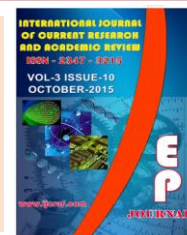




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Avifaunal Diversity of Sirmaur District, Himachal Pradesh, India

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A B S T R A C T

The avifaunal diversity at four study sites (Nahan, Renuka, Simbalwara WLS and Majra) of Sirmaur district in Himachal Pradesh was explored during three visits (2 springs and 1 winter) in 2008 and 2010. In total, 141 species of birds belonging to 12 orders and 36 families were recorded (Nahan: 45, Renuka: 73, Simbalwara Wildlife Sanctuary: 59 and Majra: 64). The highest number of species were found in order Passeriformes (87) 61.7% followed by Ciconiiformes (19) 13.4% and least number (1) 0.70% number in other 2 orders. The highest number of species were found in family Muscicapidae (24) 17.0% followed by Corvidae (17) 12.0% and Passeridae (11) 7.8% and least number (1) 0.70% in other 11 families. The relative abundance of species was Very Common (14), Common (57), Uncommon (55) and Rare (15). The seasonal status of species was Spring (113) and Winter (98). Of 141 species of present study, 26 species were found further additions to bird lists of Renuka; 3 species to Simbalwara Wildlife Sanctuary and 8 species to Sirmaur district. One globally threatened (IUCN status) species White-rumped Vulture *Gyps bengalensis* (Critical) was found to have relative abundance as Uncommon.

Introduction

There are about 10,000 living species of birds in the world. Birds are diverse in nature; vary in their habitats, abundance and distribution throughout the world. Bird diversity varies greatly from one place to another and more diversity is often found in tropics than temperate, alpine or polar regions. Their habitat preferences are more or less specialized and they occupy higher trophic levels in food webs. They vary in their abundance, as some species occur in

large numbers while others are represented by few individuals only. Some birds have small breeding ranges in particular region only while others undertake long distance annual migrations throughout the world. Their distribution reflects many other wildlife groups. Birds serve as valuable indicators of changes in biodiversity and environment of the world (Birdlife International, 2015).

India has more than 1250 species of birds (Grimmett et al., 1999; Kazmierczak and Perlo, 2000).

Himachal Pradesh supports more than 500 to 600 species of birds (Ali and Ripley, 1968-1999; Singh et al., 1990; Grimmett and Inskipp, 2003; Besten, 2004; Mahabal, 2005; Thakur and Mattu, 2012; Singh, 2015). Some of the checklists of birds of Himachal Pradesh are as follows: Ali and Ripley (1968-1999) mentioned about birds recorded in Himachal Pradesh in their book "Handbook of Birds of India and Pakistan, together with those of Bangladesh, Nepal, Bhutan and Srilanka-10 Vols". Singh et al. (1990) enlisted about 358 species of birds from 2 National Parks and 29 Wildlife Sanctuaries in Himachal Pradesh. Grimmett and Inskipp (2003) enlisted about 572 species in Himachal Pradesh in their book "Birds of Northern India". Besten (2004) reported 555 species of birds in Kangra in his book "Birds of Kangra" including previous lists of Hingston (1921), Whister (1926), Panday (1987) and other sources. Mahabal (2005) made a systematic list of 447 species of birds recorded in Himachal Pradesh in publication of Zoological Survey of India as "Fauna of Western Himalaya, Part -2". Thakur and Mattu (2012) reported 322 species in their book "Birds of Himachal Pradesh". The author (Singh, 2015) recorded 308 species (study carried out during 2007 to 2012) in his book "Birds Recorded during a Study in Himachal Pradesh".

The avifauna of Sirmour district has been studied in past by some workers (Mahabal, 2000, 2005; Bhargav et al., 2007; Ghosh et al., 2007; Sharma et al., 2009). Mahabal, (2000) reported 103 species in Renuka Wetland (surveys were carried out during 1991-92). Mahabal (2005) made a systematic list of 148 species of Sirmour

district. Bhargav et al. (2007) reported 117 species in Simbalwara Wildlife Sanctuary. Ghosh et al. (2007) enlisted 131 species in Simbalwara Wildlife Sanctuary. Sharma et al. (2009) recorded 153 species in Simbalwara Wildlife Sanctuary and compiled a total list of 210 bird species (including lists of earlier workers viz. Bhargav et al, 2007 and Ghosh et al, 2007).

As most of these studies were confined to Simbalwara and Renuka Wildlife Sanctuaries only, therefore present study was undertaken with motive of exploring additional sites (Nahan and Majra of Poanta valley) of Sirmour district to see variation in bird diversity. A preliminary checklist of this area has already been reported by author (Singh, 2011, 2015) and present study aims to give further information about relative abundance, seasonal status and habitat of birds.

