like Bhagawat and Bishnu Puran and hindu epics like Ramayan and Mahabharat mentions *Samundra Manthan* (Sea exploring) which is directly related to the origin of Gosaikunda. The holy water of Gosaikunda is used during *Gangadashahara* and *Janai purnima* (sacred thread festival) by thousands of people visiting the place from Nepal and India to celebrate the festival. The meandering river Trishuli is also significant for economy of the country not only due to hydroelectricity but also for adventure tourism.

■ THREATS:

- Water pollution and waste disposal due to pilgrimage during the festivals and peak tourist seasons
- Over grazing by livestock, sheep and horses
- Over harvesting of NTFPs for domestic use during the grazing and festival period
- Unsustainable use of fuel wood for subsistence and other religious purposes during festive and touristic seasons

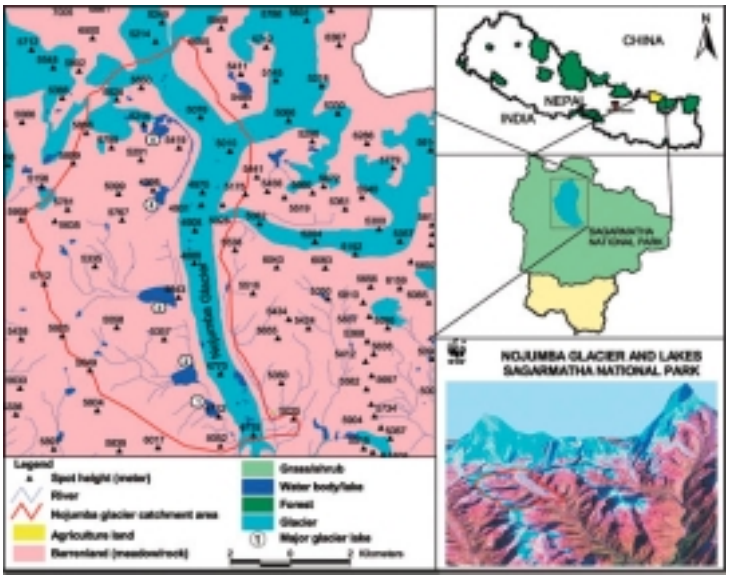
■ CONSERVATION MEASURES:

Gosainkunda wetland series falls within Langtang National Park and is under the management of the Department of National Parks and Wildlife Conservation of HMG/Nepal. The Park management has delineated the Gosaikunda area as a religious site. Therefore, animal slaughter and grazing in the upper catchment is prohibited. There is a Gosaikunda Area Management Committee, a registered NGO, for overall development and management during the festivals, under which, sub-committes together with hotel/lodge owners are responsible for tourism management. The Goth (herders) Committees are responsible for management in the lower catchment area of Gosaikunda.

FACTSHEET

Gokyo Wetland Series

Sagarmatha National Park



Coordinates: 27° 57.02' E
86° 41.58' N
Area: 42.69 ha
Length: 975m
Elevation: 4700- 5000m

■ OVERVIEW:

Gokyo is an oligotrophic lake series in the Everest region. Partially fed by Ngozumpa glacier, it lies on the head of the Dudh Koshi River which descends from world's 7th highest mountain - Cho Oyo creating a unique and representative wetland in the world's highest freshwater lake system. There are 6 main lakes in Gokyo series, out of which Thonak lake is the largest lake at 4834m followed by Gokyo. Dudh koshi is a sub-basin of Koshi River in Nepal, which feeds the Ganges river basin, safeguarding the livelihood of millions of people downstream.

