

## SEASONAL CHANGES OF BIRD SPECIES IN TWO DIFFERENT ALTITUDINAL LOCATIONS OF SOLAN DISTRICT, HIMACHAL PRADESH

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### INTRODUCTION

The Himalaya are most complex folded mountain system in the Indian subcontinent. Altitudinal variations, topographical and climatic conditions have greatly influenced the diversity and distribution of its fauna. The present studies deal with a comparative account of birds occurring in two locations with different altitudes and forest biotopes in Western Himalayan ecosystem of Himachal Pradesh.

### STUDY AREA AND METHODS

Observations of birds were carried out at two locations in district Solan, Himachal Pradesh, viz. 1) Kotbeja near Kasauli, alt. 715 m. 2) Dumrog near Solan, alt. 1590 m (Fig. 1), covering an area of 3 to 5 sq. km. at each place.

Area of Kotbeja falls in Siwalik Himalaya, a zone of sub-montane and sub-tropical low hills consisting of Siwalik Sal forest. The vegetation comprises *Shorea robusta* with species of *Acacia*, *Zizyphus*, *Dalbergia*, *Bauhinia*, *Bombax*, *Ficus* and *Mangifera* : and patches of shrubs and grasses. The area is also under cultivation of maize, wheat, paddy and vegetables. Average annual rainfall is about 1100 mm and temperature varies from 5°C to 28°C. Dumrog are lies in sub-humid and sub-tropical mid hills of lower Himalaya with Himalayan Chir-Pine forest. It is more of less a pure association of *Pinus roxburghii* with Chir *Carissa* grass and dry-evergreen forest. Average annual rainfall is about 1450 mm and temperature range between -4°C and 25°C.

At both locations, observations were made once a month from November 1991 to December 1992 through all seasons : Winter (November-March), Summer or Pre-Monsoon (April-June) and Rainy (July-October). The birds were observed by using a pair of binoculars (8×50 with zoom focussing). They were determined in field with the help of Ali (1949) and Ali & Ripley (1983 a), and finally confirmed by the work of Ali & Ripley (1983 b).

## OBSERVATIONS AND DISCUSSION

The data on bird was analysed for their seasonal abundance. A systematic list of 127 species belonging to 37 families alongwith their status and abundance at two locations has been given in Table 1. Of these, 110 species were noticed in Kotbeja area as compared to 96 species at Dumrog.

Relative percentage of all species occurring at Kotbeja and Dumrog are depicted in Fig. 2. Resident species with a percentage of 62.7 predominated at Kotbeja. However, their percentage declined to 45.8 at Dumrog. The summer and winter visitors were recorded almost in equal numbers at both locations. It is well known that several bird species migrate from the plains of Central India and Himalayan foothills to these ranges during summer, primarily for breeding from March/April to September. Some species also migrate from Central Asia, Europe and Siberia to this region during the winter particularly from October to March (Ali & Ripley, 1983 b).

Further, a number of high altitude birds endemic to this ecosystem migrate towards lower elevations during winter because of heavy snowfall at Higher ranges and then return back in summer. Birds showing such vertical movements were noticed at both the locations but their percentage was much higher (30.2) in Chir-Pine forest of Dumrog as compared to that of Sal forested area of Kotbeja (17.3).

The resident birds like Whitebacked Vulture, Roseringed Parakeet, Spotted Owlet, Crimsonbreasted Barbet, Yellowfronted Pied Woodpecker, Northwestern Tree Pie, House Crow, Redvented Bulbul and Magpie Robin occurred in fairly good numbers in the Sal forest of Kotbeja (Table 1). On the other hand, the residents like Blossomheaded Parakeet, Jungle Myna and Indian Myna were abundant at Dumrog. Summer visitors *viz.*, Wiretailed Swallow and Golden Oriole were found in higher number at Kotbeja, whereas Brown and Verditor Flycatchers predominated at other locality. Similarly, population of winter visiting birds such as Sooty Flycatcher, Brown Chiffchaff and Pallas's Leaf Warbler was substantial at Dumrog.