Material and Methods

Study area

Sirmour district (30°22'30" to 31°01'20" N, 77°01'12" to 77°49'40" E) lies in south-eastern part of Himachal Pradesh in Shiwalik region of Himalayas (Fig.1). The areas of Sirmour district at lower elevations (Paonta valley - Simbalwara and Majra) lie in Sub-humid tropical zone and at higher elevations (Nahan and Renuka) in Humid sub-tropical Zone. Sirmour district has total area of 2825 km². The temperature of district varies from minimum 1⁰C (winter) to maximum 46⁰ C (summer). Two important sites viz. Renuka Lake Wildlife Sanctuary has an area of 4.03 km² with 2000 mm of annual rainfall; and Simbalwara Wildlife Sanctuary has an area of 19.03 km² with 1260 mm of annual rainfall (Balokhra, 2010).

The vegetation and habitats of study area mainly consists of dry mixed deciduous forests, Sal mixed broadleaved forests, coniferous (pine) forests, scrubs, bushes, ponds, gardens, streams, rivers and agricultural lands. The sites located within an altitudinal range of 350 meters to 920 meters above mean sea level were selected for observation of birds: (920 m- Nahan town including Villa Round and Chidavali; 670 m- Renuka Lake including Wildlife Sanctuary area, Giri river and Dadahu; 450 m- Simbalwara Wildlife Sanctuary around Kaludev Forest surroundings and 350 m- Majra village including Bata stream surroundings). From central point of Nahan, distances of these sites are: 40 km (Renuka), 32 km (Majra) and 48 km (Simbalwara Wildlife Sanctuary).

Methods

Because of large area of study sites, stratified sampling technique was adopted to include all different kinds of habitats of study area by selecting a representative sample of each habitat. Each site was searched along routes of roads, paths and other accessible ways in the periphery of about 4–6 km. Three visits (2 springs and 1 winter) were made to four study sites (Nahan, Renuka, Simbalwara WLS and Majra) of Sirmaur district during 2008 (Spring) and 2010 (spring and winter). Minimum 4 days were given to each site during any visit. The observations were done during morning (7.00–10.30 hrs) and evening times (15.00–17.00 hrs) in sufficient sunlight at local time. The relative abundance of bird species was estimated on the basis of frequency of sightings and number of birds seen. The seasonal status of bird species was evaluated on the basis of presence or absence of birds during different seasons of year. The birds were observed visually by binocular (7x35mm) and

sometimes photographed for aid in identification by digital camera (12x optical zoom). The birds were identified with the help of field guides: *Pocket Guide to the Birds of the Indian Subcontinent* (Grimmett *et al.*, 1999); and *A Field Guide to the Birds of India, Srilanka, Pakistan, Nepal, Bhutan, Bangladesh and the Maldives* (Kazmierczak and van Perlo, 2000). Nomenclature and classification follows *An Annotated Checklist of the Birds of the Oriental Region* (Inskipp *et al.*, 1996).

Results and Discussion

In total, 141 species of birds belonging to 12 orders and 36 families were recorded in Sirmaur district (Table 1). The total number of species observed in 36 families were (Fig. 2): Phasianidae (2) 1.4%, Anatidae (3) 2.1%, Picidae (5) 3.5%, Megalaimidae (2) 1.4%, Bucerotidae (1) 0.70%, Upupidae (1) 0.70%, Coraciidae (1) 0.70%, Alcedinidae (1) 0.70%, Halcyonidae (2) 1.4%, Cerylidae (2) 1.4%, Meropidae (1) 0.70%, Cuculidae (1) 0.70%, Centropodidae (1) 0.70%, Psittacidae (2) 1.4%, Columbidae (7) 4.9%, Rallidae (3) 2.1%, Scolopacidae (4) 2.8%, Charadriidae (4) 2.8%, Accipitridae (5) 3.5%, Phalacrocoracidae (2) 1.4%, Ardeidae (4) 2.8%, Laniidae (2) 1.4%, Corvidae (17) 12.0%, Muscicapidae (24) 17.0%, Sturnidae (6) 4.2%, Sittidae (2) 1.4%, Certhiidae (1) 0.70%, Paridae (1) 0.70%, Hirundinidae (3) 2.1%, Pycnonotidae (3) 2.1%, Cisticolidae (3) 2.1%, Zosteropidae (1) 0.70%, Sylviidae (10) 7.0%, Nectariniidae (2) 1.4%, Passeridae (11) 7.8% and Fringillidae (1) 0.70%.

The highest number of species were found in order Passeriformes (87) 61.7% followed by Ciconiiformes (19) 13.4% and least number (1) 0.70% number in other 2 orders. The highest number of species were found in family Muscicapidae (24) 17.0% followed

by Corvidae (17) 12.0% and Passeridae (11) 7.8% and least number (1) 0.70% in other 11 families.

