

PUNJAB

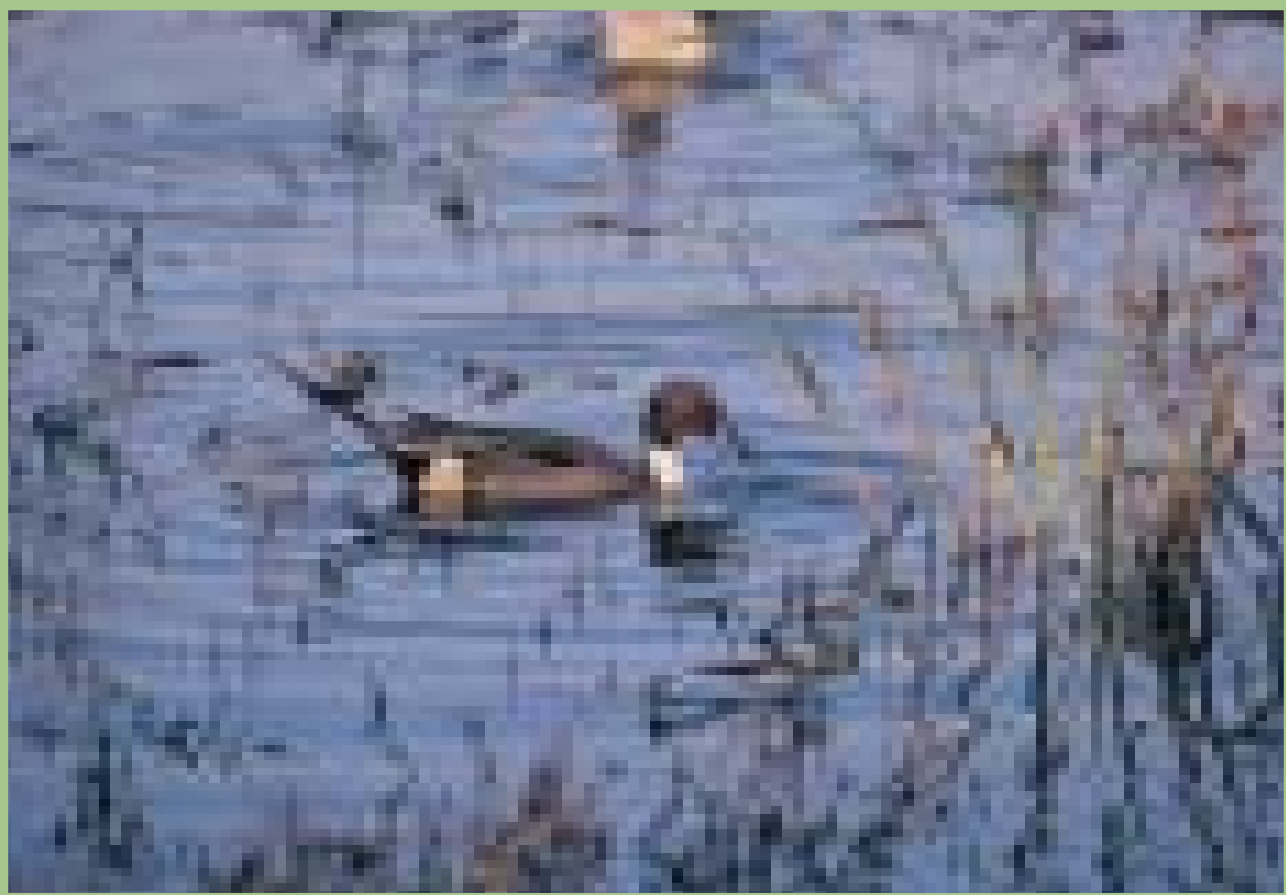


Photo: Hira Banjahi

As the wetlands of Punjab lie on the migratory route, thousands of waterfowl are found in the state, especially in Harike Lake.

Punjab (29° 33' - 32° 32' North and 73° 53' - 76° 56' East) has a geographical area of 5.04 million ha and is situated in the northwestern part of the country. It is broadly divided into three physiographic regions, namely the mountainous Himalayas, the sub-mountainous Himalayas and the alluvial plains. The important rivers draining the State are the Sutlej and the Beas.

Punjab is considered as the wheat bowl of India, a state where India's Green Revolution was started. It is an intensively cultivated State through canal irrigation and/ or through underground water. The underground water table has dropped in recent decades. The use of fertilizers and pesticides is very high. The average annual rainfall varies between 400 to 600 mm and the temperature ranges from 2 °C to 45 °C. The population of the state is 20.28 million (1991 census). The urban population is 30% and the rural population is 70% of the total population. The population density is 403 persons per. sq. km. The livestock population is 10.22 million (1992 livestock census), largely stall-fed.