Birds endemic to the Himalayan ecosystem (Table 1) such as Slatyheaded Parakeet, Kashmir Woodpecker, Leiothrix, various species of Tits, Wall Creeper, Tree Creeper, etc. occurred in good numbers during winter months in Pine-forested area as compared to Sal-forested area. Further, the population of Himalayan Redbilled Blue Magpie, Himalaya Jungle Crow, Whitecheeked Bulbul, Simla Streaked Laughing Thrush and Himalayan Whistling Thrush was substantial at Dumrog throughout the year. A few common endemic species like West Himalayan Pied Kingfisher, Himalayan Tree Pie, Whitecheeked Bulbul were also found in good numbers at Kotbeja throughout the year.

In general, it can be pointed out that because of varied range of ecological conditions like climate, altitude and associated forest biotopes not only changes the distribution pattern of birds having different status but also changes the seasonal abundance of a species.

## SUMMARY

The observations were carried out on the birds occurring in a Siwalik-Sal forest and Himalayan Chir-Pine forest situated in two different altitudinal areas of Solan district, Himachal Pradesh during November, 1991 to December 1992. Altogether 127 species have been recorded. Their status and seasonal abundance at these locations have been compared and discussed.

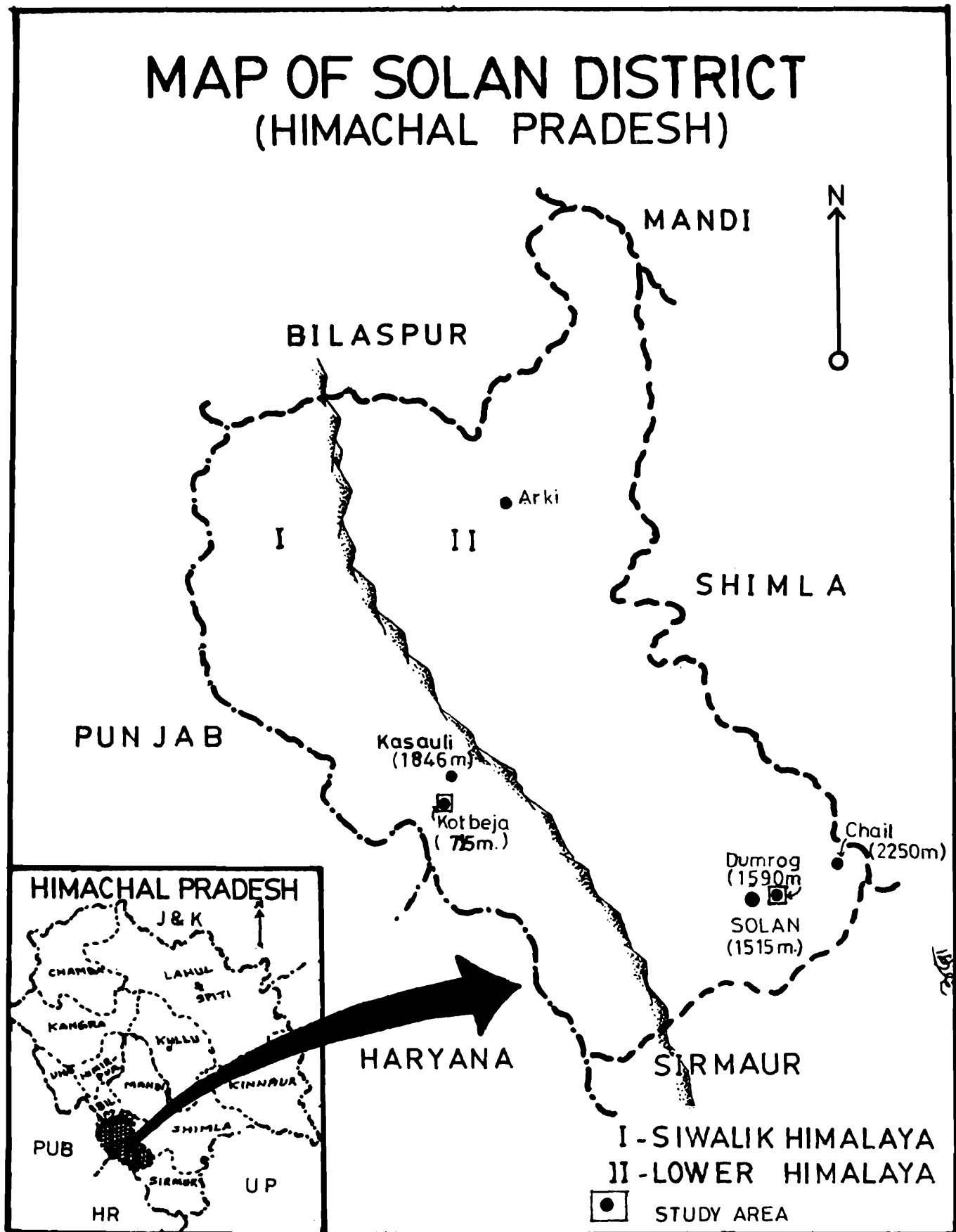


Fig. 1: Map of Solan district (Himachal Pradesh) showing places of study area.

