

## Hokersar Bird Conservation Wetland Under Threat Due To Anthropogenic Interference

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**ABSTRACT:** Kashmir is the northwest region of the Indian subcontinent. It is ethnically diverse Himalayan region, covering around 222,738 sq Km and famous for the beauty of its fresh water bodies which are directly linked to the livelihood requirements of the local populations apart from their ecological, biodiversity, cultural and tourism values. Apart from being the primary habitat for hundreds of species of waterfowl, fish, mammals and insects they receive a wide variety of migratory birds from Siberia, Northern Europe and Central Asia during the winter months which add to the beauty. Although there are wetlands all around the valley, some of the larger ones which have been designated as Ramsar sites in Kashmir include Hokersar, Haigam, Shallabugh, and Wular. In which Hokersar and Wular Lake is Asia's largest freshwater lake. Out of four main wetlands in the valley Hokersar wetland is the site of the current investigation. Many resident and migratory birds find it to be a good habitat. A large diversity of the area's avifauna can find ample cover, secure roosting locations, and feeding grounds in this wetland. This wetland is also an ideal breeding place for many local and

seasonal bird visitors. The coordinates for the Hokersar wetland are 34 0 7' N and 74 0 39' E. With an elevation of 1584 meters above mean sea level, it is located to the north-west of Srinagar City, 16Kms from Srinagar on Srinagar Baramulla road National highway and has a sub-Mediterranean climate. Due to encroachment and siltation, the Hokersar wetland, which formerly covered a vast 13.26 sq. km, has gradually shrunk to a size of 7.5 sq. km. In Kashmir Valley, Hokersar is regarded as the migrating bird's paradise. However due to the increased rate of anthropogenic activities changes in the natural process can be seen, Hokersar wetland is degrading at an alarming rate and affecting water quality. The major threats to this wetland include pollution, land use, climate change, urbanization and encroachment. These major threats during the past few years have resulted in degradation of wetland over this region. The present study assesses the avian diversity of Hokersar bird conservation wetland Srinagar. During the present study a total 76 species of birds belonging to 14 orders and 36 families were recorded. These comprised of Summer visitors

26 species, Winter visitors 20 species, Residents 21 species and Local altitudinal migrants 9 species. Study revealed that no species restricted itself to only one particular habitat and only maximum density was found in that habitat. Anthropogenic interference in the form of illegal hunting, macrophytic harvesting, boating and severe cold climatic conditions during the winter

season greatly reduced the diversity of the avifauna. Sustainable management of Hokersar wetland is crucial as this ecosystem offer an array of ecological functions. This study provides special insight about the significant changes in spatial scale.

**Keywords:** Wetland, conservation, Protection, Avifauna, Diversity

## INTRODUCTION

A wetland is an area of land that is either covered by water or saturated with water. The water is often groundwater, seeping up from an aquifer or spring. A wetland's water can also come from a nearby river or lake. Seawater can also create wetlands, especially in coastal areas that experience strong tides. The depth and duration of this seasonal flooding varies. Wetlands are transition zones. They are neither totally dry land nor totally underwater; they have characteristics of both. Wetlands exist in many kinds of climates, on every continent except Antarctica. They vary in size from isolated prairie potholes to huge salt marshes. They are found along coasts and inland. Some wetlands are flooded woodlands, full of trees. Others are more like flat, watery grasslands. Still others are choked by thick, spongy mosses. Wetlands go by many names,

such as swamps, peatlands, sloughs, marshes, muskegs, bogs, fens, potholes, and mires. Most scientists consider swamps, marshes, and bogs to be the three major kinds of wetlands. Wetlands go by many names, such as swamps, peatlands, sloughs, marshes, muskegs, bogs, fens, potholes, and mires. Most scientists consider swamps, marshes, and bogs to be the three major kinds of wetlands. The classifications of wetlands have been suggested from time to time as earlier classification describes wetland types on the basis of flooding, depth, dominant forms of vegetation and salinity regimes. At international level, wetlands have been classified by many scholars and Academicians (e.g., Dugan, 1990).

### Wetlands in Jammu & Kashmir

"Any natural or manmade pond, lake, stream, river, or wetland that contains permanent, semi-

permanent, or intermittent standing or flowing waters" is the definition of a "water body."