**Vegetation**

The recorded forest area of the State is 0.29 million ha which constitutes 5.76% of the geographical area. By legal status, Reserved Forest constitutes 1.52%, Protected Forest 38.16% and Unclassed Forest 63.32%. There are three forest types, namely Tropical Dry Deciduous, Subtropical Dry Evergreen and Tropical Thorn Forest.

**IBAs AND PROTECTED AREAS**

The State has 11 wildlife sanctuaries spread over 31,779 ha constituting 0.63% of the geographical area. Three sites have been identified as IBAs.

**IBAs of Punjab**

IBA site codes	IBA site names	IBA criteria
IN-PB-01	Harike Lake Bird Sanctuary	A1, A4i, A4iii
IN-PB-02	Kanjli Lake	A4i, A4iii
IN-PB-03	Ropar Lake	A4 (Data Deficient)

Number of IBAs and IBA Criteria

A1= Threatened species; A2 = Restricted Range species; A3= Biome species; A4=Congregatory species

List of threatened birds with IBA site codes

Critically Endangered		
Oriental White-backed Vulture	<i>Gyps bengalensis</i>	IN-PB-01
Slender-billed Vulture	<i>Gyps tenuirostris</i>	IN-PB-01
Endangered		
White-headed Duck	<i>Oxyura leucocephala</i>	IN-PB-01
Vulnerable		
Lesser Adjutant	<i>Leptoptilos javanicus</i>	IN-PB-01
Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>	IN-PB-01
Greater Spotted Eagle	<i>Aquila clanga</i>	IN-PB-01
Eastern Imperial Eagle	<i>Aquila heliaca</i>	IN-PB-01
Indian Skimmer	<i>Rynchops albicollis</i>	IN-PB-01
Bristled Grass-Warbler	<i>Chaetornis striatus</i>	IN-PB-01
Kashmir Flycatcher	<i>Ficedula subrubra</i>	IN-PB-01
Near Threatened		
Darter	<i>Anhinga melanogaster</i>	IN-PB-01
Painted Stork	<i>Mycteria leucocephala</i>	IN-PB-01
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	IN-PB-01
Oriental White Ibis	<i>Threskiornis melanocephalus</i>	IN-PB-01
Ferruginous Pochard	<i>Aythya nyroca</i>	IN-PB-01
Red-headed Vulture	<i>Sarcogyps calvus</i>	IN-PB-01
Pallid Harrier	<i>Circus macrourus</i>	IN-PB-01
Long-tailed Prinia	<i>Prinia burnesii</i>	IN-PB-01

THREATENED SPECIES FOR WHICH PUNJAB IS IMPORTANT

**Oriental White-backed Vulture** *Gyps bengalensis* **Critically Endangered**

This Vulture has been graded as Critically Endangered because it has suffered an extremely rapid population decline, particularly across the Indian subcontinent (BirdLife International 2001). In Punjab, this bird was abundant 5-10 years ago (Grubh 1983), but now is extremely rare.

**White-headed Duck** *Oxyura leucocephala* **Endangered**

This Duck is very rare in India. It was reported in the Harike Lake Wildlife Sanctuary in September 1984 (BNHS ringing data) (Singh 1993).