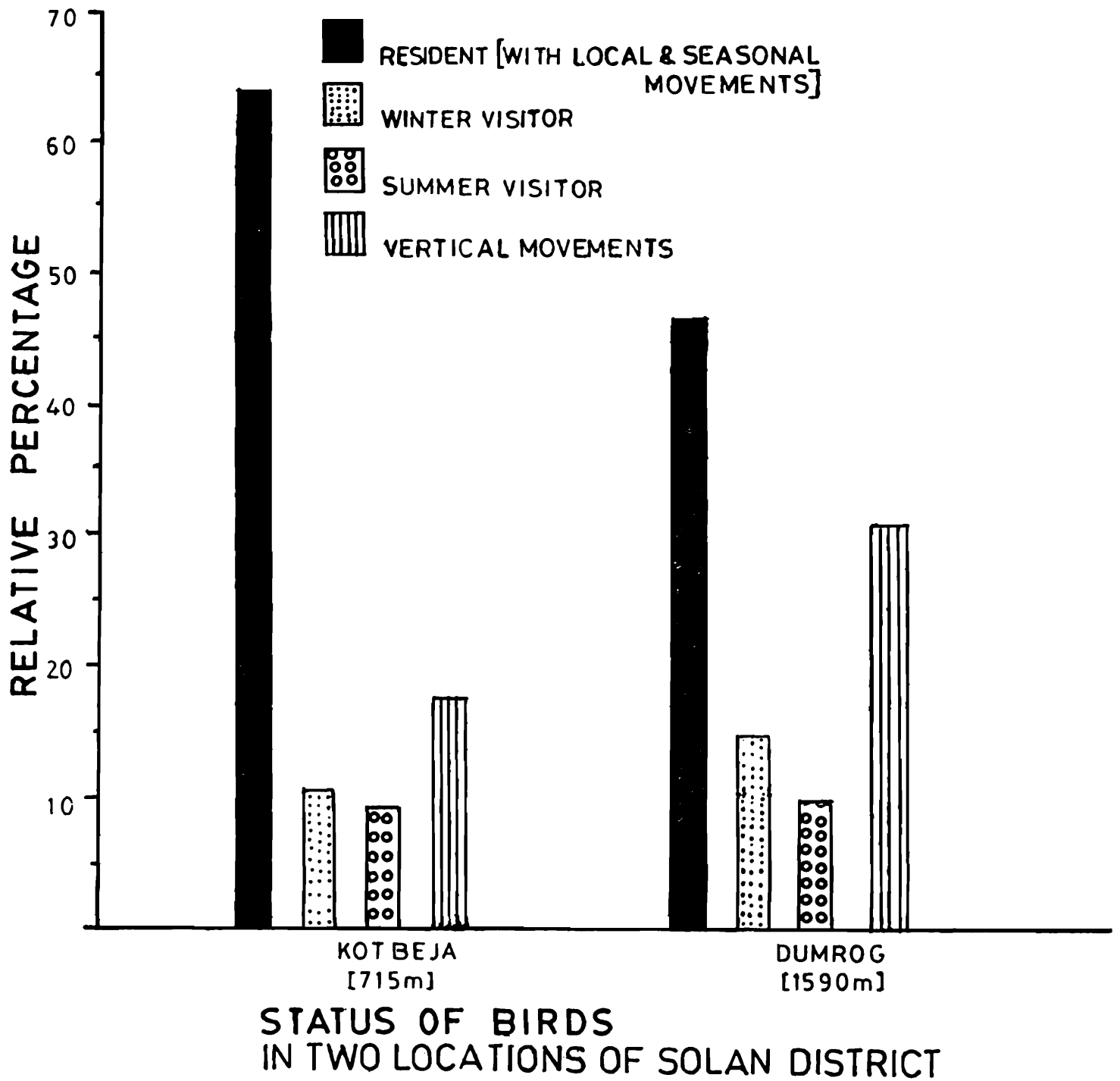


Fig. 2 : Relative percentage of birds having different status in two different altitudinal locations of Solan district, Himachal Pradesh.

Table-1

**A SYSTEMATIC LIST OF BIRDS SHOWING THEIR STATUS AND SEASONAL ABUNDANCE  
AT TWO DIFFERENT LOCATIONS IN SOLAN DISTRICT DURING 1991-1992.**

SI. No.	Species & Common Name	Status	Seasonla abundance						
			Kotbeja (715 m, Sal Forest)			Dumrog (1590 m, Chir-Pine Forest)			
			Winter	Summer	Rainy	Winter	Summer	Rainy	
1	2	3	4	5	6	7	8	9	
	<b>Family : ARDEIDAE</b>								
1.	<i>Egretta alba</i> (Linnaeus) Eastern Large Egret	R/LM	+	+	-	-	-	-	-
2.	<i>Egretta intermedia</i> (Wagler) Median Egret	R/LM	+	+	-	-	-	-	-
	<b>Family : ACCIPITRIDAE</b>								
3.	<i>Elanus caeruleus</i> (Desfontaines) Blackwinged Kite	R	+	++	++	-	+	+	+
4.	<i>Milvus migrans</i> (Boddaert) Pariah Kite	R/LM	+	++	++	-	++	+	+
5.	<i>Butaster teesa</i> (Franklin) White-eyed Buzzard Eagle	R/LM	-	+	+	-	-	-	-
6.	<i>Accipiter badius</i> (Gmelin) Indian Shikra	R	+	++	++	-	++	+	+
7.	<i>Aquila rapax</i> (Temminck) Tawny Eagle	R/LM	-	+	-	-	-	-	-
8.	* <i>Gyps himalayensis</i> Hume Himalayan Griffon Vulture	VM	-	-	-	+	++	+	+
9.	<i>Gyps bengalensis</i> (Gmelin) Whitebacked Vulture	R	++	+++	++	+	++	++	++
