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## **Avifauna of Chandertal Wetland Sanctuary of District Lahaul and Spiti, Himachal Pradesh, India**

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### **ABSTRACT**

The explorations of avifauna of Chandertal wetland sanctuary revealed the presence of 41 birds species belonging to 35 genera, 12 families, 7 orders of class Aves. Family Passeridae represented by 6 species, Fringilidae by 5 species and Corvidae, Phasianidae and Accipitridae has 4 species each. Family Columbidae has 3 species but families like Musciapidae, Falconidae, Scolopacidae, Charadriidae, Upupidae and Anatidae each represented by single species. There are 20 avian species found in sanctuary which are listed in Schedule IV of the Wildlife Protection Act, 1972.

**Key words:** Avifauna, Chandertal, Himachal Pradesh, sanctuary, wetland

### **INTRODUCTION**

Of the 9800 species of aves globally, India harbours 1307 species and about 740 species of birds inhabit Himachal Pradesh. Maximum avifauna in the hilly state of India mainly confines to Shiwalic area and a few species are reported from cold desert area i.e., district of Lahaul Spiti and Kinnaur district (Besten, 2004; Mahabal, 2005). Seventy seven species of birds have been reported from Khajjiar Lake area (Singh and Banyal, 2013) and 95 species from Prashar Lake and its surrounding area (Singh *et al.*, 2014) situated in high altitude area of Himachal Pradesh. The lake freezes during winters and with snow from October to March while in summer, it is frequented by tourists.

The Chandertal Wildlife Sanctuary (WLS) being a Ramsar site and wetland of national importance situated 32°29'N latitude and 77°36'E longitude with altitude up to 4830 m above mean sea level falling in the 1 B Tibetan Plateau Biogeographic zone (Fig. 1). The lake exhibits half moon shaped rock basin hence called Chandertal Lake (4270 m a.m.s.l) formed by glacial melt in land locked depression with single outlet which drain down into Chandra river (Fig. 2). Lake with crystal clear water inhabits shrimps and larvae of trichoptera etc. A few semi permanent small land locked water reservoirs are also present in the vicinity of lake helps in wetland formation.

### **MATERIAL AND METHODS**

The stratified random sampling technique (Snedecore and Cochran, 1993) was followed for observing the birds. For this, different sites were monitored including main water body, banks of lake, surrounding pastures and rocky terrains of study area. The residential status was observed according to McKinnon and Philips (1993). The distant terrestrial as well as water birds were observed by 10×50 super Zenith field trismatic binocular and 1000 mm tele-lens of Questar make. The avian fauna was photographed with the help of Nikon D-80 camera with zoom telly lenses.



Fig. 1: Geographical location of Chandertal wetland and wildlife sanctuary

The field identifications were carried out with the help of field guides (Ali *et al.*, 1983; Grimmett *et al.*, 1998). The identifications were based on their morphological characters and not even a single bird was killed during this investigation. The nomenclature was assigned according to Manakadan and Pittie (2001).

## RESULTS

Among the chordates, avifauna dominates the sanctuary due to their diverse feeding habits, altitudinal as well as short and long range migrations. After insect fauna (44.06%), birds (34.74%) are represented by maximum 41 species belonging to 35 genera and 15 families (Table 1). These are spread over 7 orders with maximum 19 species of Passeriformes (16% of total fauna of the order) followed by Charadriiformes (5 spp., 4%), Falconiformes (5 spp., 4%), Galliformes (4 spp., 3%), Anseriformes (4 spp., 3%), Columbiformes (3 spp., 3%) and only one species of Coraciiformes (1%). Among avian diversity, the percentage composition of birds of different orders came to be almost 46% in Passeriformes, 12% each in Falconiformes and Charadriiformes, 10% each in Anseriformes and Galliformes, 7% in Columbiformes and 3% in Coraciiformes (Fig. 3 and 4).

