

AVIAN DIVERSITY OF LADAKH WETLANDS

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Ladakh, known for centuries as the 'land of passes' (La-pass;Dakh-land),Ladakh was described by Fa-hian, who traveled across its inhospitable terrain in 399 A.D., as 'The land where snow never melts and only corn ripens'. The snow-swathed mountains rise to several thousand feet above one of the most elevated plateau on earth. The mountain ranges in this region were formed over a period of 45 million years by the folding of the Indian plate into the more stationary Eurasian Plate. The drift continues, causing frequent earthquakes in the Himalayan region. Treeless wind-swept country, much of Ladakh can be termed as mountains, Arctic desert, where everything is parched by the rarefied dryness of the atmosphere. The summer weather is dry and pleasant. Temperature ranges are from -3 to 30 °C in summer and from -20 to 15 °C in winter. There is little moisture to temper the effects of rarefied air. Ladakh is a high altitude desert as the Himalayas create a rain shadow, denying entry to monsoon clouds. The main source of water is the winter snowfall on the mountains. Pangong Lake is an endorheic lake in the Himalayas situated at a height of about 4,350 m (14,270 ft). It is 134 km (83 mi) long and extends from India to China. 60% of the length of the lake lies in China. The lake is 5 km (3.1 mi) wide at its broadest point. During winter the lake freezes completely, despite being saline water. The lake is in the process of being identified under the Ramsar Convention as a wetland of international importance. Strand lines above current lake level reveal a 5 m (16 ft) thick layer of mud and laminated sand, suggesting the lake has shrunken recently in geological scale. The salinity values show the amount of mixing between fresh water (0 parts/thousand) and sea water (33 parts/thousand), which shows the salinity of Pangong lake water is some what comparable to sea water. Pangong salinity shows 10-12.5 ppt with electrical conductivity of 19-22mS/cm. Ladakh has a great diversity of birds — a total of 225 species have been recorded. Many species of finches, robins, redstarts (like the Black Redstart that migrates to the south), and the Hoopoe are common in summer. The Brown-headed Gull is seen in summer on the river Indus and on some lakes like the Changthang and Pangong Lake. Resident water-birds include the Brahminy duck also known as the Ruddy Sheldrake and the Bar-headed Goose. These ducks migrates to South India in winter to escape the extreme cold temperature and return to Ladakh in Mid May. The recent team visit for present study could list out 50 species of birds in quite limited time and also spot 26 Black-necked Cranes at various wetland locations between Merak and Hanle. . Pangong lake, though brakish water quality harboured several Brown headed-gulls at the centre and at the peripheral region brahminy ducks, Bar-headed geese along with other birds. The presence of Brown headed-gull at the upland wetland is quite interesting as they are usually seen only at sea coast. Today, Ladakh with its unique temperate high altitude landscape and rich biodiversity gain much conservational value and needs much importance from avian point of view so as to expedite conservation

of the rare and endangered birds of this region, especially the black-necked cranes, which is quite endemic to the higher Himalayas, Ladakh and peripheral region.

Introduction:

Ladakh, known for centuries as the 'land of passes' (La-pass;Dakh-land),Ladakh was described by Fa-hian, who traveled across its inhospitable terrain in 399 A.D., as 'The land where snow never melts and only corn ripens'. The snow-swathed mountains rise to several thousand feet above one of the most elevated plateau on earth. The mountain ranges in this region were formed over a period of 45 million years by the folding of the Indian plate into the more stationary Eurasian Plate. The drift continues, causing frequent earthquakes in the Himalayan region. The peaks in the Ladakh range are at a medium altitude close to the Zoji-la (5,000–5,500 m or 16,000–18,050 ft), and increase towards south-east, culminating in the twin summits of Nun-Kun (7000 m or 23,000 ft). Ladakh is the highest plateau of the Indian state of Kashmir with much of it being over 3,000 m (9,800 ft). It spans the Himalayan and Karakoram mountain ranges and the upper Indus River valley. Treeless wind-swept country, much of Ladakh can be termed as mountains, Arctic desert, where everything is parched by the rarefied dryness of the atmosphere. The Indus River is the backbone of Ladakh. Most major historical and current towns — Shey, Leh, Basgo and Tingmosgang (but not Kargil), are situated close to the Indus River. The Ladakh range has no major peaks; its average height is a little less than 6,000 m (19,700 ft), and few of its passes are less than 5,000 m (16,400 ft). The Pangong range runs parallel to the Ladakh range about 100 km northwest from Chushul, along the southern shore of the Pangong Lake. Its highest range is 6,700 m (22,000 ft) and the northern slopes are heavily glaciated. The region comprising the valley of the Shayok and Nubra rivers is known as Nubra.