Wetlands are crucial for maintaining the ecology and health of our water system as well as contributing to our culture and ethos. Under the auspices of the EP Act of 1986, the Ministry of Environment & Forests, Government of India published the Wetland Rule, 2010/2017, which comprehensively outlines the management of Wetlands.

"Regions of marsh, or water, whether natural or manmade, permanent or temporary, with water that is static or flowing, fresh, brackish, or salt, including areas of sea water the depth of which at low tide does not exceed six meters," is how the Ramsar Convention defines wetlands.

In addition to their ecological, biodiversity, cultural, and tourism aspects, the major wetlands in Jammu and Kashmir are well

known across the world. These wetlands are intimately related to the needs of the local population for a means of subsistence. In addition to serving as the major home for hundreds of species of fish, animals, and insects, they also attract a variety of migratory birds from Siberia, Northern Europe, and Central Asia throughout the winter, which enhances their beauty. Due to silt deposition, human involvement such as encroachments, agriculture and habitation grazing, and over-extraction of fodder, fuel, fish, and wicker-willow, among other things, these wetlands have been under a great deal of strain. Because many wetlands are being drained or invaded by agricultural operations and urban areas, the management of wetlands has consequently become crucial.

Table 1: The Wetlands of Kashmir Valley of Jammu and Kashmir

S.NO.	Name of Wetland	District	Present Status
1	Khushal Sar	Srinagar	Marshy
2	Gilsar	Srinagar	Habitation/Marshy
3	Ahansar	Srinagar	Marshy/Agriculture
4	Anchar lake	Srinagar	Plantation/Habitation/agriculture
5	Nagin lake	Srinagar	Marshy/Habitation
6	Dale lake	Srinagar	Marshy/Habitation/Agriculture
7	Rampur Taloo	Anantnag	Playground
8	Chakla Nambal	Anantnag	Agriculture land
9	Munshahun Taloo	Anantnag	Agriculture

10	Kiel Khanun Taloo	Anantnag	Agriculture
11	Buta Sar	Kupwara	ButaSar
12	Tekipur	Kupwara	Seasonal
13	Nonn Khan Chak	Kupwara	Seasonal
14	Wudina Sar	Baramulla	Agriculture
15	Tsore Teng	Baramulla	Seasonal
16	Malipur	Baramulla	Marshy
17	Wullar Lake	Bandipora	Marshy/Plantation/Agriculture
18	HaighanJhil	Baramulla	Agriculture/Marshy
19	Gadsar	Baramulla	Agriculture
20	Rakhi Malanpur	Pulwama	Agriculture
21	Chow kidarSar	Pulwama	Agriculture
22	Baner Nambal	Pulwama	Horticulture
23	Bod Sar	Pulwama	Marshy/Agriculture
24	Rakhi-Arth	Budgam	Land/Agriculture
25	Nambli Narkur	Budgam	Plantation/Agri/Marshy/Habitation
26	Hokar Sar	Budgam	Plantation/Marshy/Habitation
27	Danda Rokhaw	Budgam	Marshy/Agriculture

Source: Directory of Lakes and Water Bodies (2012). Jammu and Kashmir

**Methodology**

In the current study we examine the Hokersar wetland of Kashmir valley in the light of history and by field visits. To collect information about the wetlands, we surveyed areas and interviewed people surrounding the wetland and people related to the protection of this wetland. Finally, we present results on the basis of the information collected through our field visits.

**Results and Discussion**

**Study Area:** Out of four main wetlands in the valley—Hokersar, Wular, Haigam, and

Shallabug—Hokersar wetland is the sites of the current investigation. Many resident and migratory birds find them to be a good habitat. A large diversity of the area's avifauna can find ample cover, secure roosting locations, and feeding grounds in the wetlands. This wetland is also an ideal breeding place for many local and seasonal bird visitors. The coordinates for the Hokersar wetland are 34 0 7' N and 74 0 39' E. With an elevation of 1584 meters above mean sea level, it is located to the north-west of Srinagar City and has a sub-Mediterranean climate. Due to encroachment and siltation, the Hokersar wetland, which formerly covered a vast 13.26 sq. km, has gradually shrunk to a

size of 7.5 sq. km. In Kashmir Valley, Hokersar is regarded as the migrating bird's paradise. Although there are wetlands all around the valley, some of the larger ones include Hokersar, Haigam, Mirgund, Shallabugh, and Wular. Hokersar and Wular Lake, which is Asia's largest freshwater lake, have been designated as Ramsar sites in Kashmir.