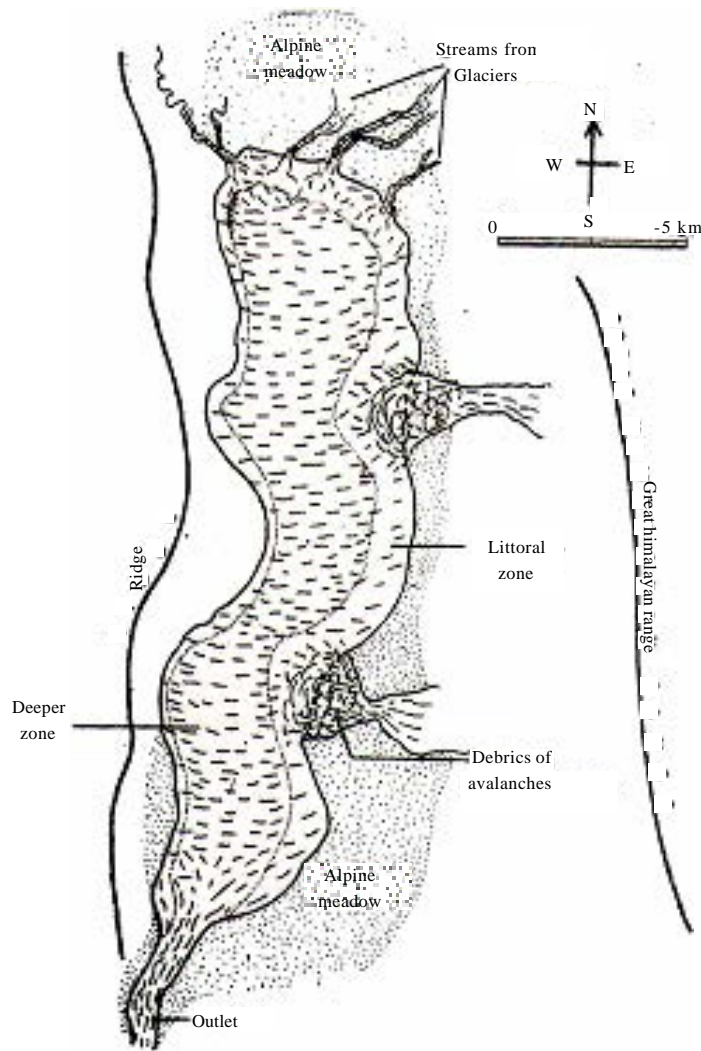


Fig. 2: Diagrammatic view of Chandertal Lake



Fig. 3: Number of bird species in various orders of class aves noticed in Chandertal WLS

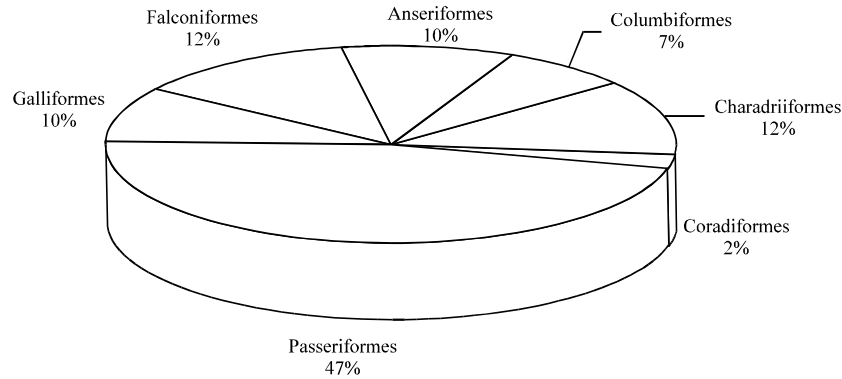


Fig. 4: Percentage composition of various orders in aves reported from Chandertal lake

