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RESEARCH ARTICLE

AVIFAUNAL DIVERSITY OF BHATTIYAT VALLEY (CHAMBA), HIMACHAL PRADESH, INDIA

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ABSTRACT

The avifaunal diversity of Bhattiyat valley in district Chamba of Himachal Pradesh was studied during 2008-2010 (opportunistic) and July 2011- June 2012 (monthly basis). In total, 135 species of birds belonging to 12 orders and 35 families were recorded. The highest number of species were found in order Passeriformes (80) 59.2 % followed by Ciconiiformes (17) 12.5 % and least number (1) in other 3 orders. The highest number of species were found in family Muscicapidae (24) 17.7 % followed by Passeridae (13) 9.6 % and least number (1) in other 11 families. The residential statuses of species were found as Resident (75) 55.5 %, Summer visitor (22) 16.3%, Winter visitor (21) 15.5%, Passage migrant (12) 8.8%, Vagrant (4) 2.9% and Uncertain (3) 2.2%. The relative abundances of species were found as Very Common (10) 7.4%, Common (41) 30.3%, Uncommon (65) 48% and Rare (18) 13.3%. Two globally threatened species were reported and their relative abundances were found as Uncommon (Egyptian Vulture *Neophron percnopterus*) and Common (White-rumped Vulture *Gyps bengalensis*). Two peculiar species Siberian Rubthroat *Luscinia calliope* and Hill Blue Flycatcher *Cyornis banyumas* were recorded as new additions to bird list of Himachal Pradesh. The other interesting rare species found was Collared Scops Owl *Otus bakkamoena*.

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INTRODUCTION

Birds are one of the best known and highly valued groups of species. There are nearly 10,000 living species of birds in the world which form an important part of biodiversity. Birds are found almost everywhere; however these species are unique in their ecology and distribution. Some bird species occur in large numbers while others are represented by few individuals only; some spend their entire lives in a limited area, while others undertake long distance annual migrations to cover large area of world. Further, birds also serve as indicators of environmental changes (Birdlife International, 2015). India has more than 1250 species of birds (Grimmett *et al.*, 1999; Kazmierczak and Perlo, 2000). Himachal Pradesh has more than 500 species of birds (Grimmett and Inskipp, 2003; Mahabal, 2005). The avifauna of Chamba district has been studied in past (Whistler, 1916; Mahabal, 1992 a, 1992 b; Thakur *et al.* 2002; Mahabal, 2005; Sakia *et al.*, 2008) and that of adjoining Kangra district (Whistler, 1926; Mahabal and Sharma, 1992; Besten, 2004; Mahabal 2005). Despite these studies, Bhattiyat valley of Chamba district remained unexplored; therefore, present study was undertaken.

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A preliminary checklist of this area has already been reported by author (Singh, 2011, 2015) and present study aims to give detailed information about relative abundance, habitats and status of bird diversity.

MATERIALS AND METHODS

Study Area

Bhattiyat Valley (32.25^o to 32.45^o N, 75.93^o to 76.14^o E) is a part of Bhattiyat tehsil in district Chamba of Himachal Pradesh (Fig.1). It lies in Humid sub-tropical zone of Shiwalik Himalayas in Himachal Pradesh. The climate of area is mild warm temperate and average annual rainfall is about 2000 mm. It is populous and fertile valley of Chamba district. The terrain is mainly hilly with less plain areas (Balokhra, 2010). The vegetation and habitats of area mainly consists of subtropical broadleaved forests mixed forests, coniferous (pine) forests, agricultural fields, scrubs, grassy slopes, bushes and streams. The areas located within an altitudinal range of about 800 meters to 1200 meters above mean sea level were selected for observation of birds. The following places or villages viz. Hatli, Thulel, Bangai, Kakroti, Lodhargarh, Dramnala, Sihunta, Kamla, Samote, Sahla, Nargada, Lahru, Chowari, Narola Galla, Beriyan and Kakira were covered for observation of birds. The road distance between two end points of study area from Hatli to Kakira is about 65 km.