The relative abundance (Fig. 3) of species was Very Common (14), Common (57), Uncommon (55) and Rare (15). The highest number of species was found in common followed by uncommon, rare and very common.

The seasonal status (Fig. 4) of species was Spring (113) and Winter (98). The spring season was found dominant for bird diversity than winter.

The total number of species found in four study sites were: 45 (Nahan), 73 (Renuka), (59) Simbalwara Wildlife Sanctuary and (64) Majra (Table 1). Of 141 species, 16 species (Common Hoopoe, Rock Pigeon, Spotted Dove, Indian Pond Heron, Rufous Treepie, Large-billed Crow, Blue Whistling Thrush, Oriental Magpie Robin, Indian Robin, Common Myna, Great Tit, Himalayan Bulbul, Red-vented Bulbul, Oriental White Eye, Grey-hooded Warbler, House Sparrow) were found common in all study sites (Nahan, Renuka, Simbalwara and Majra). This indicates that these species

have common occurrence in Sirmaur district.

In comparison to previous records (Bhargav *et al.*, 2007; Ghosh *et al.*, 2007), 3 species [Desert Wheatear (Fig. 5), Brownish-flanked Bush Warbler and White-capped Bunting] were found further additions to bird list of Simbalwara Wildlife Sanctuary.

In comparison to previous records (Mahabal, 2000), 26 species of present study were found further additions to bird list of Renuka Wildlife Sanctuary [Gadwall, Mallard, Fulvous-breasted Woodpecker, Black-rumped Flameback, Greater Flameback, Stork-billed kingfisher (Fig. 6), Crested Kingfisher, Emerald Dove, Yellow-footed Green Pigeon, Common Moorhen, Common Coot, Great Cormorant, Bay-backed Shrike, Tickell's Thrush, Dark-throated Thrush, Slaty-blue Flycatcher, White-tailed Rubythroat, Blue-capped Redstart, Black Redstart, White-capped Water Redstart, Plumbeous Water Redstart, Dusky Crag Martin, Black-chinned Babbler, Water Pipit, Buff-bellied Pipit and White-capped Bunting] were found further additions to birdlist of Renuka Wildlife Sanctuary.

Table. Systematic list of birds of Sirmaur District

SN	Common and Scientific Names (with orders and families)	Study Sites	Habitats	Seasonal Status	Rel. Abu.
	GALLIFORMES Phasianidae				
1	Red Junglefowl <i>Gallus gallus</i>	N, R, S	MF, BF	PW	C
2	Kalij Pheasant <i>Lophura leucomelanos</i>	R	MF, BF	PW	UC
	ANSERIFORMES Anatidae				
3	Ruddy Shelduck <i>Tadorna ferruginea</i>	M	St	W	SC
4	Gadwall <i>Anas strepera</i>	R	Lk	W	C
5	Mallard <i>Anas platyrhynchos</i>	R	Lk	W	C
	PICIFORMES Picidae				

6	Grey-capped Pygmy Woodpecker <i>Dendrocopos canicapillus</i>	N,S	BF	PW	UC
7	Fulvous-breasted Woodpecker <i>Dendrocopos macei</i>	R	BF	W	UC
8	Lesser Yellownape <i>Picus chlorolophus</i>	R	MF,CF	W	UC
9	Black-rumped Flameback <i>Dinopium benghalense</i>	R,S	BF	W	C
10	Greater Flameback <i>Chrysocolaptes lucidus</i>	N,R	BF	PW	SC
	Megalaimidae				
11	Great Barbet <i>Megalaima virens</i>	S	Gr, BF	P	C
12	Brown-headed Barbet <i>Megalaima zeylanica</i>	N, R, S	Gr, Ga, BF	P	UC
	BUCEROTIFORMES				
	Bucerotidae				
13	Indian Grey Hornbill <i>Ocyrceros birostris</i>	R, S	Gr, Ga, BF	PW	C
	UPUPIFORMES				
	Upupidae				
14	Common Hoopoe <i>Upupa epops</i>	N, R, S, M	La, HH, Ga	PW	UC
	CORACIIFORMES				
	Coraciidae				
15	Indian Roller <i>Coracias benghalensis</i>	M	OA, Al, Sl	P	UC
	Alcedinidae				
16	Common Kingfisher <i>Alcedo atthis</i>	R, S	Ri	W	UC
	Halcyonidae				
17	Stork-billed Kingfisher <i>Halcyon capensis</i>	R	Lk	W	SC
18	White-throated Kingfisher <i>Halcyon smyrnensis</i>	R, S	Ri, Lk	PW	VC
	Cerylidae				
19	Crested Kingfisher <i>Megaceryle lugubris</i>	R	Ri	PW	C
20	Pied Kingfisher <i>Ceryle rudis</i>	M	St	W	C
	Meropidae				
21	Green Bee-eater <i>Merops orientalis</i>	M, S	BF	P	C
	CUCULIFORMES				
	Cuculidae				
22	Asian Koel <i>Eudynamys scolopacea</i>	N, R, M	Ga, Gr	P	C
	Centropodidae				
23	Greater Coucal <i>Centropus sinensis</i>	R, M	Ga, Gr, Sl	PW	UC
	PSITTACIFORMES				
	Psittacidae				
24	Rose-ringed Parakeet <i>Psittacula krameri</i>	S, M	Ga, Gr, Al, HH	PW	C
25	Plum-headed Parakeet <i>Psittacula cyanocephala</i>	N, R	Ga, Gr, Al, HH	PW	C
	COLUMBIFORMES				
	Columbidae				
26	Rock Pigeon <i>Columba livia</i>	N, R, S, M	HH, Al, Ga, BF, MF	PW	VC
27	Oriental Turtle Dove <i>Streptopelia orientalis</i>	S	BF	P	UC
28	Laughing Dove <i>Streptopelia senegalensis</i>	S, M	BF, Al, Sl	P	UC
29	Spotted Dove <i>Streptopelia chinensis</i>	N, R, S, M	HH, Ga, BF, La, Al	PW	VC
30	Eurasian Collared Dove <i>Streptopelia decaocto</i>	M	Al, HH, Ga, Sl	P	C
31	Emerald Dove <i>Chalcophaps indica</i>	R	MF	W	SC
32	Yellow-footed Green Pigeon	N, R	BF, Ga, Gr	P	UC