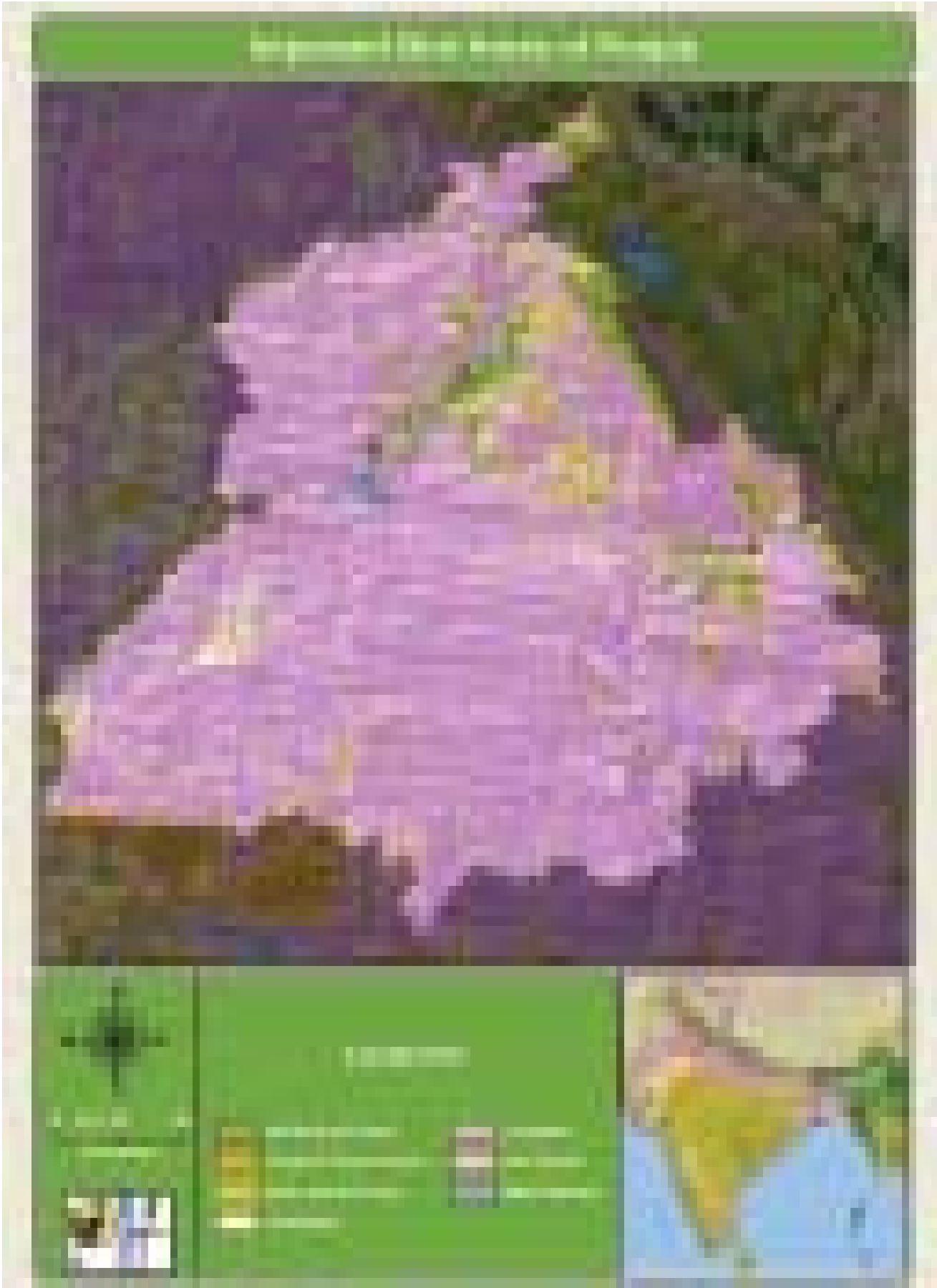
**Greater Spotted Eagle** *Aquila clanga* **Vulnerable**

This Eagle too is a rare winter visitor and was recorded in the Harike Lake Wildlife Sanctuary in 1981 (Ali *et al.* 1981).

**Eastern Imperial Eagle** *Aquila heliaca* **Vulnerable**

This bird is a migratory winter visitor. It was recorded from the Harike Lake Wildlife Sanctuary in 1981 (Ali *et al.* 1981), and six birds were recorded in February-May 1994 (P. Undeland *in litt.* 1995)

IN-PB



**Pallas's Fish-Eagle** *Haliaeetus leucoryphus* **Vulnerable**

This Eagle is also rare in Punjab but was recorded in May–July 1982 in the Shivalik range and Harike Lake Wildlife Sanctuary (Ali *et al.* 1981).

**Indian Skimmer** *Rynchops albicollis* **Vulnerable**

This bird was reported in the Harike Lake Wildlife Sanctuary, a colony nearby (Ali *et al.* 1981), a maximum of 43 individuals were recorded during the period of 1983 to 1994 (P. Undeland *in litt.* 1995), 51 individuals in March 1995 (Crosby 1995, P. Undeland *in litt.* 1995), 70 individuals were recorded in July 1995, of which 34 were adults and 36 juveniles (Robson 1996).

**Eastern Stock or Yellow-eyed Pigeon** *Columba evermanni* **Vulnerable**

Reported in the Harike Lake Wildlife Sanctuary, a maximum of c. 800, in 1995 (P. Undeland *in litt.* 1995, Crosby 1995), also reported c. 2,000 in 1996–1997 (Robson 1997: 61–69, P. Undeland *in litt.* 1997).

**Bristled Grass-Warbler or Grassbird** *Chaetomis striatus* **Vulnerable**

A pair apparently breeding near the Harike Lake Wildlife Sanctuary was reported in August 1997 (Kazmierczak *et al.* 1998)

**Kashmir Flycatcher** *Ficedula subrubra* **Vulnerable**

One male flycatcher was seen in September 1998 in or near Harike Lake Wildlife Sanctuary (Robson 1999).



Pallas's Fish-Eagle *Haliaeetus leucoryphus* was recorded from the IBAs of Punjab.