Figure 1. Map showing location of Study Area (Bhattiyat Valley)

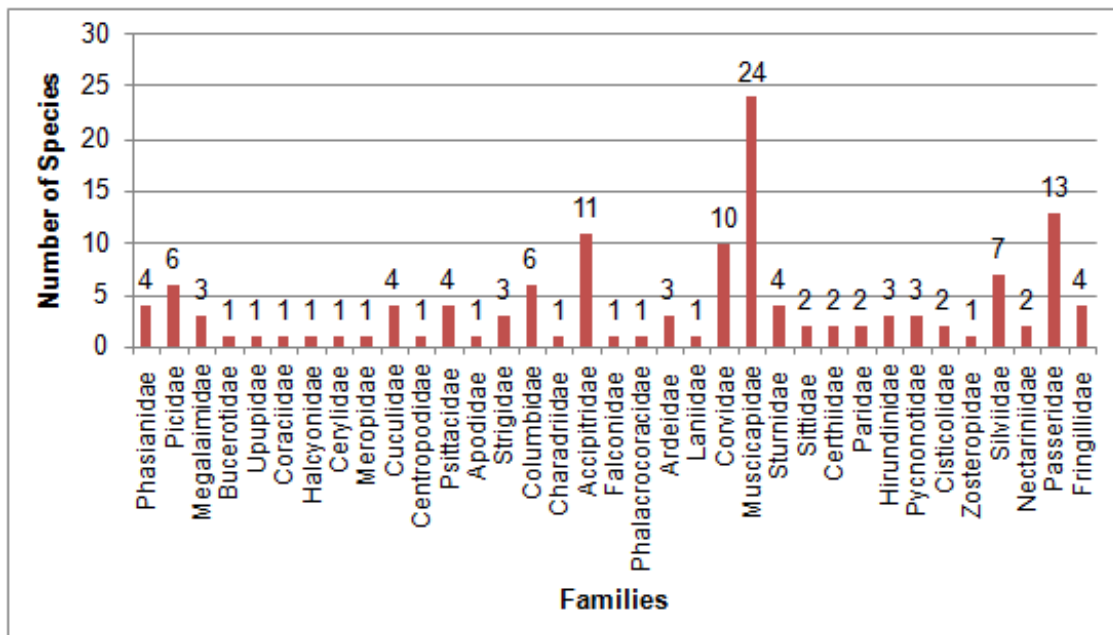


Figure 2. Family-wise distribution of bird species in Bhattiyat Valley

Table Systematic List of Birds of Bhattiyat Valley

Sn	Common and Scientific Names (with orders and families)	Habitats	Status	Rel. Abu.
Galliformes Phasianidae				
1	Black Francolin <i>Francolinus francolinus</i>	CF, MF, SI, GS	R	UC
2	Red Junglefowl <i>Gallus gallus</i>	MF, Bu, BF, CF	R	C
3	Kalij Pheasant <i>Lophura leucomelanos</i>	MF, CF, BF	R	C
4	Indian Peafowl <i>Pavo cristatus</i>	MF, BF	R	UC
PICIFORMES Picidae				
5	Speckled Piculet <i>Picumnus innominatus</i>	MF, CF	R	UC
6	Grey-capped Pygmy Woodpecker <i>Dendrocopos canicapillus</i>	MF, BF	R	C
7	Brown-fronted Woodpecker <i>Dendrocopos auriceps</i>	CF	R	VC
8	Fulvous-breasted Woodpecker <i>Dendrocopos macei</i>	MF, BF	R	UC
9	Grey-headed Woodpecker <i>Picus canus</i>	MF, CF, BF	R	C
10	Black-rumped Flameback <i>Dinopium benghalense</i>	BF, Gr, Ga	R	UC
Megalaimidae				
11	Great Barbet <i>Megalaima virens</i>	MF, CF	R	UC
12	Brown-headed Barbet <i>Megalaima zeylanica</i>	Ga, Gr, Al	R	UC
13	Blue-throated Barbet <i>Megalaima asiatica</i>	Ga, Gr, Al	R	UC
Bucerotiformes Bucerotidae				
14	Indian Grey Hornbill <i>Ocyroceros birostris</i>	Ga, Gr, BF	R	UC
Upupiformes upupidae				
15	Common Hoopoe <i>Upupa epops</i>	La, Al, Ga, MF	R	UC
Coraciiformes Coraciidae				
16	Indian Roller <i>Coracias benghalensis</i>	OC, Al	S	SC
Halcyonidae				
17	White-throated Kingfisher <i>Halcyon smyrnensis</i>	St, Al	R	C
Cerylidae				
18	Crested Kingfisher <i>Megaceryle lugubris</i>	St	R	UC
Meropidae				
19	Green Bee-eater <i>Merops orientalis</i>	Al, SI, BF	SP	UC
Cuculiformes Cuculidae				
20	Pied Cuckoo <i>Clamator jacobinus</i>	Al, SI	P	UC
21	Common Hawk Cuckoo <i>Hierococcyx varius</i>	OC, Al	S	SC
22	Eurasian Cuckoo <i>Cuculus canorus</i>	OC, Al	S	UC
23	Asian Koel <i>Eudynamis scolopacea</i>	Ga, Gr, Al	R	C
Centropodidae				
24	Greater Coucal <i>Centropus sinensis</i>	SI	R	SC