10.	<i>Neophron percnopterus</i> (Linnaeus) Scavenger Vulture	R/LM	++	++	++	-	+	+	+
11.	<i>Spilornis cheela</i> (Latham) Crested Serpent Eagle	R/SM	++	+	-	-	+	-	-

1	2	3	4	5	6	7	8	9
	Family : FALCONIDAE							
12.	<i>Falco tinnunculus</i> Linnaeus European Kestrel	R/LM	+	++	++	-	++	+
	Family : PHASIANIDAE							
13.	<i>Francolinus francolinus</i> (Linnaeus) Black Partridge	R	-	-	-	-	+	+
14.	<i>Francolinus pondicerianus</i> (Gmelin) North Indian Grey Partridge	R	+	++	++	-	-	-
15.	<i>Perdica asiatica</i> (Latham) Punjab Jungle Bush Quail	R	-	++	++	-	-	-
16.	<i>Gallus gallus</i> (Linnaeus) Red Junglefowl	R	-	++	+	-	+	+
	Family : TURNICIDAE							
17.	<i>Turnix sylvatica</i> (Desfontaines) Little Bustard-Quail	R/SM	-	+	+	-	-	-
	Family : CHARADRIIDAE							
18.	<i>Vanellus indicus</i> (Boddaert) Redwattled Lapwing	R	-	++	++	-	-	-
	Family : COLUMBIDAE							
19.	<i>Treron phoenicoptera</i> (Latham) Bengal Green Pigeon	R/LM	-	++	+	-	-	-
20.	<i>Columba livia</i> Gmelin Blue Rock Pigeon	R/LM	+	++	++	+	++	++
21.	<i>Streptopelia orientalis</i> (Latham) Western Turtle Dove	R/SM	-	-	-	-	+	+
22.	<i>Streptopelia decaocta</i> (Frisvaldszky) Ring Dove	R/SM	+	++	++	-	+	-
23.	<i>Streptopelia Chinensis</i> (Scopoli) Spotted Dove	R/LM	+	++	++	-	++	+
24.	<i>Chalcophaps indica</i> (Linnaeus) Indian Emerald Dove	R/LM	-	+	++	-	-	-