Photo: Ketil Knudsen/Peter Lobo

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**THREATS AND CONSERVATION ISSUES**

Punjab is a very thickly populated agriculture state where natural vegetation has disappeared under plough. This state is one of the highest consumers of pesticides and fertilizers. Owing to intensive cereals cultivation such as wheat and rice, ground water is depleted, resulting in demand for more canal water. Punjab is basically a semi-arid state, with annual rainfall of up to 600 mm so there is not much rainwater to allow rice and sugarcane cultivation. Nonetheless, cultivation of such crops is expanding even to those areas where intensive irrigation cultivation is not recommended due to edaphic factors. Due to depletion of ground water resources and deterioration of soil productivity, farmers now go for high dozes of fertilizers and pesticides, resulting in temporarily high agriculture produce but long-term deterioration of farmland. All these factors have impact on bird life. Not much work has been done on the pesticide loads in bird. Moreover, there is no monitoring of farmland birds so we do not know how they are faring.

Harike Lake Wildlife Sanctuary is spread over the alluvial plains comprising 33 small lakes, while Kanjli Lake which is about 20 km from Harike Lake also falls in this area. Ropar Lake is another congregatory site identified in Punjab. All these sites are infested with the invasive weed *Eichhornia crassipes*. Eradication has been attempted but without success, as fresh infestation takes place from upstream.

Another major problem is that of siltation. The problem of soil erosion is acute in the catchment areas causing the wetland to silt up rapidly. Urban and industrial development in the vicinity of these lakes, and along feeder streams, is polluting lake water. Most of the catchment areas are under cultivation, and the use of fertilizers and pesticides is contributing to the pollution load. All these wetlands are auctioned on contract annually for commercial fishing which supports a major fishery. Birds are disturbed day and night. Gill nets used by the fishermen have been shown to cause mortality in ducks. Cattle graze the areas around the lake. Local people encroach upon the main lake area, mainly for agriculture.

**Threats to IBAs**

A=Agriculture intensification/expansion; B=Dams/Dykes; C=Disturbance to Birds; D=Firewood Collection; E=Industrialisation/Urbanisation; F=Unsustainable exploitation; G=Others; H=Natural Events

The Water Hyacinth is one of the persistent problems of the wetlands of Punjab.