Psittaciformes Psittacidae				
25	Alexandrine Parakeet <i>Psittacula eupatria</i>	Ga, Gr, Al	R	C
26	Rose-ringed Parakeet <i>Psittacula krameri</i>	Ga, Gr, Al	R	C
27	Slaty-headed Parakeet <i>Psittacula himalayana</i>	CF, MF, Gr	R	UC
28	Plum-headed Parakeet <i>Psittacula cyanocephala</i>	Ga, HH, Al	R	C
Apodiformes Apodidae				
29	House Swift <i>Apus affinis</i>	HH	S (Br)	UC
Strigiformes Strigidae				
30	Collared Scops Owl <i>Otus bakkamoena</i>	Gr	U	SC
31	Asian Barred Owllet <i>Glaucidium cuculoides</i>	Gr, Ga, MF	R	UC
32	Spotted Owllet <i>Athene brama</i>	Gr	R	SC
Columbiformes Columbidae				
33	Rock Pigeon <i>Columba livia</i>	HH, Al, La	R	VC
34	Common Wood Pigeon <i>Columba palumbus</i>	Al, MF	V	SC
35	Oriental Turtle Dove <i>Streptopelia orientalis</i>	Al, SI	W	UC
36	Spotted Dove <i>Streptopelia chinensis</i>	Al, HH, MF, La, SI	R	VC
37	Red Collared Dove <i>Streptopelia tranquebarica</i>	Al	S	UC
38	Eurasian Collared Dove <i>Streptopelia decaocto</i>	Al, SI	S	UC
Ciconiiformes Charadriidae				
39	Red-wattled Lapwing <i>Vanellus indicus</i>	St, La	R	UC
Accipitridae				
40	Black-shouldered Kite <i>Elanus caeruleus</i>	OC	V	SC
41	Black Kite <i>Milvus migrans</i>	HH, DS, MF	R	C
42	Egyptian Vulture <i>Neophron percnopterus</i>	CF, DS, St	R	UC
43	White-rumped Vulture <i>Gyps bengalensis</i>	CF, St	R	C
44	Himalayan Griffon <i>Gyps himalayensis</i>	CF, St	R	C
45	Crested Serpent Eagle <i>Spilornis cheela</i>	MF	P	UC
46	Shikra <i>Accipiter badius</i>	MF, Gr, Ga	R	UC
47	Oriental Honey-buzzard <i>Pernis ptilorhynchus</i>	Gr	S	SC
48	White-eyed Buzzard <i>Butastur teesa</i>	CF	R	UC
49	Booted Eagle <i>Hieraetus pennatus</i>	OC	W	SC
50	Eurasian Hobby <i>Falco subbuteo</i>	CF	SP	SC
Falconidae				
51	Common Kestrel <i>Falco tinnunculus</i>	OC	R	UC
Phalacrocoracidae				
52	Little Cormorant <i>Phalacrocorax niger</i>	St	W	UC
Ardeidae				
53	Little Egret <i>Egretta garzetta</i>	St, Al	W	UC
54	Cattle Egret <i>Bubulcus ibis</i>	Al, Gl, S	P	UC
55	Indian Pond Heron <i>Ardeola grayii</i>	Cr	V	SC
Passeriformes Laniidae				

Continue....