1	2	3	4	5	6	7	8	9
	<b>Family : PSITTACIDAE</b>							
25.	<i>Psittacula eupatria</i> (Linnaeus) Large Indian Parakeet	R/LM	+	++	+	-	-	+
26.	<i>Psittacula krameri</i> (Scopoli) Northern Roseringed Parakeet	R	+++	+++	++	-	++	+
27.	<i>Psittacula cyanocephala</i> (Linnaeus) Northern Blossomheaded Parakeet	R	+	++	+	+	+++	++
28.	* <i>Psittacula himalayana</i> (Lesson) Himalayan Slatyheaded Parakeet	VM	-	+	-	++	++	++
	<b>Family : CUCULIDAE</b>							
29.	<i>Clamator jacobinus</i> (Boddaert) Pied Crested Cuckoo	SV	-	-	+	-	+	+
30.	<i>Cuculus varius</i> Vahl Common Hawk Cuckoo	R/LM	-	+	++	-	++	+
31.	<i>Cuculus micropterus</i> Gould Indian Cuckoo	R/SM	+	-	+	-	-	-
32.	<i>Cacomantis passerinus</i> (Vahl) Plaintive Cuckoo	R/LM	-	+	+	-	-	+
33.	<i>Eudynamys scolopacea</i> (Linnaeus) Indian Koel	R/LM	+	++	++	-	+	+
34.	<i>Taccocua leschenaultii</i> Lesson Western Sirkeer Cuckoo	R	-	-	+	-	+	++
35.	<i>Centropus sinensis</i> (Stephens) Common Crow-Pheasant	R	+	+	++	-	-	-
	<b>Family : STRIGIDAE</b>							
36.	* <i>Bubo bubo</i> (Linnaeus) Himalayan Eagle-Owl	VM	-	-	-	+	-	+
37.	<i>Glaucidium cuculoides</i> (Vigors) West Himalayan Barred Owlet	WV	+	+	-	+	-	-
38.	<i>Athene brama</i> (Temminck) Northern Spotted Owlet	R	++	++	++	-	+	+

1	2	3	4	5	6	7	8	9
	Family APODIDAE							
39.	<i>Apus melba</i> (Linnaeus) Indian Alpine Swift	R/LM	-	-	+	-	++	+
	Family : ALCEDINIDAE							
40.	* <i>Ceryle lugubris</i> (Temminck) West Himalayan Pied Kingfisher	VM	+	++	+	-	+	-
41.	<i>Alcedo atthis</i> (Linnaeus) Small Blue Kingfisher	R/LM	-	+	+	-	+	-
42.	<i>Halcyon smyrnensis</i> (Linnaeus) Whitebreasted Kingfisher	R/LM	+	++	++	-	+	-
	Family : MEROPIDAE							
43.	<i>Merops orientalis</i> Latham Small Green Bee-eater	R/SM	++	++	+	-	+	+
	Family : CORACIIDAE							
44.	<i>Coracias benghalensis</i> (Linnaeus) Northern Roller	R/SM	-	++	+	-	-	-
	Family : UPUPIDAE							
45.	<i>Upupa epops</i> Linnaeus European Hoopoe	SV	-	++	-	-	+	-
	Family : BUCEROTIDAE							
46.	<i>Tockus birostris</i> (Scopoli) Grey Hornbill	R/LM	+	++	++	-	-	-
	Family : CAPITONIDAE							
47.	* <i>Megalaima virens</i> (Boddaert) Himalayan Great Barbet	VM	+	-	-	++	+	++