	<i>Treron phoenicoptera</i>				
	GRUIFORMES				
	Rallidae				
33	White-breasted Waterhen <i>Amaurornis phoenicurus</i>	R, M	Lk, IC	PW	C
34	Common Moorhen <i>Gallinula chloropus</i>	R	Lk	PW	VC
35	Common Coot <i>Fulica atra</i>	R	Lk	W	C
	CICONIIFORMES Scolopacidae				
36	Common Redshank <i>Tringa tetanus</i>	M	St	W	UC
37	Common Greenshank <i>Tringa nabularia</i>	M	St	PW	UC
38	Green Sandpiper <i>Tringa ochropus</i>	M	St	PW	UC
39	Common Sandpiper <i>Actitis hypoleucos</i>	M	St	W	UC
	Charadriidae				
40	Black-winged Stilt <i>Himantopus himantopus</i>	M	St	W	C
41	Little Ringed Plover <i>Charadrius dubius</i>	M	St	PW	UC
42	River Lapwing <i>Vanellus duvaucelli</i>	R	Ri	W	UC
43	Red-wattled Lapwing <i>Vanellus indicus</i>	R, S, M	Ri, La	PW	C
	Accipitridae				
44	Black Kite <i>Milvus migrans</i>	N, R, M	HH, Gr, DS, OA	PW	C
45	White-rumped Vulture <i>Gyps bengalensis</i>	N	BF	PW	UC
46	Himalayan Griffon <i>Gyps himalayensis</i>	N	MF	PW	UC
47	Crested Serpent Eagle <i>Spilornis cheela</i>	S	BF	P	SC
48	Shikra <i>Accipiter badius</i>	N	Gr, BF	P	UC
	Phalacrocoracidae				
49	Little Cormorant <i>Phalacrocorax niger</i>	M	St	PW	C
50	Great Cormorant <i>Phalacrocorax carbo</i>	R	Lk	W	UC
	Ardeidae				
51	Little Egret <i>Egretta garzetta</i>	N, R, M	Po, Lk, St, Ri	PW	C
52	Intermediate Egret <i>Mesophoyx intermedia</i>	R	Lk	PW	UC
53	Cattle Egret <i>Bubulcus ibis</i>	M	St	P	C
54	Indian Pond Heron <i>Ardeola grayii</i>	N, R, S, M	Po, Lk, St, Ri	PW	C
	PASSERIFORMES				
	Laniidae				
55	Bay-backed Shrike <i>Lanius vittatus</i>	R	Sl, Bu	P	SC
56	Long-tailed Shrike <i>Lanius schach</i>	R, M	Sl, Bu	PW	C
	Corvidae				
57	Red-billed Blue Magpie <i>Urocissa erythrorhyncha</i>	N, R	BF, MF, CF	PW	C
58	Rufous Treepie <i>Dendrocitta vagabunda</i>	N, R, M, S	Ga, Gr, BF	PW	C
59	House Crow <i>Corvus splendens</i>	M	HH, DS, Al	PW	C
60	Large-billed Crow <i>Corvus macrorhynchos</i>	N, R, S, M	HH, DS, CF, BF, MF, Al, Sl	PW	VC
61	Eurasian Golden Oriole <i>Oriolus oriolus</i>	N, S	Gr, Ga, BF	P	UC
62	Black-hooded Oriole <i>Oriolus xanthornus</i>	S	BF	P	UC
63	Small Minivet <i>Pericrocotus cinnamomeus</i>	S	BF	P	C
64	Long-tailed Minivet <i>Pericrocotus ethologus</i>	S	BF	W	UC
65	Yellow-bellied Fantail <i>Rhipidura hypoxantha</i>	R, S	BF	W	UC