	Passeriformes			
	Laniidae			
56	Long-tailed Shrike <i>Lanius schach</i>	Sl, Al, He	R	UC
	Corvidae			
57	Yellow-billed Blue Magpie <i>Urocissa flavirostris</i>	MF	R	C
58	Rufous Treepie <i>Dendrocitta vagabunda</i>	MF, Gr, Ga, HH	R	C
59	Large-billed Crow <i>Corvus macrorhynchos</i>	HH, DS, Al, La, MF	R	VC
60	Eurasian Golden Oriole <i>Oriolus oriolus</i>	Ga, Gr, Al	S	UC
61	Long-tailed Minivet <i>Pericrocotus ethologus</i>	CF	R	C
62	Yellow-bellied Fantail <i>Rhipidura hypoxantha</i>	CF	R	UC
63	White-throated Fantail <i>Rhipidura albicollis</i>	MF, Bu	R	UC
64	Black Drongo <i>Dicrurus macrocercus</i>	Al, He, Sl	R	C
65	Ashy Drongo <i>Dicrurus leucophaeus</i>	CF	S	UC
66	Asian Paradise-flycatcher <i>Terpsiphone paradisi</i>	Ga, Gr, Bu	S	C
	Muscicapidae			
67	Blue-capped Rock Thrush <i>Monticola cinclorhynchus</i>	CF	S	UC
68	Chestnut-bellied Rock Thrush <i>Monticola rufiventris</i>	MF	R	UC
69	Blue Whistling Thrush <i>Myophonus caeruleus</i>	St, Cr, MF	R	VC
70	Grey-winged Blackbird <i>Turdus boulboul</i>	Ga	W	SC
71	Dark-throated Thrush <i>Turdus ruficollis</i>	Ga, La	P	UC
72	Asian Brown Flycatcher <i>Mucicapa daurica</i>	CF	S (Br)	C
73	Slaty-blue Flycatcher <i>Ficedula tricolor</i>	Cr, MF	R	UC
74	Verditer Flycatcher <i>Eumyias thalassina</i>	CF	S	UC
75	Rufous-bellied Niltava <i>Niltava sundara</i>	CF, MF	R	UC
76	Hill Blue Flycatcher <i>Cyornis banyumas</i>	He, Gr	U	SC
77	Grey-headed Canary Flycatcher <i>Culicicapa ceylonensis</i>	MF	R	UC
78	Siberian Rubithroat <i>Luscinia calliope</i>	Bu	U	SC
79	White-tailed Rubithroat <i>Lucinia pectoralis</i>	Bu,GS	W	UC
80	Orange-flanked Bush Robin <i>Tarsiger cyanurus</i>	CF, MF	W	UC
81	Golden Bush-Robin <i>Tarsiger chrysaeus</i>	Bu	W	SC
82	Oriental Magpie Robin <i>Copsychus saularis</i>	Ga, La	R	C
83	Indian Robin <i>Saxicoloides fulicata</i>	Ga, Sl	R	C
84	Blue-capped Redstart <i>Phoenicurus coeruleocephalus</i>	CF	W	C
85	White-capped Water Redstart <i>Chaimarrornis leucocephalus</i>	St	R	C
86	Plumbeous Water Redstart <i>Rhyacornis fuliginosus</i>	St	R	C
87	Spotted Forktail <i>Enicurus maculatus</i>	St	R	UC
88	Common Stonechat <i>Saxicola torquata</i>	He, Bu, Sl	W	C
89	Pied Bushchat <i>Saxicola caprata</i>	He, Sl, Al, MF	S	VC
90	Grey Bushchat <i>Saxicola ferrea</i>	He, Bu, Sl	W	VC
	Sturnidae			
91	Chestnut-tailed Starling <i>Sturnus malabaricus</i>	La, Ga, Al,BF	R	UC
92	Brahminy Starling <i>Sturnus pagodarum</i>	Sl, Al	R	UC
93	Common Myna <i>Acridotheres tristis</i>	HH, La, Al, Sl, Gl	R	VC
94	Jungle Myna <i>Acridotheres fuscus</i>	Al, La, Sl	SP	C
	Sittidae			
95	Chestnut-bellied Nuthatch <i>Sitta castanea</i>	BF	R	UC
96	Wall Creeper <i>Tichodroma muraria</i>	Ro/So	R	UC
	Certhiidae			
97	Bar-tailed Treecreeper <i>Certhia himalayana</i>	CF, MF	R	C
98	Winter Wren <i>Troglodytes troglodytes</i>	CF	W	SC
	Paridae			
99	Great Tit <i>Parus major</i>	Ga, Gr, Al, Sl, HH, CF, BF	R	VC
100	Green-backed Tit <i>Parus monticolus</i>	MF	W	UC
	Hirundinidae			
101	Plain Martin <i>Riparia paludicola</i>	St	P	UC
102	Barn Swallow <i>Hirundo rustica</i>	HH, La	S	UC
103	Red-rumped Swallow <i>Hirundo daurica</i>	HH, La	S (Br)	C
	Pycnonotidae			
104	Himalayan Bulbul <i>Pycnonotus leucogenys</i>	Sl, MF, Al, Ga,	R	VC
105	Red-vented Bulbul <i>Pycnonotus cafer</i>	MF, Sl, Al, Ga	R	C
106	Black Bulbul <i>Hypsipetes leucocephalus</i>	MF	W	UC
	Cisticolidae			
107	Striated Prinia <i>Prinia criniger</i>	MF, Sl, GS	R	C
108	Grey-breasted Prinia <i>Prinia hodgsonii</i>	He, Bu, Sl, MF	R	C
	Zosteropidae			
109	Oriental White Eye <i>Zosterops palpebrosus</i>	Ga, Bu, Sl, Al MF	R	VC
	Sylviidae			
110	Common Tailorbird <i>Orthotomus sutorius</i>	Ga, Bu	R	C
111	Common Chiffchaff <i>Phylloscopus collybita</i>	Ga, MF	R	C
112	Grey-hooded Warbler <i>Seicercus xanthoschistos</i>	Ga, MF, Bu, Sl	R	VC
113	Puff-throated Babbler <i>Pellorneum ruficeps</i>	Bu, MF	R	C
114	Black-chinned Babbler <i>Stachyris pyrrhops</i>	Bu	R	C
115	Jungle Babbler <i>Turdoides striatus</i>	Ga, MF, Sl, Al	R	VC
116	Rufous Sibia <i>Heterophasia capistrata</i>	MF, Ga	W	UC
	Nectariniidae			
117	Purple Sunbird <i>Nectarinia asiatica</i>	Bu, Sl, He	S	UC