1	2	3	4	5	6	7	8	9
48.	<i>Megalaima asiatica</i> (Latham) Bluethroated Barbet	R	+	+	-	+	++	+
49.	<i>Megalaima haemacephala</i> (Müller) Crimsonbreasted Barbet	R	++	++	++	-	+	-
	Family : PICIDAE							
50.	* <i>Picus canus</i> Gmelin Blacknaped Green Woodpecker	VM	+	+	-	++	+	+
51.	<i>Dinopium benghalense</i> (Linnaeus) Lasser Golden backed Woodpecker	R	-	+	+	-	-	-
52.	* <i>Picoides himalayensis</i> (Jerdine & Selby) Himalayan Pied Woodpecker	VM	-	-	-	++	-	+
53.	<i>Picoides macei</i> (Vieillot) Fulvousbreasted Pied Woodpecker	R/LM	-	+	+	-	+	-
54.	<i>Picoides mahrattensis</i> (Latham) Yellowfronted Pied Woodpecker	R	++	++	++	-	+	-
55.	* <i>Picoides canicapillus</i> (Blyth) West Himalayan Greycrowned Pygmy Woodpecker	VM	+	-	-	++	+	+
	Family : HIRUDINIDAE							
56.	<i>Hirundo rustica</i> Linnaeus Western Swallow	SV	-	-	-	-	++	+
57.	<i>Hirundo smithii</i> Leach Wiretailed Swallow	SV	-	++	++	-	+	-
58.	<i>Hirundo daurica</i> Linnaeus Himalayan Striated Swallow	SV	-	+	-	-	++	++
	Family : LANIIDAE							
59.	<i>Lanius vittatus</i> Valenciennes Baybacked Shrike	R/SM	++	++	+	-	-	-

1	2	3	4	5	6	7	8	9
60.	<i>Lanius schach</i> Linnaeus Rufousbacked Shrike Family : ORIOLIDAE	SV	+	++	++	-	++	+
61.	<i>Oriolus oriolus</i> (Linnaeus) Golden Oriole	SV/SM	-	++	+	-	+	+
62.	<i>Oriolus xanthornus</i> (Linnaeus) North Indian Blackheaded Oriole Family : DICRURIDAE	R/LM	-	+	+	-	-	-
63.	<i>Dicrurus adsimilis</i> (Bechstein) North Indian Black Drongo	R/LM/SM						
64.	<i>Dicrurus leucophaeus</i> Vieillot Grey Drongo	SV	+	+	-	+	+	-
65.	<i>Dicrurus hottentottus</i> (Linnaeus) Haircrested Drongo Family : STURNIDAE	R/SM	-	++	-	-	-	-
66.	<i>Sturnus malabaricus</i> (Gmelin) Grey headed Myna	R/SM	-	-	+	-	+	+
67.	<i>Sturnus pagodarun</i> (Gmelin) Brahminy Myna	R/SM	+	++	++	-	+	-
68.	<i>Acridotheres tristis</i> (Linnaeus) Indian Myna	R	++	+++	+++	++	+++	++
69.	<i>Acridotheres fuscus</i> (Wagler) Northern Jungle Myna Family : CORVIDAE	R/LM	+	++	++	+	+++	++
70.	* <i>Cissa erythorhyncha</i> (Boddaert) Himalayan Redbilled Blue Magpie	VM	++	+	+	+++	++	++
71.	<i>Dendrocitta vagabunda</i> (Latham) Northwestern Tree Pie	R/SM	++	++	++	+	+	++
72.	* <i>Dendrocitta formosae</i> Swinhoe West Himalayan Tree Pie	VM	++	+	+	+	++	++