The regions on the north flank of the Himalayas — Dras, the Suru valley and Zangskar — experience heavy snowfall and remain virtually cut off from the rest of the country for several months in the year. Summers are short, though they are long enough to grow crops in the lower reaches of the Suru valley. The summer weather is dry and pleasant. Temperature ranges are from -3 to 30 °C in summer and from -20 to 15 °C in winter. There is little moisture to temper the effects of rarefied air. Ladakh is a high altitude desert as the Himalayas create a rain shadow, denying entry to monsoon clouds. The main source of water is the winter snowfall on the mountains. Vegetation is extremely sparse in Ladakh except along streambeds and wetlands, on high slopes, and in irrigated places.

Pangong Lake is an endorheic lake in the Himalayas situated at a height of about 4,350 m (14,270 ft). It is 134 km (83 mi) long and extends from India to China. 60% of the length of the lake lies in China. The lake is 5 km (3.1 mi) wide at its broadest point. During winter the lake freezes completely, despite being saline water. The lake is in the process of being identified under the Ramsar Convention as a wetland of international importance. The lake acts as an important breeding ground for a variety of birds including a number of migratory birds. During summer, the Bar-headed goose and Brahmini ducks are commonly seen here. Formerly, Pangong Tso had an outlet to Shyok River, a tributary of Indus River, but it was closed off due to natural damming. Two streams feed the lake from the Indian side, forming marshes and wetlands at the edges. Strand lines above current lake level reveal a 5 m (16 ft) thick layer of mud and laminated sand,

suggesting the lake has shrunken recently in geological scale. The salinity values show the amount of mixing between fresh water (0 parts/thousand) and sea water (33 parts/thousand), which shows the salinity of Pangong lake water is some what comparable to sea water. Pangong salinity shows 10-12.5 ppt with electrical conductivity of 19-22mS/cm. This could also be an evidence for the Tethys Sea which existed about 250 million years ago.

Result and Discussion:

Avifauna of Ladakh was first studied by Ferdinand Stoliczka, an Austrian- Czech palaeontologist, who carried out a massive expedition in the region in the 1870s. Ladakh has a great diversity of birds — a total of 225 species have been recorded. Many species of finches, robins, redstarts (like the Black Redstart that migrates to the south), and the Hoopoe are common in summer. The Brown-headed Gull is seen in summer on the river Indus and on some lakes like the Changthang and Pangong Lake. Resident water-birds include the Brahminy duck also known as the Ruddy Sheldrake and the Bar-headed Goose. These ducks migrates to South India in winter to escape the extreme cold temperature and return to Ladakh in Mid May. Other birds include the Raven, Red-billed Chough, Tibetan Snowcock, and Chukar. The endangered Black-necked Crane (*Grus nigricollis*), being the state bird of Jammu and Kashmir are found scattered in the Tibetan plateau, is also found in parts of Ladakh. There are about 36 individuals sighted and reported by the wildlife department along with other research institution. The recent team visit for present study could list out 50 species (Table 1) of birds in quite limited time and also spot 26 Black-necked Cranes at various wetland locations between Merak and Hanle. Their distribution is very much restricted to wetlands, marshy areas, even closer to village hamlets. The Lammergeier, Upland Buzzard, Golden Eagle and some other quite interesting raptors are spotted at sereval regions of Ladakh, especially Leh, Merak, Chumatang and Hanle. The Brown-headed Gull breeds at Ladakh region, migrates to Sea coast during winter till summer. Pangong lake, though brakish water quality harboured several Brown headed-gulls at the centre and at the peripheral region brahminy ducks, Bar-headed geese along with other birds. The presence of Brown headed-gull at the upland wetland is quite interesting as they are usually seen only at sea coast. Wagtails like the White wagtail, Citrine wagtail, and Yellow wagtail were observed thriving in great numbers all throughout Ladakh region. These birds breed in Ladakh, migrates to south to warmer parts during winter. The avian diversity of this high altitude wetland proves quite rich, attributing to the landscape, food availability and the climatic condition.