66	White-throated Fantail <i>Rhipidura albicollis</i>	R	Bu, BF	PW	UC
67	White-browed Fantail <i>Rhipidura aureola</i>	S	Bu, BF	P	SC
68	Black Drongo <i>Dicrurus macrocercus</i>	M	He, Sl, Bu, Al	PW	VC
69	Ashy Drongo <i>Dicrurus leucophaeus</i>	N, R	Gr, Ga, BF	PW	C
70	Spangled Drongo <i>Dicrurus hottentottus</i>	S	BF	PW	C
71	Asian Paradise-flycatcher <i>Terpsiphone paradisi</i>	S	Ga, Gr, Bu	P	C
72	Common Woodshrike <i>Tephrodornis pondicerianus</i>	N, S	Ga, BF	P	UC
73	Common Iora <i>Aegithina tiphia</i>	N	Ga	W	SC
	Muscicapidae				
74	Blue Whistling Thrush <i>Myophonus caeruleus</i>	N, R, S, M	St, Ri, MF, BF, Lk	PW	C
75	Orange-headed Thrush <i>Zoothera citrina</i>	S	BF	P	UC
76	Scaly Thrush <i>Zoothera dauma</i>	S	BF	PW	C
77	Tickell's Thrush <i>Turdus unicolor</i>	R	MF, Ga	W	UC
78	Grey-winged Blackbird <i>Turdus boulboul</i>	S	BF	P	UC
79	Dark-throated Thrush <i>Turdus ruficollis</i>	R	Ga, Gr, La	P	C
80	Rufous-gorgeted Flycatcher <i>Ficedula strophciata</i>	S	BF, He	W	SC
81	Slaty-blue Flycatcher <i>Ficedula tricolor</i>	R, S	He, Bu, IC	PW	UC
82	Rufous-bellied Niltava <i>Niltava sundara</i>	S	BF, He	P	UC
83	Grey-headed Canary Flycatcher <i>Culicicapa ceylonensis</i>	N, S	Bu, BF, MF	PW	UC
84	White-tailed Rubythroat <i>Luscinia pectoralis</i>	R	Bu, Sl	W	UC
85	Bluethroat <i>Luscinia svecica</i>	M	Bu, Sl, La	W	UC
86	Oriental Magpie Robin <i>Copsychus saularis</i>	N, R, S, M	Ga, La, HH, Gr	PW	C
87	White-rumped Shama <i>Copsychus malabaricus</i>	S	BF, Bu	P	SC
88	Indian Robin <i>Saxicoloides fulicata</i>	N, R, S, M	Ga, La, Sl, Bu	PW	C
89	Blue-capped Redstart <i>Phoenicurus coeruleocephalus</i>	R	CF, MF	W	UC
90	Black Redstart <i>Phoenicurus ochruros</i>	R, S, M	Lk, La, Ga, St	P	UC
91	White-capped Water Redstart <i>Chaimarrornis leucocephalus</i>	N, R, S	Lk, Ri, St	PW	C
92	Plumbeous Water Redstart <i>Rhyacornis fuliginosus</i>	R, S	Lk, Ri, St	PW	C
93	Common Stonechat <i>Saxicola torquata</i>	M	He, Bu, Sl	P	C
94	Pied Bushchat <i>Saxicola caprata</i>	R, M	He, Sl, Bu	P	C
95	Grey Bushchat <i>Saxicola ferrea</i>	N, S	He, Sl, Bu	W	C
96	Brown Rock Chat <i>Cercomela fusca</i>	N, M	HH, La	PW	UC
97	Desert Wheatear <i>Oenanthe deserti</i>	S	Ro/So, St	P	SC
	Sturnidae				
98	Chestnut-tailed Starling <i>Sturnus malabaricus</i>	M	Al, Ga	P	UC
99	Brahminy Starling <i>Sturnus pagodarum</i>	M	Sl, La, Ga	PW	C
100	Asian Pied Starling <i>Sturnus contra</i>	M	La, Ga, Al	PW	C
101	Common Myna <i>Acridotheres tristis</i>	N, R, S, M	HH, La, Al, Sl, Ga	PW	VC
102	Bank Myna <i>Acridotheres ginginianus</i>	M	HH, Al, La	PW	C
103	Jungle Myna <i>Acridotheres fuscus</i>	M	HH, Al, La	P	C
	Sittidae				
104	Chestnut-bellied Nuthatch <i>Sitta castanea</i>	N	Gr, BF	P	UC
105	Wall Creeper <i>Tichodroma muraria</i>	M	So, St	W	SC
	Certhiidae				
106	Bar-tailed Treecreeper <i>Certhia himalayana</i>	S	BF	PW	UC