#### **Significance of the Wetland**

Hokersar has been declared as Conservation Reserve under the Jammu and Kashmir Wildlife (Protection) Act, 1978. It was also declared as Ramsar site on November 8, 2005 under the Ramsar Convention. India is a signatory to the Ramsar Convention-an international treaty for the conservation and sustainable utilization of wetlands.

##### **a) Flood water storage**

Wetlands act as a reservoir for water during floods, slowly releasing it when the water level drops. This can dramatically lower peak flood flows and the subsequent downstream flood damage. In times of heavy rain, wetlands also act as a reservoir for runoff water. There will be less flooding because these wetland reservoirs can usually contain more water than it appears.

##### **b) Acts as a habitat**

The wetlands of Kashmir serve as a congenial habitat to a number of bird species. Birds use this habitat for number of activities like nesting, roosting and feeding. Hokersar wetland is the biggest bird reserve in the Kashmir

Valley.

##### **c) Pollution sink**

Phytoremediation Wetlands deliver a wide array of hydrological services, for instance, flood regulation, promote groundwater recharge and regulate river. Wetlands are among the most productive ecosystems and a rich repository of biodiversity and are known to play significant role in carbon sequestration.

#### **Factors responsible for deterioration of Wetland Hokersar**

wetland has shrunk and depleted due to the human activities and encroachments. During the observation period from 1969 to 2008, the spatial extents of wetland have reduced from 18.75 km<sup>2</sup> in 1969 to 13.00 km<sup>2</sup>. The extent of the wetland is seen at various points. As is evident from the data, an area of 5.75 km<sup>2</sup> has been lost during the last four decades.

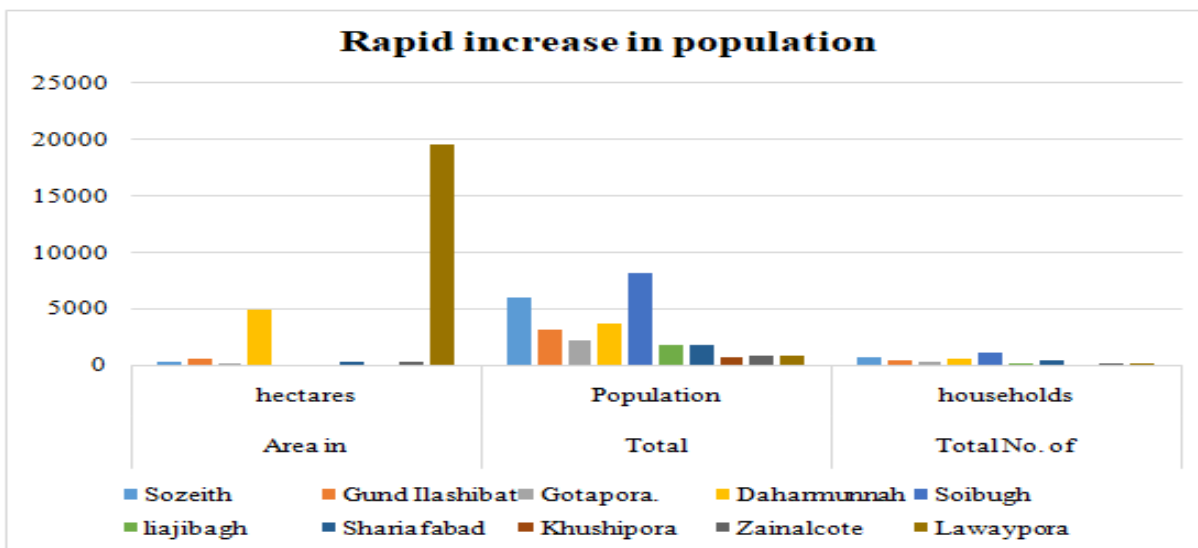
##### **a) Populous Villages around the Wetland**

The wetland is bordered by urban habitations on the northern side along the Srinagar-Baramulla highway. The area is thickly populated and major threat is in terms of eutrophication and poaching.