1	2	3	4	5	6	7	8	9
73.	<i>Corvus splendens</i> Vieillot House Crow	R/SM	+++	++	++	-	-	+
74.	* <i>Corvus macrorhynchos</i> Wagler Himalayan Jungle Crow	VM	++	+	+	++	++	++
	Family : CAMPEPHAGIDAE							
75.	<i>Coracina melaschistos</i> (Hodgson) Dark Grey Cuckoo-Shrike	SV	++	+	+	-	++	+
76.	<i>Pericrocotus flammeus</i> (Forster) North Indian Scarlet Minivet	R/SM	+	+	-	-	++	++
77.	<i>Pericrocotus roseus</i> (Vieillot) Rosy Minivet	R/SM	++	+	+	-	+	-
	Family : IRENIDAE							
78.	<i>Aegithina tiphia</i> (Linnaeus) Northwestern Iora	R	++	++	-	-	-	-
	Family : PYCNONOTIDAE							
79.	* <i>Pycnonotus leucogenys</i> (Gray) Whitecheeked Bulbul	VM	++	+	+	++	+++	+++
80.	<i>Pycnonotus cafer</i> (Linnaeus) Punjab Redvented Bulbul	R	++	++	++	+	++	+
81.	* <i>Hypsipetes madagascariensis</i> (P. L. S. Müller) Himalayan Black Bulbul	VM	++	-	-	++	+	++
	Family : MUSCICAPIDAE							
82.	<i>Pellorneum ruficeps</i> Swanson Western Spotted Babbler	R/LM	+	++	+	-	-	-
83.	* <i>Pomatorhinus schisticeps</i> Hodgson West Himalayan Slatyheaded Scimitar Babbler	VM	+	+	+	+	+	+
84.	<i>Turdoides striatus</i> (Dumont) Sind Jungle Babbler	R	+	++	++	-	-	+

1	2	3	4	5	6	7	8	9
85.	<i>*Garrulax leucolophus</i> (Hardwicke) Himalayan Whitecrested Laughing Thrush	VM	++	-	+	+	-	+
86.	<i>*Garrulax lineatus</i> (Vigors) Simla Streaked Laughing Thrush	VM	-	-	-	+++	++	++
87.	<i>*Leiothrix lutea</i> (Scopoli) Western Redbilled Leiothrix	VM	-	-	-	++	+	+
88.	<i>Muscicapa sibirica</i> Gmelin Kashmir Sooty Flycatcher	WV	-	-	-	++	-	-
89.	<i>Muscicapa latirostris</i> Raffles Brown Flycatcher	SV	-	-	+	-	++	+
90.	<i>Muscicapa thalassina</i> Swainson Verditer Flycatcher	SV	+	+	-	-	++	++
91.	<i>Rhipidura hypoxantha</i> Blyth Yellowbellied Fantail Flycatcher	WV	++	-	-	-	-	-
92.	<i>Rhipidura albicollis</i> (Vieillot) Western Whitethroated Fantail Flycatcher		WV	++	+	+	-	+
93.	<i>Terpsiphone paradisi</i> Linnaeus West Himalayan Paradise Flycatcher	SV	-	++	+	-	++	++
94.	<i>Prinia socialis</i> Sykes Northern Ashy Wren-Warbler	R/LM	+	++	++	-	-	-
95.	<i>Orthotomus sutorius</i> (Pennant) Tailor Bird	R	+	++	++	-	-	-
96.	<i>Phylloscopus collybita</i> (Vieillot) Brown Chiffchaff	WV	-	-	-	++	-	-
97.	<i>Phylloscopus proregulus</i> (Pallas) Western Pallas's Leaf Warbler	WV	+	-	-	++	-	-
98.	<i>Copsychus saularis</i> (Linnaeus) Magpie-Robin	R	++	++	++	-	+	++
99.	<i>Rhyacornis fuliginosus</i> (Vigors) Plumbeous Redstart	R/SM	+	-	-	++	-	-
100.	<i>*Enicurus maculatus</i> Vigors Western Spotted Forktail	VM	++	-	-	++	-	-
101.	<i>Saxicola caprata</i> (Linnaeus) Northern Pied Bush Chat	WV	++	+	-	-	-	-
102.	<i>Saxicola ferrea</i> Gray Dark-grey Bush Chat	R/SM	+	-	-	++	-	-