	Paridae				
107	Great Tit <i>Parus major</i>	N, R, S, M	BF, MF, CF, Sl, HH, Ga, Al	PW	VC
	Hirundinidae				
108	Dusky Crag Martin <i>Hirundo concolor</i>	R	HH	P	UC
109	Barn Swallow <i>Hirundo rustica</i>	N, R, M	HH, La	P	C
110	Red-rumped Swallow <i>Hirundo daurica</i>	M	HH, La	P	C
	Pycnonotidae				
111	Himalayan Bulbul <i>Pycnonotus leucogenys</i>	N, R, S, M	Sl, Bu, BF, MF	PW	VC
112	Red-vented Bulbul <i>Pycnonotus cafer</i>	N, R, S, M	Sl, Bu, BF, MF	PW	VC
113	Black Bulbul <i>Hypsipetes leucocephalus</i>	R, S	BF, MF	PW	UC
	Cisticolidae				
114	Grey-breasted Prinia <i>Prinia hodgsonii</i>	N, R	He, Bu, Sl	PW	C
115	Plain Prinia <i>Prinia inornata</i>	M	He	PW	UC
116	Ashy Prinia <i>Prinia socialis</i>	M	He, Bu	PW	C
	Zosteropidae				
117	Oriental White Eye <i>Zosterops palpebrosus</i>	N, R, S, M	Bu, BF, MF	PW	VC
	Sylviidae				
118	Brownish-flankd Bush Warbler <i>Cettia fortipes</i>	S	He, Bu	P	UC
119	Common Tailorbird <i>Orthotomus sutorius</i>	N, R	Bu, Ga	PW	C
120	Grey-hooded Warbler <i>Seicercus xanthoschistos</i>	N, R, S, M	BF, MF, CF, Ga, Gr, Bu	PW	VC
121	Puff-throated Babbler <i>Pellorneum ruficeps</i>	S	Bu	PW	C
122	Rusty-cheeked Scimitar Babbler <i>Pomatorhinus erythrognys</i>	R	Bu, MF	PW	UC
123	Black-chinned Babbler <i>Stachyris pyrrhops</i>	R	Bu, MF	PW	C
124	Yellow-eyed Babbler <i>Chrysomma sinense</i>	R	He, Sl, Bu	P	C
125	Common Babbler <i>Turdoides caudatus</i>	M	He, Sl	P	C
126	Large Grey Babbler <i>Turdoides malcolmi</i>	M	Ga, He, La	PW	C
127	Jungle Babbler <i>Turdoides striatus</i>	N, R	BF, MF, Sl, Bu, La, Ga	PW	VC
	Nectariniidae				
128	Purple Sunbird <i>Nectarinia asiatica</i>	N, M	Ga, Sl, Gr	P	UC
129	Crimson Sunbird <i>Aethopyga siparaja</i>	S	Ga	P	UC
	Passeridae				
130	House Sparrow <i>Passer domesticus</i>	N, R, S, M	HH, Bu, La	PW	VC
131	Chestnut-shouldered Petronia <i>Petronia xanthocollis</i>	M	La, Bu	P	UC
132	White Wagtail <i>Motacilla alba</i>	R, M	Lk, St, Ri, La	PW	C
133	White-browed Wagtail <i>Motacilla maderaspatensis</i>	R, M	Lk, St, Ri, La	PW	C
134	Yellow Wagtail <i>Motacilla flava</i>	M	St	P	SC
135	Grey Wagtail <i>Motacilla cinerea</i>	N, R, S	Po, Ri, St, Lk,	PW	UC
136	Paddyfield Pipit <i>Anthus rufulus</i>	M	La, Al	PW	C
137	Water Pipit <i>Anthus spinoletta</i>	R	Ri	W	SC
138	Buff-bellied Pipit <i>Anthus rubescens</i>	R	Ri	W	SC
139	Red Avadavat <i>Amandava amandava</i>	M	He, Bu	PW	UC
140	Scaly-breasted Munia <i>Lonchura punctulata</i>	N	La, Al, He	P	UC
	Fringillidae				
141	White-capped Bunting <i>Emberiza stewarti</i>	R, S	MF, La	P	UC

Figure.1 Map showing location of Study Sites (N: Nahan, R: Renuka, S: Simbalwara WLS, M: Majra) in Sirmour district of Himachal Pradesh (Map Source: www.mapsofindia.com)