Conclusion:

For endless years, man had even discovered this remote land, several hardy animals and birds lived together here in an exquisite equilibrium. Circumstances have now changed as they have almost everywhere else on the subcontinent. Today, Ladakh's flora and fauna are threatened and protection is vital if the ancient ecosystems are to survive the trauma of modern man. Harnessing this vital potential force may be the single most important conservation advance India could make in the battle to save what remains of its natural wealth. Today, Ladakh with its unique temperate high altitude landscape and rich biodiversity gain much conservational value and needs much importance from avian point of view so as to expedite

conservation of the rare and endangered birds of this region, especially the black-necked cranes, which is quite endemic to the higher Himalayas, Ladakh and peripheral region.

Table 1. Checklist of Birds:

No.	Common name	Scientific Name
	Bar-headed Goose	Anser indicus
	Black Redstart	Phoenicurus ochruros
	Black-billed Magpie	Pica pica
	Black-headed Gull	Larus ridibundus
	Black-necked Crane	Grus nigricollis
	Black-winged Stilt	Himantopus himantopus
	Blue Rock Pigeon	Columba livia
	Brown Wood Owl	Strix leptogrammica
	Brown-headed Gull	Larus brunnicephalus
	Chestnut-eared Bunting	Emberiza fucata
	Chukar	Alectoris chukar
	Citrine Wagtail	Motacilla citreola
	Common Hoopoe	Upupa epops
	Common Kestrel	Falco tinnunculus
	Common Merganser	Mergus merganser
	Common Raven	Corvus corax
	Common Redstart	Phoenicurus phoenicurus
	Common Sandpiper	Actitis hypoleucos
	Common Tern	Stwrna hirundo
	Common Wood Pigeon	Columba palumbus
	Cotton Pygmy Goose	Nettapus coromandelianus
	Daurian Redstart	Phoenicurus aureoreus
	Desert Wheatear	Oenanthe deserti
	Eurasian Tree Sparrow	Passer montanus
	Ferruginous Pochard	Aythya nyroca
	Fire-fronted Serin	Serinus pusillus
	Garganey	Anas querquedula
	Golden Eagle	Aquila clanga
	Great Crested Grebe	Podiceps cristatus
	Green Sandpiper	Tringa ochropus
	Himalayan Snowcock	Tetraogallus himalayensis
	Horned Lark	Eremophila alpestris
	Lammergeier	Gypaetus barbatus

Lesser Spotted Eagle	Aquila pomarina
Northern Pintail	Anas acuta
Osprey	Pandion haliaetus
Palla's Fish Eagle	Haliaeetus leucoryphus
Palla's Gull	Larus ichthyaeus
Red-billed Chough	Pyrrhocorax pyrrhocorax
Red-necked Phalarope	Phalaropus lobatus
Ruddy Shelduck	Tadorna ferruginea
Ruddy Turnstone	Arenaria interpres
Tibetan Sandgrouse	Syrrhaptes tibetanus
Tibetan Snowcock	Tetraogallus tibetanus
Tree Pipit	Anthus trivialis
Upland Buzzard	Buteo hemilasius
White Wagtail	Motacilla alba
White Wagtail ssp. Personata	Motacilla alba personata
White-winged Redstart	Phoenicurus erythrogaster
Yellow Wagtail	Motacilla flava

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