■ BIODIVERSITY VALUES:

Flora: Above 80 species of flowering plants have been recorded from the Gokyo catchment. It also holds 4 endemic species of plants like *Kobresia fissiglumis, K. gandakiensis, Pedicularis poluninii, P. pseudoregelina,* along with rare and vulnerable plant species, such as *Neopicrorhiza scrophulariifolia, Swertia multicaulis, Saussurea gossipiphora, Meconopsis horridula.*

Fauna: Wetlands birds found in Gokyo are Brahminy ducks (*Tadorna ferruginea*), Eurasian Wigeon (*Anas penelope*), Northern Pintail (*Anas acuta*), Common Pochard (*Aytha ferina*), Common Coot (*Fulica atra*), Wood Snipe (*Gallinago nemoricola*), Eurasian Woodcock (*Scolopax rusticola*), and Great Crested Grebe (*Podiceps cristatus*). It is also a breeding site of the at least 6 pairs of Brahminy Ducks (*Tadorna ferruginea*). The lower catchment is also the winter habitat of musk deer.

HIGH ALTITUDE WETLANDS OF NEPAL

■ SOCIO-CULTURAL AND RELIGIOUS VALUES:

The Gokyo lake is also considered as sacred lake by both Hindu and Buddhist, where about 500 Hindu people take a holy dip during *Janai purnima* (sacred thread festival). The site is worshipped as the residing place of *Naag Devata* (Snake God) and a temple of Hindu deities like Lord Vishnu and Shiva is constructed at the western corner of the lake. The faith of "no harm" to birds in the lake provides shelter to wetland birds.

Gokyo lake, situated at the base of Mt. Everest, is one of the most popular tourist destinations leading to Everest Base Camp in Sagarmatha National Park. Tourism is one of the major sources of income for the local communities. An average of over 7,000 tourists visit Gokyo Lake every year.

■ THREATS:

- Pollution due to visitors and their supporting groups during the peak season
- Over grazing during the summer season
- Over harvesting of Dhupi to be used as firewood during the grazing and tourism seasons
- Potential danger of Glacier Lake Outburst Flood

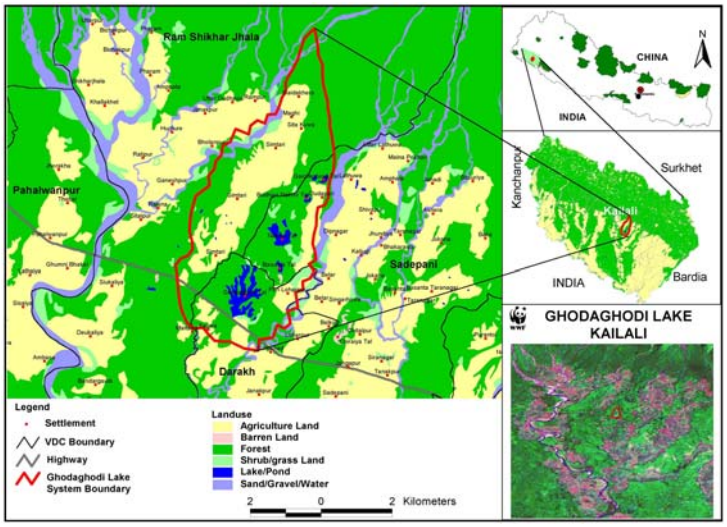
■ CONSERVATION MEASURES:

Gokyo wetland series falls under the Sagarmatha (Mount Everest) National Park and is under the management of the Department of National Parks and Wildlife Conservation of HMG/Nepal. Conservation and management within the Sagarmatha National Park and Buffer Zone is supported by buffer zone user committees, user groups, local NGOs, hotel owners and other conservation partners.

FACTSHEET

Ghodaghodi Lake Area

Kailali



Ramsar Designation Date: 13-08-2003
Coordinates: 28°41'03" N
80° 56'43" E
Area: 2,563 hectares
Elevation: 205 meters

■ OVERVIEW:

Ghodaghodi is a natural freshwater oxbow lake on the lower slopes of Siwalik. It is a large and shallow lake, having finger-like projections, with associated marshes and meadows surrounded by tropical deciduous forest on the lower slopes of Siwalik range. There are thirteen associated lakes and ponds, and some streams separated by hillocks situated on the periphery of Ghodaghodi. The forest and wetlands are wildlife corridor between the low land (Terai) and the Siwaliks.