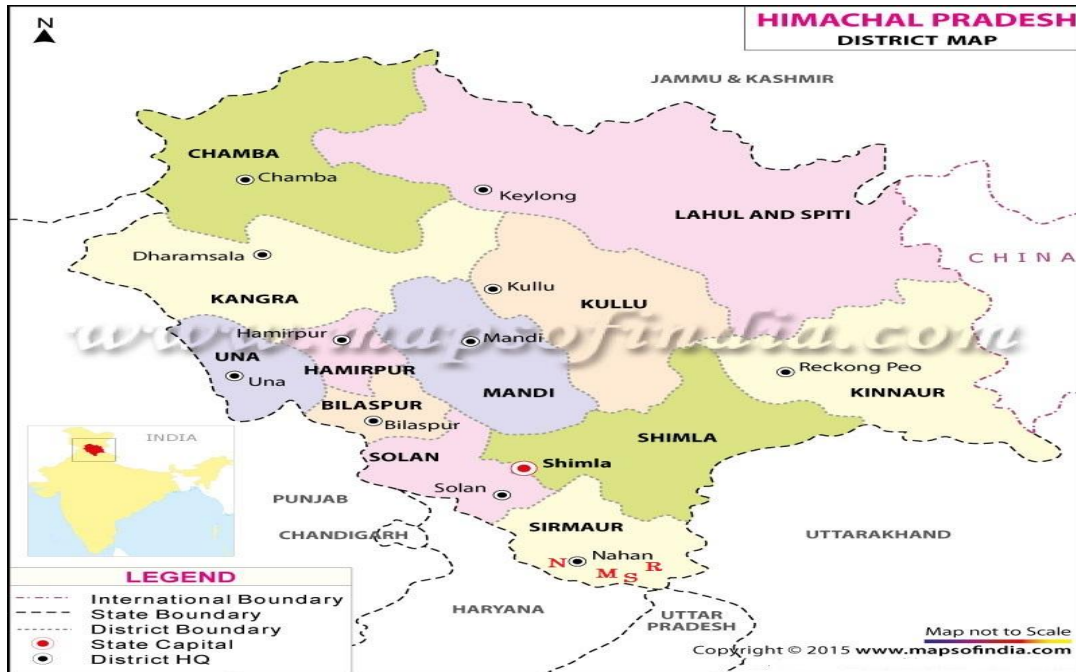


Figure.2 Family-wise distribution of bird species in Sirmour district

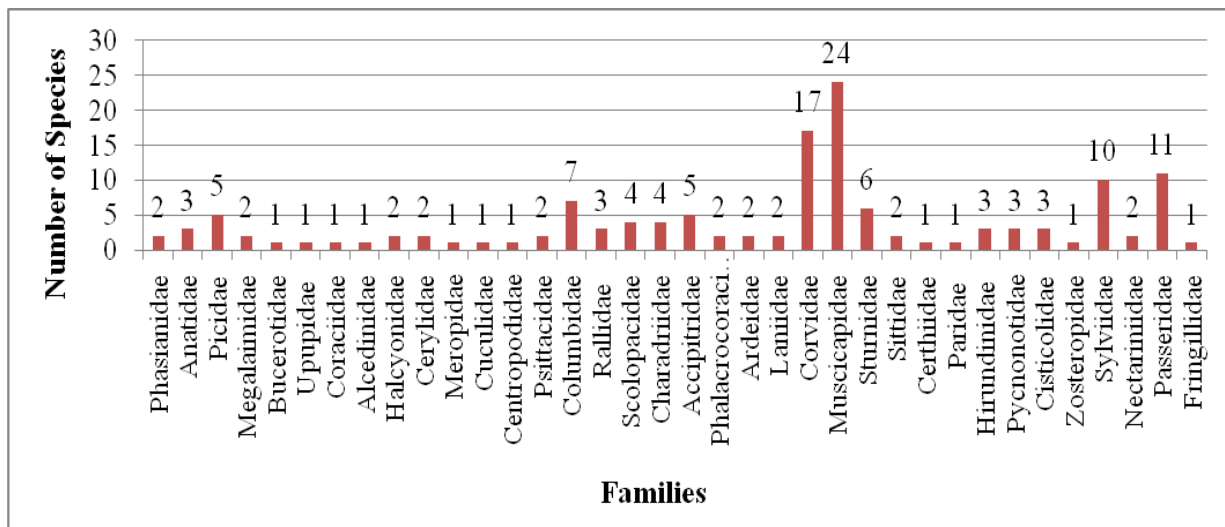


Figure.3 Relative abundance of bird species in Sirmaur district

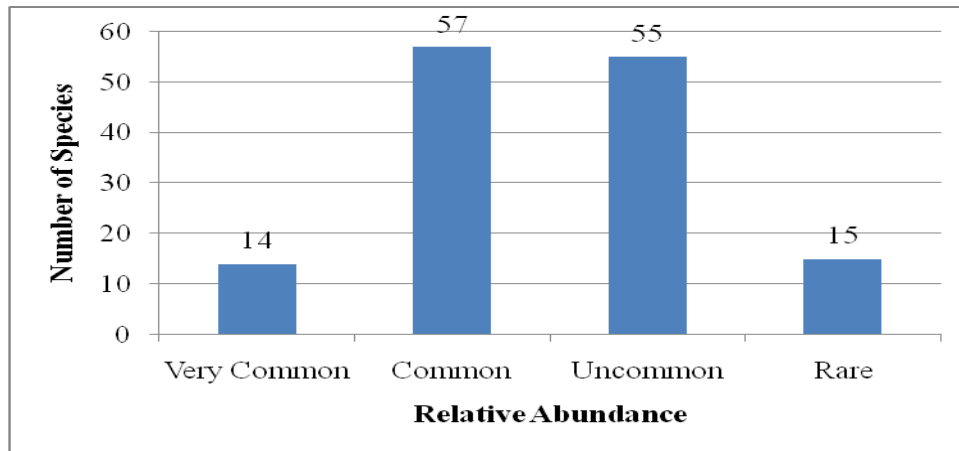


Figure.4 Seasonal status of bird species in Sirmaur district

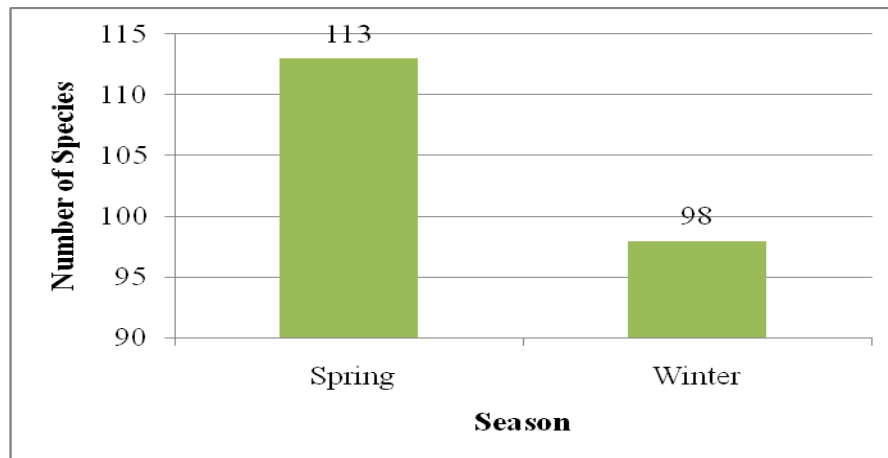


Figure.5 Desert Wheatear *Oenanthe deserti* (Simbalwara Wildlife Sanctuary)



Figure.6 Stork-billed kingfisher *Halcyon capensis* (Renuka Lake)



Figure.7 White-rumped Shama *Copsychus malabaricus* (Simbalwara Wildlife Sanctuary)



Further, in comparison to previous records (Mahabal, 2005), 8 species (Common Redshank, Black-winged Stilt, Brown Rock Chat, Chestnut-tailed Starling, Chestnut-

bellied Nuthatch, Common Babbler, Large Grey Babbler and Red Avadavat) were found further additions to bird list of Sirmaur district.

The globally threatened (IUCN status) species White-rumped Vulture *Gyps bengalensis* was found to have relative abundance as uncommon and thus, have scope of conservation in this area.

Abbreviations:

Table

SN: Serial Number, Rel. Abu.: Relative Abundance

Study sites

N: Nahan, R: Renuka, M: Majra, S: Simbalwara Wildlife Sanctuary

Seasonal status

P: Spring (March to April), W: Winter (December to February)

Relative abundance

VC: Very Common (Abundant number of sightings/Sightings in 80-100% of field visits)/ Abundant number of birds seen.

C: Common (Regular number of sightings but less than VC/ Sightings in 50-79% of field visits)/Moderate number of birds seen.

UC: Uncommon (Occasional sightings/ Sightings in 6-49% of field visits)/Less number of birds seen.

SC: Scarce/Rare (Hardly visible/ Sightings in 1-5% of field visits)/Few birds seen.

Habitats

Al: Agricultural Land, Sl: Scrub Land, MF: Mixed forest (broadleaved and coniferous) BF: Broadleaved Forest, CF: Coniferous Forest, HH: Human Habitations, Ga: Garden, Gr: Grove, OA: Open Area, He: Herb, DS: Dumping Site, Bu: Bush, Po: Pond, Ri/St: River/Stream, IC: Irrigation

Channel, Lk: Lake, La: Lawn, Ro/So: Rock/Stone

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