Continue....

118	Crimson Sunbird <i>Aethopyga siparaja</i>	Ga	R	UC
	Passeridae			
119	House Sparrow <i>Passer domesticus</i>	HH, La, Bu, Al, Sl	R	VC
120	Russet Sparrow <i>Passer rutilans</i>		W	UC
121	Chestnut-shouldered Petronia <i>Petronia xanthocollis</i>	Bu, Al, La	S	UC
122	White Wagtail <i>Motacilla alba</i>	St, Al, La, HH	P	C
123	White-browed Wagtail <i>Motacilla maderaspatensis</i>	St, Al, La, HH	P	C
124	Grey Wagtail <i>Motacilla cinerea</i>	St, La	R	UC
125	Richard's Pipit <i>Anthus richardi</i>	Al	P	UC
126	Paddyfield Pipit <i>Anthus rufulus</i>	La, Gl	P	UC
127	Olive-backed Pipit <i>Anthus hodgsoni</i>	Al	V	SC
128	Rufous-breasted Accentor <i>Prunella strophiaata</i>	Bu, Sl	W	UC
129	Black-throated Accentor <i>Prunella atrogularis</i>	Bu, Ga, Sl	W	UC
130	Baya Weaver <i>Ploceus philippinus</i>	Sl, Al	R	UC
131	Scaly-breasted Munia <i>Lonchura punctulata</i>	He, Al, La	S	C
	Fringillidae			
132	Yellow-breasted Greenfinch <i>Carduelis spinoides</i>	Ga, Al	W	UC
133	European Goldfinch <i>Carduelis carduelis</i>	Ga, La	W	SC
134	Crested Bunting <i>Melophus lathami</i>	Sl, He	S	UC
135	Rock Bunting <i>Emberiza cia</i>	MF, La	W	C