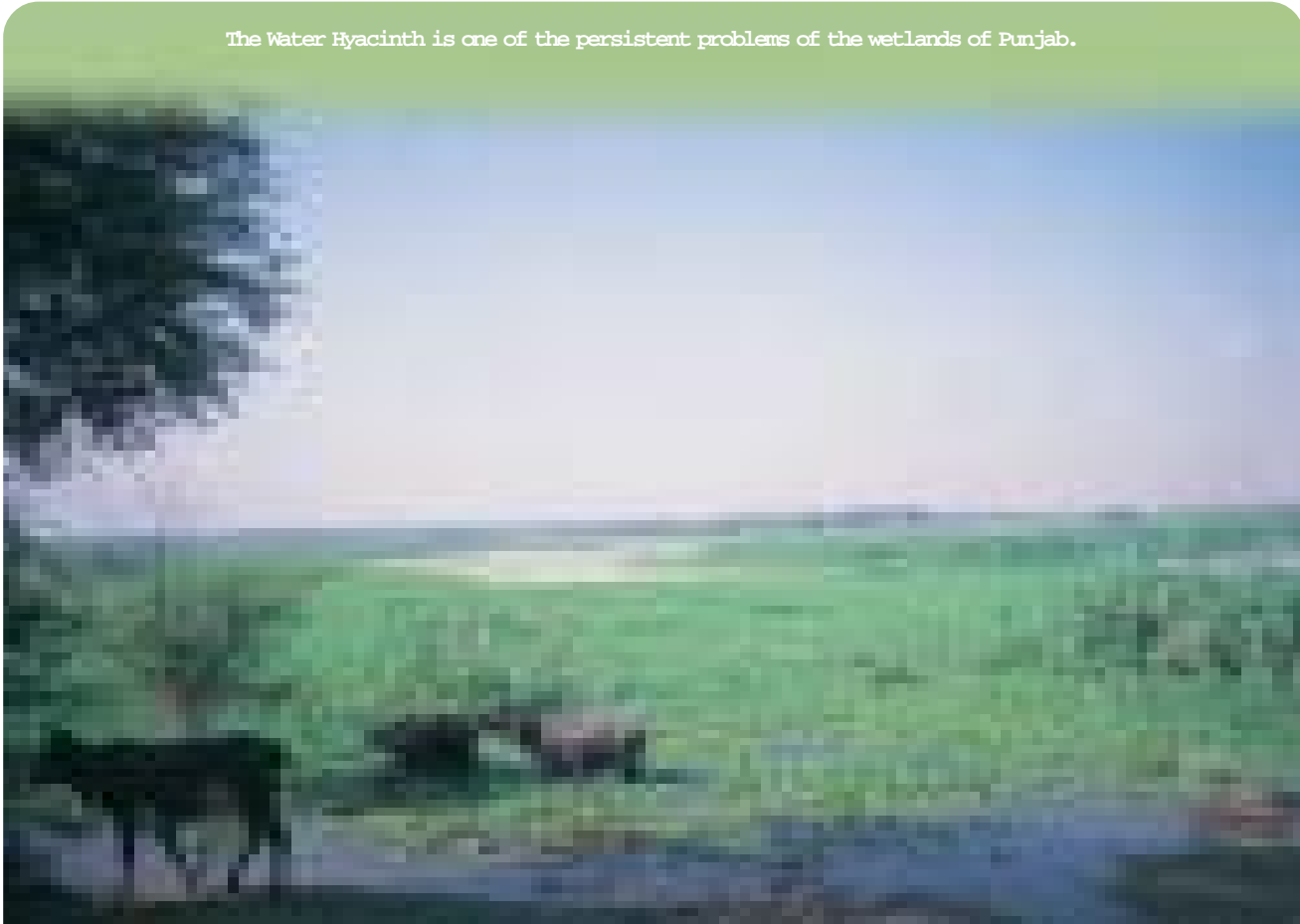


Photo: M. Zafar-ul-Islam

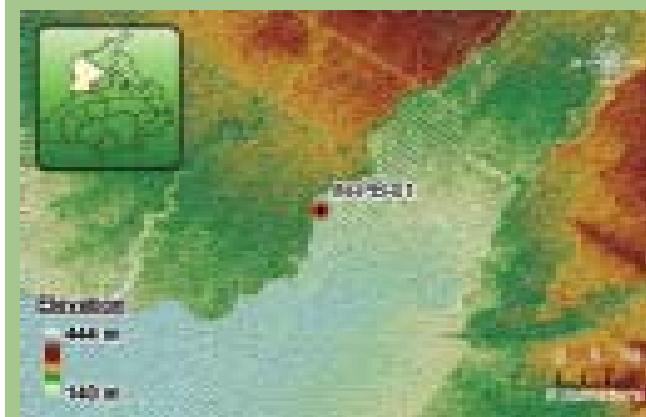
Simultaneously, poaching of wildfowl in these lakes has also increased dramatically. Various methods are used to trap and / or kill the birds. These include the blinding of the bird with powerful searchlights and then clubbing them with a *lathi*. The tubers that the ducks eat are poisoned with Furatex, a common pesticide, and others use shotguns with their barrels sawn off.

The Shivalik Hills have lost their vegetation cover, hence have been severely eroded over the years. Much of its original habitat has degraded and is now barren. Exotic species like *Lantana camera*, are posing a big problem. Land is being used for agriculture and most of the soil gets washed away in the monsoon. Grazing of livestock further aggravates the problem. The silt load from the Shivaliks is filling other wetland IBAs such as Ropar Lake in Punjab. This site needs to be surveyed to define the boundaries of IBAs within it.

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## HARIKE LAKE BIRD SANCTUARY



<b>IBA Site Code</b>	: IN-PB-01
<b>State</b>	: Punjab
<b>District</b>	: Amritsar, Kapurthala and Ferozpur
<b>Coordinates</b>	: 31° 18' 00" N, 75° 04' 60" E
<b>Ownership</b>	: State
<b>Area</b>	: 8,600 ha
<b>Altitude</b>	: 210 m
<b>Rainfall</b>	: 700 mm
<b>Temperature</b>	: 2 °C to 45 °C
<b>Biogeographic Zone</b>	: Semi-Arid
<b>Habitats</b>	: Freshwater Swamp (Reservoir)

**IBA CRITERIA:** A1 (Threatened species), A4i ( $\geq 1\%$  biogeographic population), A4iii ( $\geq 20,000$  waterbirds)

**PROTECTION STATUS:** Wildlife Sanctuary, established in 1982

### GENERAL DESCRIPTION

Harike Lake is a shallow water storage reservoir created by the construction of a barrage at Harike in 1952, at the confluence of the Sutlej and Beas rivers. It covers an area of approximately 14,800 ha in the open water. About 33 islands are scattered throughout the lake. The water depth varies from 1.2 m to 4.2 m. More than 50% of the water area is thickly covered by Water Hyacinth *Eichhornia crassipes*. The lake is surrounded by agricultural land and is the main source of water for the Indira Gandhi (Rajasthan) Canal.

The lake is triangular in shape, with its apex in the west, a bund called Dhussi Bund forming one side, a canal the second and a major road the third. Harike lake is a vital source of fish to Punjab (WWF, undated).

The National Committee on Wetlands, Mangroves and Coral Reefs of the Ministry of Environment and Forests, Government of India, has identified Harike Lake as one of the wetlands for special conservation action and management.

This artificial water body is heavily infested with Water Hyacinth that forms floating islets throughout the lake. Thick stands of *Typha* are found at the margins. The embankments have been planted with *Dalbergia sissoo*, *Acacia nilotica*, *Zizyphus*, *Ficus* and *Prosopis chilensis*.