The name of these villages along with their area, total population and total number of households is given below:

**Table: 2** Total population and total number of households.

Villages	Area in hectares	Total Population	Total No. of households
Sozeith	282.07	5994	687
Gund Hassi Bhat	520.74	3122	415
Gotapora	164.71	2222	278
Darmunah	4901.8	3717	490
Soibugh	60.12	8175	1093
Ilahi Bagh	25.30	1788	196
Shariafabad	312.40	1820	425
Khushipora	11.88	657	SS
Zainakot	273.16	813	123
Lawaypora	19625	776	105



**Fig: 1** Total population and total number of households  
 During recent years the rapid increase in population has resulted in establishment of new human settlements in the catchment area of the lake (fig.1)

b) **Conversion of Wetland into Agricultural land**

Some areas of the wetland that existed in 1969 have been converted into paddy fields. About 10 hectares of the wetland has been converted into built-up area. Habitat fragmentation is the process of splitting of major habitats into smaller pieces or habitat patches by expansion of land use which results in the decrease in biodiversity of natural habitats.

**c) Discharge of domestic waste into the wetland**

The discharge of untreated effluents in aquatic ecosystems is one of the most important environmental concerns in present day content. Experts are of the opinion that said influx of sewage and solid waste from flood spill channel and Doodh Ganga has also led to deterioration of the wetland's condition. Hokersar also bore the brunt of September 2014 devastating floods in Kashmir Valley.

**d) Excessive weed growth**

This wetland is now characterized by low water levels since it is surrounded by cultivation areas which wash organic and inorganic constituents

into the wetland thus resulting in exceedingly high macrophyte growth. The wetland is infested with number of macrophytes.

**e) Eutrophication**

The nutrient enrichment in the wetland causes changes in the biotic community composition, some new invasive and exotic species start growing there. Sometimes the native species disappear because of excessive nutrient loads in the wetland which change the quality of water drastically ultimately results in the excessive growth of algal mats, macrophytes finally resulting in the death of fishes and decrease in water bird population.

**f) Waterfowl hunting**

Hunting is a common practice among the local people around the Zainakote, Haji Bagh and Soibugh villages. Some people are dependent on waterfowl for food and their daily needs. The hunting continues from the month of November and ends in the month of April. The birds are killed by gun shots and sometimes trapped by traditional hair snarls.

**Different Strategies for Management process of Hokersar Wetland.**

- ✓ The initial step to prohibit construction, in and along the periphery of Hokersar wetland.
- ✓ Prohibiting any kind of anthropogenic interference and reducing the impact of existing anthropogenic pressure and

- natural processes for long term protection of Hokersar wetland.
- ✓ Regulating water quality as per international standards regarding the wetlands and also regulating the functions of wetland and derive economical benefits in a sustainable manner.

- ✓ Setting up barriers for protection of ecosystem and stopping detrimental human actions in the demarcated area of wetland for restoring the wetland.
- ✓ Constructing and using sewerage treatment plants to control the pollution around the wetland.
- ✓ Involving local community, Students from Colleges and Universities for regular monitoring of health and quality check of the wetland.
- ✓ Spreading awareness through workshops, seminars, campaigning and other programs with participation of students and local population.

### Conclusion

The Hokersar wetland, which was once known as the “migrating bird's paradise” was recently in news for being on the brink of extinction due to encroachment and anthropogenic interference. It is observed from our field survey that Hokersar wetland is currently facing multi-dimensional threats due to human encroachments like increasing human settlements, urbanization, siltation, expansion of agricultural fields, expansion of roads and Authority apathy. Public awareness is an important factor in saving wetland of Kashmir. Nobody wants a repeat of the 2014 floods when almost all the area was covered with water weather residential areas, hospitals, industrial complexes and educational institutes in and around Srinagar for more than three weeks. The Kashmir valley remained cut off from the rest of the world. It's horrible to think history could repeat itself if wetlands are not preserved. Wetlands are biologically most diverse and economically valuable ecosystems all over the world. These are important as socio-economic assets and function as absorption basins for flood waters. They help in the

maintenance of biodiversity, purification, and recharge of groundwater. The wetlands of Kashmir Valley are degrading at an alarming rate mainly due to anthropogenic pressures and climate change. The major threats to wetlands in the city include pollution, siltation, encroachments, urbanization, and establishment of floating gardens. Robust management strategies must be adopted for conservation and protection of wetland ecosystems to ensure sustainable socio-economic and ecological benefits.

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