1	2	3	4	5	6	7	8	9
103.	<i>Chaimarrornis leucocephalus</i> (Vigors) Whitecapped Redstart	SM	++	-	-	++	+	-
104.	<i>Saxicoloides fulicata</i> (Linnaeus) Brownbacked Indian Robin	R	+	++	++	-	-	-
105.	* <i>Myiophonus caeruleus</i> (Scopoli) Himalayan Whistling Thrush	VM	++	-	-	++	++	++
	Family : PARIDAE							
106.	* <i>Parus major</i> Linnaeus Kashmir Grey Tit	VM	+	-	-	++	-	-
107.	* <i>Parus monticolus</i> Vigors Greenbacked Tit	VM	+	-	-	++	+	-
108.	* <i>Parus xanthogenys</i> Vigors Northern Yellowcheeked Tit	VM	-	-	-	++	+	-
109.	* <i>Aegihalos concinnus</i> Gould Western Redheaded Tit	VM	-	-	-	++	+	-
	Family : SITTIDAE							
110.	* <i>Tichodroma muraria</i> (Linnaeus) Wall Creeper	VM	+	-	-	++	-	-
	Family : CERTHIIDAE							
111.	* <i>Certhia himalayana</i> Vigors Himalayan Tree Creeper	VM	+	-	-	++	+	-
	Family : MOTACILLIDAE							
112.	* <i>Anthus sylvanus</i> (Hodgson) Upland Pipit	VM	-	-	-	-	+	++
113.	<i>Motacilla citreola</i> Pallas Northern Yellowheaded Wagtail	WV	++	-	-	+	-	-
114.	<i>Motacilla alba</i> Linnaeus White Wagtail	WV	+	-	-	-	-	-
115.	<i>Motacilla maderaspatensis</i> Gmelin Large Pied Wagtail	R/LM	+	++	+	-	-	-

1	2	3	4	5	6	7	8	9
	Family : NECTARINIDAE							
116.	<i>Nectarinia asiatica</i> (Latham) Purple Sunbird	R/LM	-	+	++	-	-	-
117.	* <i>Aethopyga siparaja</i> (Raffles) Yellowbacked Sunbird	VM	+	-	+	++	+	+
	Family : ZOSTEROPIDAE							
118.	<i>Zosterops palpebrosa</i> (Temminck) White-eye	R/SM	+	++	++	-	++	+
	Family : PLOCEIDAE							
119.	<i>Passer domesticus</i> (Linnaeus) House Sparrow	R/SM	+++	+++	+++	+	++	++
120.	* <i>Passer rutilans</i> Temminck Himalayan Cinnamon Tree Sparrow	VM	-	-	-	+	++	-
121.	<i>Petronia xanthocollis</i> (Burton) Yellowthroated Sparrow	SV	-	+	-	-	-	-
122.	<i>Ploceus philippinus</i> (Linnaeus) Indian Baya	R/SM	-	++	+	-	-	-
123.	<i>Lonchura punctulata</i> (Linnaeus) Spotted Munia	R	-	++	+	-	+	+
	Family : FRINGILLIDAE							
124.	* <i>Carpodacus rhodochrous</i> (Vigors) Pinkbrowed Rosefinch	VM		-	-	+	-	-
	Family : EMBERIZIDAE							
125.	<i>Emberiza stewarti</i> (Blyth) Whitecapped Bunting	SV	-	-	-	+	+	-
126.	* <i>Emberiza cia</i> Linnaeus Himalayan Rock Bunting	VM	-	-	-	++	-	-
127.	<i>Melophus lathami</i> (Gray) Crested Bunting	R/SM	-	+	+	-	-	-

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- (R) : Resident,
- (LM) : Local Movements,
- (SM) : Seasonal Altitudinal Movements,
- (SV) : Summer Visitor (For breeding),
- (WV) : Winter Visitor,
- (VM) : Vertical Movements (Winter-Summer),
- (\*) : Bird confined to Himalayan Ecosystem,
- (-) : Not Observed,
- (+) : Rare (1-20 birds),
- (++) : Common (21-70 birds),
- (+++ ) : Abundant (More than 70 birds)