### AVIFAUNA

Harike Lake was designated as a Ramsar site on account of its importance as habitat for large number and diversity of waterfowl (Ladhar *et al.* 1994). The lake is an important staging and wintering area for migratory waterfowl. Over 20,000 ducks have been counted at the peak of the migratory season. Flocks of 2-3 thousands Red-crested Pochard *Rhodonessa rufina*, Common Pochard *Aythya ferina* and Tufted Pochard *Aythya fuligula* are not uncommon. A study conducted by the Bombay Natural History Society (1980-85) recorded 167 species of resident and migratory birds. Scaup Duck *Aythya marila*, Falcated Teal *Anas falcata* and the globally threatened White-headed Duck *Oxyura leucocephala* have been reported. The updated list (Harvey, 2002) consists of 358 species, including some very old records such as the Little Bustard *Tetrax tetrax* that has not been seen in India for the last five decades or more.

The open water zone is very important for Near Threatened Darter *Anhinga melanogaster*. More than 100 have been counted in some

years (Prakash, *et al.* 1997). The Wetlands International (2002) calculate that its population in South Asia would be about 4,000 and declining. Its 1% biogeographic population threshold is 40. It number in Harike is more than 2% of its population. Similarly, many ducks are seen in more than 1% population threshold at Harike. Therefore, this site also qualifies A4i criteria, i.e. the site is known to or thought to hold, on a regular basis,  $\geq 1\%$  of a biogeographic population of a congregatory waterbird species (BirdLife International, undated).

#### Critically Endangered

Oriental White-backed Vulture	<i>Gyps bengalensis</i>
Slender-billed Vulture	<i>Gyps tenuirostris</i>

#### Endangered

White-headed Duck	<i>Oxyura leucocephala</i>
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#### Vulnerable

Lesser Adjutant	<i>Leptoptilos javanicus</i>
Pallas's Fish-Eagle	<i>Haliaeetus leucoryphus</i>
Greater Spotted Eagle	<i>Aquila clanga</i>
Eastern Imperial Eagle	<i>Aquila heliaca</i>
Indian Skimmer	<i>Rynchops albicollis</i>
Bristled Grass-Warbler	<i>Chaetornis striatus</i>
Kashmir Flycatcher	<i>Ficedula subrubra</i>

#### Near Threatened

Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Oriental White Ibis	<i>Threskiornis melanocephalus</i>
Ferruginous Pochard	<i>Aythya nyroca</i>
Red-headed Vulture	<i>Sarcogyps calvus</i>
Pallid Harrier	<i>Circus macrourus</i>
Long-tailed Prinia	<i>Prinia burnesii</i>

### OTHER KEY FAUNA

Sinha (1997) reported 16 mammalian species from this IBA site out of which the Smooth Indian Otter *Lutra perspicillata* requires conservation measure. Other mammals present at the site include

Harike Lake, a Ramsar site, is known to attract thousands of waterbirds.



Photo: S. L. Meera

Jungle Cat *Felis chaus*, Golden Jackal *Canis aureus*, Wild Boar *Sus scrofa*, and Common Mongoose *Herpestes edwardsi*. Fresh water turtles include *Kachuga tecta* and *Lissemys punctata andersoni*. About 26 species of fish have been recorded from the lake.

#### LAND USE

- q Fishing
- q Grazing
- q Water management

#### THREATS AND CONSERVATION ISSUES

- q Invasive species (Water Hyacinth)
- q Siltation
- q Poaching

The lake is infested with the invasive Water Hyacinth. Over 50% of the lake surface area is now covered with weeds. Eradication has been attempted but without success, as fresh infestation takes place from upstream.

Another major problem is of siltation. The problem of soil erosion is acute in the catchment area causing the lake to silt up rapidly. The area of open water has reduced from 4,100 ha to 2,800 ha due to siltation and encroachment. Urban and industrial development in the vicinity of the lake and along its feeder streams is polluting the lake water. Most of the catchment area is under cultivation, and use of fertilizers and pesticides is contributing to the pollution load in the lake. The entire lake is auctioned on contract annually for commercial fishing and supports a major fishery. Birds are disturbed day and night. Gill nets used by the fishermen have been shown to cause mortality in ducks. Cattle graze the areas around the lake. Local people mainly for agriculture purpose are encroaching upon the main lake area.

Simultaneously, poaching of wildfowl in the lake has also increased dramatically. Various methods are used to trap and/or kill the birds. These include blinding of the bird with powerful searchlights and

then clubbing them with a stick (*lathi*). The tubers that the ducks eat are poisoned with the help of Furatex, a common pesticide, and others use shotguns with their barrels sawn off.