■ HYDROLOGICAL VALUE:

The lake is fed by direct precipitation during the monsoon season and by surface flows from the watershed area, ground water springs and small streams. Water depth varies from 1-4 m. Secchi depth transparency and high phoshor level indicates the lake as hypertrophic, the nitrogen level as eutrophic, and low Chlorophyll "A" level (due to rich growth of macrophytes) as oligo to mesotrophic. Dissolved oxygen is low with a minimum of 3-5 mg/l.

■ BIODIVERSITY VALUES:

Flora: More than 450 plant species have been recorded. Aquatic plants with unique physiological adaptation are Water Primrose *(Ludwigia alscendens)* and Bladderwort *(Utricularia australis)*. Biogeographically important as representatives of the Indo Malayan realm are Sal *(Shorea robusta)* and Myrobalan *(Terminalia alata)*. Threatened plant species include the endangered Orchid *(Aerides odorata)*, religiously important and threatened Lotus *(Nelumbo nucifera)*, and rare wild rice *(Hygrohiza aristata)*.

Fauna: The fauna comprises lower risk species on the IUCN Red List like Ferruginous Duck *(Aythya nyroca)*, Grey-headed fish eagle *(Ichthyophaga ichthyaetus)*, and Asiatic Rock Python *(Python molurus)*. Further rare species include the lizard *(Varanus flavescens)*. In total 29 fish species have been recorded including the

RAMSAR SITES IN NEPAL

Photo © WWF NP/Neera Shrestha/PPO/DNPWC/NN

Photo © WWF NP/Neera Shrestha PRADHAN

threatened *Puntius chola* and the endemics *Notopterus notopterus* and *Oxygaster bacaila*. Around 140 partly migrating bird species inhabit the area representing over 16% of the national avifauna. Nearly 1% of the South Asian Cotton Teal *(Nettapus coromandelianus)* population is present. The floating vegetation provides an excellent habitat for waterhen and jacanas; the surrounding forest for birds of prey (e.g. the rare osprey *Pandion haliaetus*) and kingfishers. The area supports many globally threatened species (IUCN, 2002) such as the critically endangered Red-crowned Roofed Turtle *(Kachuga kachuga)*, the endangered Tiger *(Panthera tigris)*, Leopard *(Panthera pardus)*, and Three-striped Roof Turtle *(Kachuga dhongka)*, and the vulnerable Smooth-coated Otter *(Lutra perpiscillata)*, Common Otter *(Lutra lutra)*, Lesser Adjutant Stork *(Leptotilos javanicus)* and Marsh Crocodile *(Crocodylus palustris)*.

■ SOCIOCULTURAL AND RELIGIOUS VALUES:

The pressure of illegal immigrants from adjoining hill areas result in intensive use of the lake for traditional fishing, and agricultural services. The lake is of a great religious value. There is a shrine to the Ghodaghodi deity where indigenous Tharu (an indigenous ethnic group) celebrate a traditional festival *(Agan Panchami)* by worshiping and offering animals during the month of December. People take holy bath in the lake. There are several legends related to the origin of Ghodaghodi Lake.

The forest is used for grazing, fuel wood and to harvest sal wood for timber. The lake has high potential value for tourism.

■ THREATS:

- High dependency on forest and wetland resources
- Overgrazing by domestic livestock
- Loss of protected species by poaching
- Eutrophication
- Development/expansion of settlements and developmental projects
- Sedimentation/siltation and erosion
- Introduction/invasion of exotic plant species
- Drainage/reclamation for agriculture
- Vegetational succession

Photo © WWF NP/Neera Shrestha PRADHAN

■ CONSERVATION MEASURES:

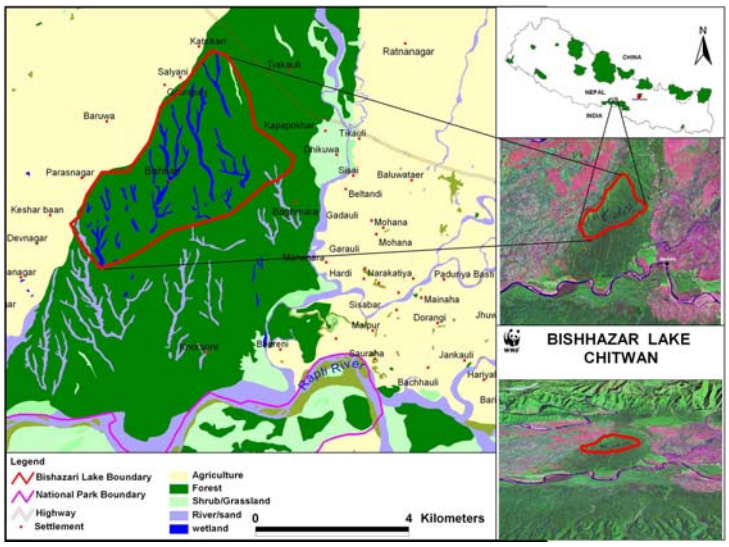
Department of forest is the management authority of the area and Kailali District Forest Office manages the area. Local communities and NGOs are involved in the conservation process by forming user groups. A participatory community-centered management plan has been prepared for the conservation of the Ghodaghodi lake area. Community based anti poaching operations help reduce poaching in the lake area.

Acknowledgement: DNPWC and WWF acknowledges the support of IUCN for preparation of Ramsar Information Sheet.

FACTSHEET

Beeshazar and Associated Lakes

Chitwan



Ramsar Designation Date: 13-08-2003
Coordinates: 27° 37'04.6" N,
84° 26' 11.3 E
Area: 3,200 hectares
Elevation: 286 m

■ OVERVIEW:

Beeshazar is a surface and ground water fed natural fresh water lake located in the buffer zone of Royal Chitwan National Park. 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 oligotrophic state of the lake is shown by the low content of Chlorophyll "A" 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 and based on one-time analysis during the summer season, the lakes can be considered to be eutrophic to hypertrophic.

■ HYDROLOGICAL VALUE:

Water is received from direct precipitation during the monsoon and through inflow of the Khageri irrigation Canal. The lake water is supplied to the canal and the stream during the dry season. The catchment area of the lake helps to control flooding in the Khageri River and recharges the ground water or the streams.

Flora: Flora: 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.