R: 75, S: 22, W: 21, PM: 11, V: 4, U: 3
 VC: 14, C: 38, UC: 65, SC: 18

Abbreviations

Table Rel. Abu. : Relative Abundance

Status

R: Resident, S: Summer Visitor, W: Winter Visitor, P: Passage Migrant (autumn and / spring), V: Vagrant, U: Uncertain, (Br): Breeding

Relative Abundance

VC: Very Common (Abundant number of sightings/ Sightings in 80-100 % of field visits
 C: Common (Regular sightings but less than VC/ Sightings in 50-79 % of field visits
 UC: Uncommon (Occasional sightings/ Sightings in 6-49 % of field visits
 SC: Scarce/ Rare (Hardly visible/ Sightings in 1-5 % of field visits

Habitats

Al: Agricultural Land, Sl: Scrub Land, Gl: Grazing Land, HH: Human Habitations, Ga: Garden, Gr: Grove, OC: Open Country, DS: Dumping Sites, He: Herbs, BF: Broadleaved Forest, CF: Coniferous Forest, MF: Mixed Forest (broadleaved and coniferous forest), Bu: Bushes, St/Cr: Stream/Creak, La: Lawn, Ro/So: Rock/ Stone, GS: Grassy Slope

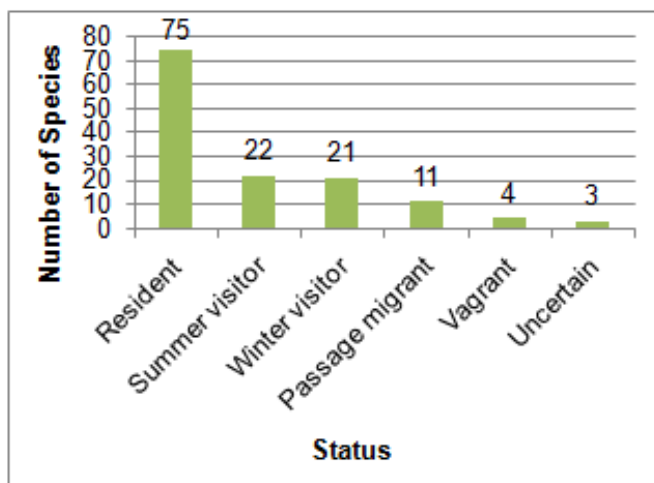


Figure 3. Residential Status of bird species in Bhattiyat Valley

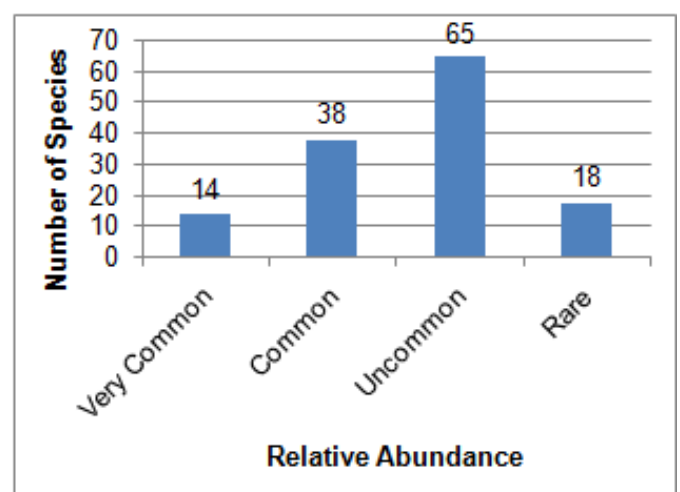


Figure 4. Relative Abundance of bird species in Bhattiyat Valley

Methods

Because of large area, stratified sampling technique was adopted to include all different kinds of habitats of study area by selecting a representative sample of each habitat.

Basically line transect method was followed along routes of roads, paths and other accessible ways through places of observations. Initially, opportunistic visits were made during 2008 to 2009 and later on regular monthly visits during July 2011 to June 2012.