The Centre sponsored a pilot project for the setting up of a special ecological task force of ex-servicemen to cleanse and manage the Harike Lake Wildlife Sanctuary. The Territorial Army was also involved in the process. The package was approved during a meeting in year 2001 between the Punjab Chief Minister and Central leaders. Under this, the army had launched a pilot project 'Project Sahyog' to check the degradation of the Harike Lake Wildlife Sanctuary.

#### KEY CONTRIBUTORS

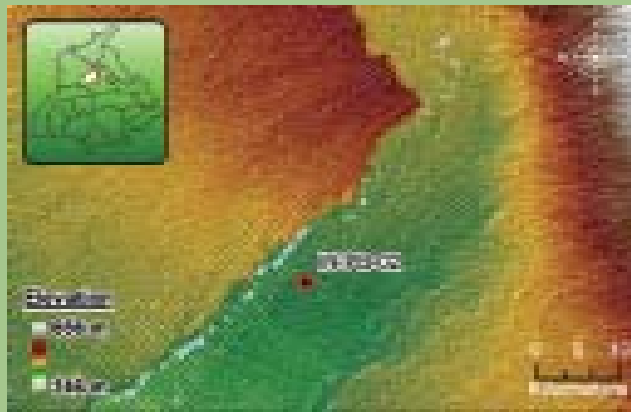
Bill Harvey, Satnam Singh Ladhar and Prakash Rao.

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## KANJLI LAKE



<b>IBA Site Code</b>	: IN-PB-02
<b>State</b>	: Punjab
<b>District</b>	: Kapurthala and Amritsar
<b>Coordinates</b>	: 31° 34' 00" N, 75° 24' 50" E
<b>Ownership</b>	: State (Irrigation Department)
<b>Area</b>	: 490 ha
<b>Altitude</b>	: 210 m
<b>Rainfall</b>	: 2,000 mm
<b>Temperature</b>	: 2 °C to 45 °C
<b>Biogeographic Zone</b>	: Semi-Arid
<b>Habitat</b>	: Freshwater Swamp (Reservoir)

**IBA CRITERIA:** A4i (≥ 1% biogeographic population),  
A4iii (≥ 20,000 waterbirds)  
**PROTECTION STATUS:** Not officially protected

### GENERAL DESCRIPTION

Kanjli wetland, recently declared as Ramsar Site in February 2002, is located on Kali Bein river, an important tributary of Beas river. It is about 4 km from the famous ancient town, Kapurthala. It is a very old lake and came into existence in 1870 when a barrage was constructed on Kali Bein river. Basically, it is an irrigation reservoir. As water is used up for agricultural purposes, the water level goes down, thus attracting thousands of waterfowl and waders. It is about 20 km from Harike Lake, another IBA. The wetland is rich in aquatic flora, especially *Phragmites* and *Typha*.

The River Bein has great religious significance as it is associated with the most revered Sikh Guru, Shri Guru Nanak Devji.

Although it a very old wetland, conservation measures were started only about 15 years ago. A Five Year Plan for conservation of this wetland was prepared in 1998-99.

### AVIFAUNA

Not much is known about the bird life of this important site but the birds are not very different from nearby Harike Lake (an IBA). According to WWF (undated), this wetland attracts a large number of resident and migratory birds, and it also acts as an important staging ground for long distance migratory birds. About 50 species of birds have been reported. The waterfowl consists of Northern Pintail *Anas acuta*, Northern Shoveller *Anas clypeata*, Mallard *Anas platyrhynchos*, Common teal *Anas crecca*, Wigeon *Anas strepera*, Tufted Duck *Aythya fuligula*, and White-eyed Pochard or Ferruginous Pochard *Aythya nyroca*. Total number of birds could reach 20,000 figures.

### OTHER KEY FAUNA

As this wetland is surrounded by human habitation, there is not much of large terrestrial fauna, except for an occasional Golden Jackal *Canis aureus*.

### LAND USE

- ☐ Irrigation
- ☐ Agriculture

### THREATS AND CONSERVATION ISSUES

- ☐ Poaching
- ☐ Encroachment
- ☐ Invasive species (Water hyacinth)

Like in Harike, Kanjali wetlands also suffers from the bane of invasive Water Hyacinth *Eichhornia crassipes*. Manual removal has been attempted, with unsatisfactory results as this pernicious weed flows in with the river water. As the wetland is surrounded by agricultural fields and human habitation, encroachment has been another threat. The Government of Punjab has now fenced the area to prevent further encroachment. Poaching of ducks is also a major problem but it can be controlled with effective patrolling and conservation education in the surrounding villages.