Table 1: Systematic list of birds noticed in Chandertal WLS

Order	Family	Scientific name	Common name
Anseriformes	Anatidae	<i>Tadorna ferruginea</i> Pallas	Brahminy shelduck
"	"	<i>Anus poecilorhyncha</i> Forester	Spot billed duck
"	"	<i>Anas clypeata</i> L.	Northern shoveller
"	"	<i>Aythya fuligula</i> (L.)	Tufted duck
Columbiformes	Columbidae	<i>Columba livia</i> Gmelin	Blue rock pigeon
"	"	<i>C. rupestris</i> Pallas	Hill pigeon
"	"	<i>C. leuconota</i> Vigors	Snow pigeon
Charadriiformes	Scelopacidae	<i>Gallinago solitaria</i> Hodgson	Solitary snipe
"	"	<i>Calidris minuta</i> (Leisler)	Little stint
"	Charadriidae	<i>Charadrius mongolus</i> Pallas	Lesser sand plover
"	"	<i>Vanellus indicus</i> (Boddaert)	Red wattled lapwing
"	Recurvirostridae	<i>Himantopus himantopus</i> (L.)	Black winged stilt
Coraciiformes	Upupidae	<i>Upupa epops</i> L.	Hoopoe
Passeriformes	Corvidae	<i>Pyrrhocorax pyrrhocorax</i> (L.)	Red billed chough
"	"	<i>P. graculus</i> (L.)	Yellow billed chough
"	"	<i>Corvus corax</i> L.	Common raven
"	"	<i>Corvus macrorhynchos</i> Wagler	Jungle crow
"	Passeridae	<i>Montifringilla adamsi</i> Adams	Tibetan snow finch
"	"	<i>Prunella strophiata</i> (Blyth)	Rufous breasted accentor
"	"	<i>P. collaris</i> Scop.	Alpine accentor
"	"	<i>Passer domesticus</i> (L.)	House sparrow
"	Fringillidae	<i>Carduelis flavirostris</i> (L.)	Twite
"	"	<i>Serinus pusillus</i> (Pallas)	Fire fronted serine
"	"	<i>Leucosticte nemoricola</i> (Hodg.)	Plain mountain finch
"	"	<i>L. brandti</i> Bonaparte	Brandt.s mountain finch
"	"	<i>Emberiza cia</i> L.	Rock bunting
"	Motacillidae	<i>Motacilla Flava</i> L.	Yellow wagtail
"	"	<i>M. alba</i> L.	White wagtail
"	"	<i>M. citreola</i> Pallas	Citrine wagtail
"	Muscicapidae	<i>Phoenicurus erythrogaster</i> Gutdenstadt	White winged red start
"	Muscicapidae	<i>P. ochruro</i> (Gmelin)	Black red start
"	Alaudidae	<i>Eremophila alpestris</i> (L.)	Horned lark

Table 1: Continue

Order	Family	Scientific name	Common name
Galliformes	Phasianidae	<i>Lerwa lerwa</i> Hodgson	Snow partridge
"	"	<i>Tetraogallus tibetanus</i> Gould	Tibetan snow cock
"	"	<i>T. himalayaensis</i> Gray	Himalayan snow cock
"	"	<i>Alectoris chukar</i> (Gray)	Chukar
Falconiformes	Accipitridae	<i>Gyps himalayensis</i> Hume	Himalayan griffon
"	"	<i>Accipiter badius</i> (Gmelin)	Shikra
"	"	<i>Aquila chrysaetos</i> (L.)	Golden eagle
"	"	<i>Gypaetus barbatus</i> (L.)	Lammergeir
"	Falconidae	<i>Falco tinnunculus</i> L.	Common kestrel

Among total avifauna, order Passeriformes represent maximum 19 species belonging to 12 genera spread over 6 families followed by Charadriiformes and Falconiformes with 5 species each.

Red wattled lapwing, blue rock pigeon and hoopoe were found to be altitudinal migrant while bearded vulture, shikra and chukor observed to be seasonal migrant. Wide grassy meadows interrupted by vegetation rich marshy smaller water bodies present in sanctuary are perfect breeding grounds for some high altitude birds. Brahminy shel duck, horned lark, white winged red start, billed chough, black red start, chukor, lesser sand plover, white and yellow wagtail birds were observed with their juveniles in the sanctuary area which justifies the presence of their breeding nests nearby.

Spot billed duck, shikra, red wattled lapwing and solitary snipe were observed once in whole field study tours. Brahminy shel duck is thought to be spiritual by ethnic community and thus no harms to the birds. These practices made them less shy and wander freely around tent areas. Passeriformes represented by 6 families (Corvidae, Passeridae, Fringilidae, Motacillidae, Muscicapidae and Alaudidae); Charadriiformes by 3 families (Scolopacidae, Charadriidae and Recurvirostridae); Falconiformes by 2 families (Accipitridae and Falconidae) and rest of orders by single family each. The relative abundance of horned lark was maximum followed by white winged red start, citrine wagtail, yellow wagtail, white wagtail, yellow billed chough and black red start.