RAMSAR SITES IN NEPAL

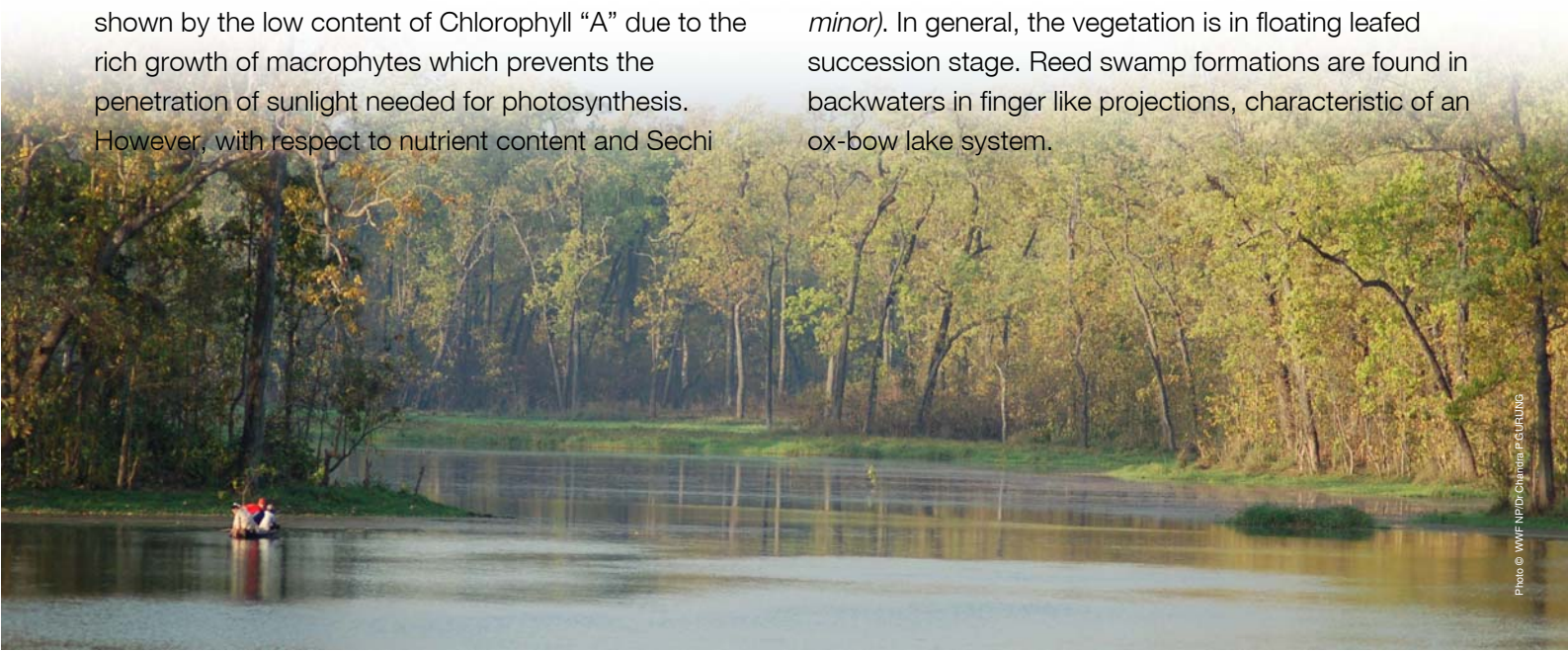


Photo © WWF NP/Neera Shrestha PRADHAN

Fauna: The fauna comprising lower risk species on the IUCN Red List are the Rhesus macaque *(Macaca mulatta)*, Hanuman Langur *(Semnopithecus entellus)*, Ferruginous duck *(Aythya nyroca)*, Painted stork *(Mycteria leucocephala)*, Black-necked stork *(Ephippiorhynchus asiaticus)*, Indian black vulture *(Sarcogyps calvus)*, Black vulture *(Aegypius monachus)*, Grey-headed Fishing Eagle *(Ichthyophaga ichthyaetus)*, Black-bellied tern *(Sterna acuticauda)*, Great hornbill *(Buceros bicornis)*, and Asiatic Rock Python *(Python molurus)*. In total 17 fish species are recorded for Beeshazar e.g. the threatened *Puntius chola* and the endemic *Notopterus notopterus* and *Oxygaster bacaila*. The site supports the largest number of Marsh Crocodiles (15-20 individuals). 273 bird species of 61 families are recorded, of which 60 are wetland species. The forested wetlands provide a refuge for a significant number of storks, ibises, fishing eagles and a large number of lesser whistling teals. Egrets, herons and serpent eagles forage upon snakes on the meadows. The Tikauli forest serves as important corridor and refuge for wildlife migrations from the Churia to the Mahabharat range.

■ SOCIOCULTURAL AND RELIGIOUS VALUES:

The current use by local population includes fishing, grazing, fuel wood and fodder collection, domestic use and supply of water for irrigation in surrounding cultivated land.

■ THREATS:

- Unsustainable use of water resources
- Invasion of exotic species (unspecified)
- Leaching of inorganic fertilizer and pesticide from farmlands
- Development of major development projects and industries
- Development/expansion of settlements
- Pollution
- Weak earthern embankment of the reservoir

Photo © David COTTRIDGE

■ CONSERVATION MEASURES:

Invasive species are manually removed by local communities with the help of Local NGOs, Buffer zone user committees/Management committee and Royal Chitwan National Park. Due to the recent designation as buffer zone for the National Park, the management responsibility has been given to the Buffer Zone Management Committee. Armed Forest Guards control poaching and land encroachment. A wildlife museum is established at Tikauli and a visitor center is established at Sauraha. The District's Irrigation Office manages the Khageri irrigation canal.