### KEY CONTRIBUTOR

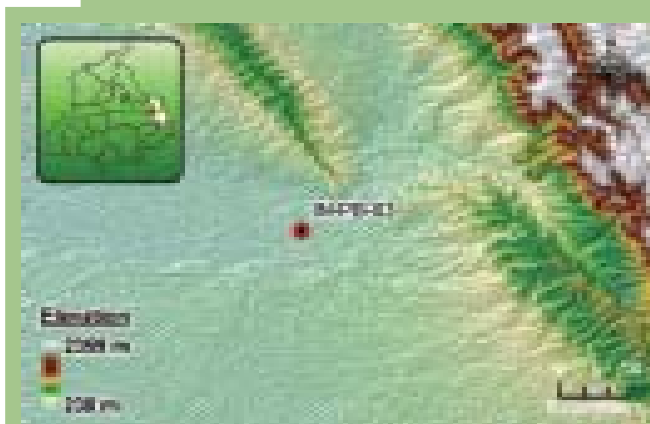
Satnam Singh Ladhar

### KEY REFERENCE

WWF (undated) WWF-Fact Sheet. Kanjali Lake: Punjab. World Wide Fund for Nature-India, and Ministry of Environment and Forests, Government of India, New Delhi.



## ROPAR LAKE



IBA Site Code	: IN-PB-03
State	: Punjab
District	: Ropar
Coordinates	: 30° 56' 30" N, 76° 27' 00" E
Ownership	: State
Area	: 1,365 ha
Altitude	: 1,500 m
Rainfall	: 1,000 mm
Temperature	: 4 °C to 45 °C
Biogeographic Zone	: Semi-Arid
Habitats	: Freshwater Swamp (Reservoir)

**IBA CRITERIA:** Ropar does not qualify any criteria as of now but has potential as a wintering ground for migratory birds and may meet the A4iii criterion if habitat is restored.

**PROTECTION STATUS:** Not officially protected

### GENERAL DESCRIPTION

The Ropar Lake was created in 1952 with the construction of the Bist-Doab canal which receives water from its head works on the Sutlej river near Ropar town. It is essentially a reservoir surrounded by marshy margins dominated by large stands of *Phragmites*. Located at the Shivalik foothills, the wetland receives a large silt load from the eroded hills. The lake lies in the Hoshiarpur-Chandigarh sub-montane plain region. The depth of the lake varies from 0.5 m to 6 m. A few shallow waterbodies along both sides of the river are located within the wetland area. The area has been declared as a reserved forest and is under the control of the Punjab State Government. The wetland experiences semi-arid monsoon type climate with average annual rainfall of approximately 1,000 mm. Under the National Wetlands Programme of the Ministry of Environment and Forests, Government of India, the Ropar wetland has been selected for inclusion in the list of wetlands of national importance. In February 2002, it was declared as a Ramsar Site.

The edge of the wetland is characterized by thorny bushes, reeds, grasses, sedges and trees. Water Hyacinth *Eichhornia crassipes* has invaded the wetland.

### AVIFAUNA

About 154 species of birds have been identified till now (WWF, undated). It serves as an important staging ground for a number of migratory birds, but detailed studies are lacking. In its current stage, the wetland supports birds numbering in a few thousands, not enough to meet any of the IBA criteria. However, it has the potential of housing over 20,000 water birds, after restoration work has been undertaken.

### OTHER KEY FAUNA

As the lake is surrounded by agricultural fields and human habitation, large mammals are absent, except for Wild Boar *Sus scrofa* and Bluebul or Nilgai *Boselaphus tragocamelus*, both of which destructive to crops. Sambar *Cervus unicolor*, Hog Deer *Axis porcinus* and Smooth Indian Otter *Lutra perspicillata* are reported to be present but the report needs confirmation. Thirty-five species of fish are found, many of commercial value.

### LAND USE

- Water Management
- Forestry

### THREATS AND CONSERVATION ISSUES

- Siltation
- Invasive species
- Poaching

The wetland is choked with fly ash from a thermal power plant in its vicinity. The wetland has also been invaded by the exotic weed, the Water Hyacinth. There is very little suitable habitat left for the birds, this too will gradually fill up with silt from the power plant. The wetland though badly degraded has been nominated as a Ramsar Site. It is in immediate need of restoration.

This IBA has great potential to be developed as an excellent bird watching area. It is easy to reach and a tourist complex located inside the wetland offers necessary facilities. Since this wetland is an important source of fisheries, it is significant from the economic point of view of the state (WWF, undated).

Ever since the inclusion of Ropar wetland as a Wetland of National Importance by the Ministry of Environment and Forests, Government of India, the Punjab State Council for Science and Technology has taken some initiatives to improve the wetland to make it more suitable for birds and tourists. However, these measures are not enough. A holistic management plan, based on scientific research, is required to make this wetland truly a Ramsar Site – important both for waterfowl and for the state's economy.

### KEY CONTRIBUTORS

Neelima Jerath and Supriya Jhunjhunwala

### KEY REFERENCE

WWF- Fact Sheet (undated) Ropar Lake, Punjab. World Wide Fund for Nature, - India, New Delhi and Ministry of Environment and Forests, Government of India, New Delhi.