Birds of sanctuary which are resident and endemic to Himalayas include *Emberiza cia*, *Serinus pusillus*, *Leucosticte nemoricola*, *Leucosticte brandti*, *Carduelis flavirostris*, *Montifringilla adamsi*, *Prunella strophiata*, *Pyrrhonoras graculus*, *P. pyrrhonorax*, *Corvus macrorhynchus*, *Corvus corax*, *Columba leuconota*, *Corvus rupestris*, *Alectoris chukar*, *Tetraogallus himalayensis*, *Lerwa lerwa*, *Gypaetus barbatus*, *Gyps himalayensis*, *Accipiter badius* and *Aquila chrysaetos*.

The avian species found in sanctuary which are listed in Schedule IV of the Wildlife Protection Act, 1972 are *Corvus corax*, *Pyrrhonorax pyrrhonorax*, *Pyrrhonoras graculus*, *Passer domesticus*, *Montifringilla adamsi*, *Leucosticte nemoricola*, *Serinus pusillus*, *Emberiza cia*, *Phoenicurus erythrogaster*, *P. ochruros*, *Motacilla citreola*, *Motacilla alba*, *Erymophila alpestris*, *Columba leuconota*, *C. rupestris*, *Alectoris chukar*, *Tetraogallus himalayensis*, *Falco tinnunculus*, *Gyps himalayensis* and *Tadorna ferruginea*.

Biosphere reserve in eastern himalayas also possess threatened species of birds like himalayan bearded vulture, tibetan snow cock, golden eagle etc.

## DISCUSSION

India, a megadiverse country is home to 13.66% of global avian species documented so far. Decline in bird species in India is quite rapid. The number of threatened bird species in 2008 was 149 now increased to 154 of which 15 species have been categorized as critically threatened (IUCN, 2013).

The reporting of 41 species of birds belonging to 35 genera and 15 families from the Chandertal WLS are in accordance with the observations of Tak *et al.* (2008) who studied status and diversity of birds in Laddakh (almost similar climatic and geographic conditions as in study area) and reported 310 birds species with maximum 157 species belonging to Passeriformes followed by Charadriiformes (47 spp.), Falconiformes (28 spp.) and Anseriformes with 25 species. Snow partridge, tibetan snowcock, chukor, lesser sand plover, solitary snipe, black winged stilt, arctic tern, blue rock pigeon, hill pigeon, snow pigeon, common hoopoe, horned lark, black red start, white-capped red start, rock bunting, fire-fronted serin, twite, house sparrow, tibetan snow finch, red-billed chough, yellow-billed chough and common raven are found to be common in laddakh and chandertal WLS.

In similar studies, Saikia *et al.* (2008) reported 62 species from Pangi valley (altitude upto 6150 m) of Himachal Pradesh including 13 species (chukor, blue rock pigeon, hill pigeon, snow pigeon, common hoopoe, rock bunting, red-billed chough, yellow-billed chough, house sparrow, himalayan griffon, lammergeier, common kestrel, yellow wagtail) common to chandertal WLS.

Price *et al.* (2003) noted that there was a high species turnover across the elevation gradients and the bird communities separated by 1 km altitude shows some variations. They concluded these variations in bird communities due to various climatic factors. Of the total 783 himalayan bird species, they observed 154 breed at an elevation above 2000 m.

Mahabal (2005) gave district wise list of avifauna of Himachal Pradesh and reported 447 species belonging to 232 genera and 29 families under 17 orders. But the altitudinal ranges of 6 species were given below 3500 m while these species were observed at an elevation above 4200 m in study area. Thus from such altitude, some of these may be new records. The 41 avian species observed in sanctuary (38.56 sq. km area) contributes 9.17% of total avifauna of Himachal Pradesh (740 spp.) and 5.19% of Indian avifauna (1307 species).

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