Figure 5. Siberian Rubithroat *Luscinia calliope*
(Kakira- Bhattiyat Valley)



Figure 6. Collared Scops Owl *Otus bakkamoena*
(Thulel- Bhattiyat Valley)

The observations were done during morning (7.00-10.00 hrs) and evening times (15.00-17.00 hrs) in sufficient sunlight at local time. The relative abundance was estimated on the basis of frequency of sightings. The residential status was evaluated on the basis of presence or absence of birds during different seasons of year. The birds were observed visually by binocular 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 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, 136 species of birds belonging to 12 orders and 36 families were observed (Table). The total number of species found in 36 families were (Table, Fig. 2): Phasianidae (4)2.9%,

Picidae (6) 4.4%, Megalaimidae (3) 2.2%, Bucerotidae (1) 0.73%, Upupidae (1) 0.73%, Coraciidae (1) 0.73%, Alcedinidae (1) 0.73%, Halcyonidae (1) 0.73%, Cerylidae (1) 0.73%, Meropidae (1) 0.73%, Cuculidae (4) 2.9%, Centropodidae (1) 0.73%, Psittacidae (4) 2.9%, Apodidae (1) 0.73%, Strigidae (3) 2.2%, Columbidae (6) 4.4%, Charadriidae (1) 0.73%, Accipitridae (11) 8.0%, Falconidae (1) 0.73%, Phalacrocoracidae (1) 0.73%, Ardeidae (3) 2.2%, Laniidae (1) 0.73%, Corvidae (10) 7.3%, Muscicapidae (24) 17.6 %, Sturnidae (4) 2.9%, Sittidae (2) 1.4%, Certhiidae (2) 1.4%, Paridae (2) 1.4%, Hirundinidae (3) 2.2%, Pycnonotidae (3) 2.2%, Cisticolidae (2) 1.4%, Zosteropidae (1) 0.73%, Silviidae (7) 5.1%, Nectariniidae (2) 1.4%, Passeridae (13) 9.5 %, and Fringillidae (4) 2.9%.

The highest number of species were found in order Passeriformes (80) 58.8 % followed by Ciconiiformes (17) 12.5 % and least number (1) 0.73% in other 3 orders. The highest number of species were found in family Muscicapidae (24) 17.6 % followed by Passeridae (13) 9.5 % and Accipitridae (11) 8.0% and least number (1) 0.73% in other 14 families (Table).

The residential status (Table, Fig. 3) of species was Resident (61) 44.8 %, Summer visitor (31) 22.7%, Winter visitor (27) 19.8%, Passage migrant (26) 19.1% and Vagrant (2) 5.5 %. The highest number of species were found in resident followed by summer visitor, winter visitor, passage migrant and vagrant.

The relative abundance (Table, Fig.4) of species was Very Common (14) 10.2%, Common (38)27.9%, Uncommon (65) 47.8% and Rare (19)13.9%. The highest number of species were found in uncommon followed by common, rare and very common.

Of 136 species, 86 species were found common with previous records of Chamba district (Thakur *et al.*, 2002; Mahabal, 2005; Sakia *et al.*, 2008).

Two globally threatened (IUCN status) species Egyptian Vulture *Neophron percnopterus* and White-rumped Vulture *Gyps bengalensis* were found to have relative abundance as Uncommon (Egyptian Vulture) and Common (White-rumped Vulture). Both of these species have scope of conservation in this area but White-rumped Vulture (Fig. 7) has very common occurrence here.

Two peculiar species viz. Siberian Rubithroat *Luscinia calliope* (Fig. 5) and Hill Blue Flycatcher *Cyornis banyumas* were recorded as new additions to bird list of Himachal Pradesh. Siberian Rubithroat was found in lantana bushes on roadside hedge along edges of an open pine mixed broadleaved forest. (Kakira, 19 January 2008). Hill Blue Flycatcher was found in pair (both male and female) on shrubs and herbs along edges of a stream in grove area (Samote, 15 July 2011). Calls like charr-charr-charr... were uttered by male continuously and followed by nearby perching female also at short interval in duet. The other interesting rare species found was Collared Scops Owl *Otus bakkamoena* (Fig. 6). Only single bird was seen in dead condition on ground under a tree trunk along roadside tree avenue (Thulel, 27 June 2010).

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