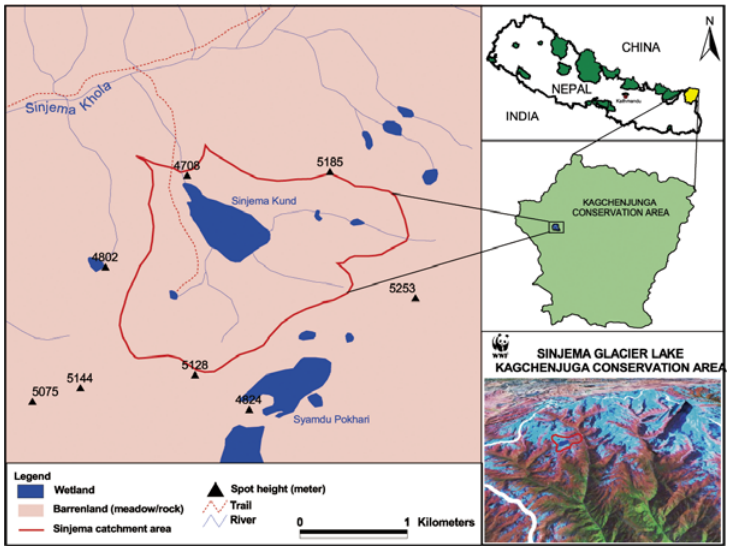
Acknowledgement: DNPWC and WWF acknowledges the support of IUCN for preparation of Ramsar Information Sheet.

Photo © WWF-NP/Dr.Chandra P. GURUNG

FACTSHEET

Singjema Wetland Series

Kanchenjungha Conservation Area



Coordinates: 27°45.44' E
87°46.81'N
Area: 25.23 ha
Length: 835 m
Elevation: 4671 m

■ OVERVIEW:

Singjema lake, where people believe to see the reflection of their own future and fortune, is an alpine fresh water oligotrophic lake with steep slopes creating a unique and representative wetland in the high Eastern Himalayan Eco- region complex. It is an important source of freshwater for Tamor River, one of the tributaries of Koshi river in Nepal feeding the Gangatic River basin.

■ BIODIVERSITY VALUES:

Flora: About 32 species of flowering plants have been recorded from the Singjema catchment including 3 endemic species of plants with rare, endangered and vulnerable species. Potential endemic plants found in this area include *Aconitum staintonii* Lauener, *Cotoneaster staintonii* Klotz, *and Cremanthodium nepalense* Kitam Other threatened species according to IUCN category are *Nardostachys grandiflora* (Vulnerable), *Neopicrorhiza scrophulariifolia* (Vulnerable), *Rheum australe* (Vulnerable), *and Swertia multicaulis* (Data Deficit).

Fauna: Brahminy Duck (*Tadorna ferruginea)* and common Pochard (*Aythya ferina)* have been recorded from the wetlands of Kangchenjunga Conservation Area but needs further observation in Sinjema. Other birds recorded in the catchment are snow pigeon, white capped redstart and finches. The catchment is habitat of snow leopard and lower section of the catchment is the winter habitat of red panda and musk deer.

HIGH ALTITUDE WETLANDS OF NEPAL

■ SOCIO-CULTURAL AND RELIGIOUS VALUES:

Sinjema lake is considered by the local people and herders from Tibet as a wish-fulfilling lake. Unmarried women come to lake to worship in hope that they will get a handsome husband. People believe that slaughtering of animals within the vicinity of the lake angers the deity of the lake. Therefore, hunting is prohibited in the area and hunting musk deer is considered to deplete social status and property. The lake is also a freshwater source for cattle herders and down stream people.

■ THREATS:

- Unsustainable collection of NTFPs for trade
- Over grazing resulting in the growth of unpalatable and toxic plants
- Hunting of wildlife specially musk deer for cross-boarder trades

■ CONSERVATION MEASURES:

Sinjgima lake falls within the Kangchenjunga Conservation Area (KCA). The KCA Management Council and its associated institutions have been empowered to manage their conservation area. The KCA Management Council has also applied to the Government through the Ministry of Forest and Soil Conservation for community management of KCA. Currently, the Management Council together with user groups, mother groups and sub-committees like Snow Leopard Conservation Committee are actively managing the conservation area.