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AVIFAUNA OF KAZA AREA OF SPITI (HIMACHAL PRADESH), INDIA

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ABSTRACT
Avifaunal diversity studies carried out in cold desert region of Kaza area in Himachal Pradesh, revealed the presence of 62 species of birds belonging to 43 genera, spread over 20 families and 7 orders. Family Muscicapidae, the largest bird family in India, was represented by 11 species. Of the 62 bird species, 16 were either resident or seasonal-local migrants, 4 showed summer influx and rest 42 were summer visitors to the area. Moreover, the explorations further revealed that 25 species were common, 20 were uncommon, 15 were very common and 2 species were rare.

KEY WORDS: Avifauna, Kaza area, Residential Status, Relative Abundance

INTRODUCTION

Faunal diversity in Himachal Pradesh is very rich and diversified, primarily due to varied climatic conditions ranging from tropical in the foothills to arctic environment in the Trans-Himalayan region. Moreover, historical influx of fauna from adjacent biogeographical regions and subsequent speciation in relation to local environment has greatly enriched the animal resources of the area. There is a pronounced dominance of Palaearctic and endemic animals above timber line (3000 m), and largely Oriental and some Palaearctic and some Ethiopian elements at lower and middle altitudes. Rich biodiversity of Himachal Pradesh has sustained population and hill communities from times immemorial. But in recent years, the state has come under a strong threshold of development. Natural ecosystems have been over-exploited and even destroyed by the rapidly increasing human population (Mehta and Julka, 2002; Thakur, 2008).

Present avifunnal investigations were conducted in various habitats types Kaza areas situated at 32^{o} 13' north latitude and 78^{o} 04' east longitude in Spiti division Lahaul and Spiti division of Himachal Pradesh. The area fall in trans Himalayan zone has a cold desert climate and is situated at an altitude of 3500 m amsl. Annual rainfall is scanty and varies from 250 to 400 mm. This area is extremely cold and minimum temperature on an average comes down to - 15^{0} C. Kaza area supports sub-Alpine and Alpine vegetation which is dominated by thorny patches of willow, birch and rhododendron interspersed with high-altitude meadows. Moreover, villages harbor some of the good vegetation.

Biological studies on diversity, distribution, relative abundance and status of birdlife present in different parts of the state have been conducted by various workers like Jones (1947 a&b, 48), Ganguli (1967), Gaston et al. (1981, 1993), Garson (1983), Pandey (1989a, 1993), Mahabal and Mukherjee (1991), Mahabal and Sharma (1992, 1993), Narang and Singh (1995), Ramesh et al. (1999), Mahabal (1996, 2000 a & b, 2005), Thakur et al., 2002, 2003, 2006) and Mattu and Thakur (2006). Moreover, birdlife present in the Greater and Trans-Himalayan region of Himachal Pradesh has been insufficiently explored (Theobald, 1862; Whistler, 1925; Wynter-Blyth, 1948, 1951, 1952, 1953; Mahajan and Mukherjee, 1974; Khacher, 1986; Narang, 1989; Pandey, 1989 b; Rana, 1997; Manjrekar and Mehta, 1999; Singh, 2003; Santharam, 2005). Therefore, inevitability of the present study on different biological aspects of birds present in this Trans-Himalayan zone was urgently felt.

METHODOLOGY

Present investigations have been conducted during different seasons of the years 2002 to 2006 in various habitat types. During present study an area of some 100 sq km has been explored. Keeping in view the comparatively large size of the study area, Stratified Random Sampling Technique (Snedecore and Cochran, 1993) was followed for studying the birds of present study area, which involved the division of sites into different strata, based on vegetation type and habitat. These strategies were mainly based upon the principle of exploration of a portion of the individuals in the whole population.

Birds were observed with aid of 10 x 50 super Zenith prismatic field binoculars. Field Identifications were carried out with the help of various field guides (Ali and Ripley, 1983; Grimmett et. al, 1999; Kazmierczak, 2000). The nomenclature followed here is after Manakadan and Pittie (2001).

The data recorded in each survey from different habitat types was kept separate and analysed for relative abundance on the basis of relative frequency scale of occurrence depending upon the number of sightings, as followed by Mc Kinnon and Philips (1993) and Thakur (2008), as: very common (VC)- sighted more than ten times, common (C)- sighted seven to nine times, uncommon (UC)- sighted three to six times and rare (Ra)- sighted once or twice. The relative frequency scale was fixed in such a way so as to include the migrant species sighted seasonally in good numbers (which visited the area for a brief period of time) to their respective category.

Residential status of the birds has been worked out and different status categories like resident, summer visitor and summer influx have been assigned strictly with

reference to the study area on the basis of presence or absence method. The birds that showed irregular trend of sighting and population fluctuations (non-seasonal) have been placed under resident with local movements (R/LM) category (Thakur, 2008).

RESULTS AND DISCUSSION

Avifaunal investigations on avifauna of Kaza area of Lahaul & Spiti district of Himachal Pradesh revealed the presence of 62 species of birds belonging to 43 genera, spread over 20 families and 7 orders. Moreover, family Muscicapidae, the largest bird family of India as well as Himachal Pradesh (Manakadan and Pittie, 2001; Mahabal, 2005, Thakur, 2008) was represented by 11 species, followed by Fringillidae (9 species), Columbidae, Motacillidae and Corvidae (5 each) and Accipitridae (4 species). However, families like Falconidae, Phasianidae, Cuculidae, Upupidae, Troglodytidae, Certhiidae, Emberizidae and Oriolidae were represented by a single species each (Table 1).

Analysis of data on residential status showed that of the 62 bird species, 16 were either resident or seasonal-local migrants, 4 showed summer influx and rest 42 were summer visitors to the area. Moreover, categorization of birds in to relative abundance categories revealed that 25 species were common, 20 were uncommon, 15 were very common and 2 species were rare in Kaza area. Further analyses of residential status and relative abundance revealed that of the 42 summer visitors, 19 species were uncommon, 14 common, 7 very common and 2 were rare. Similarly, of the 15 seasonal-local migrant bird species, 7 each were very common and common, and 1 was uncommon. A single resident species recorded was common. Of the summer influx category, 3 species were common and 1 was very common (Table 1). This high percentage (67.7%) of summer visitors can be correlated with the earlier works of Gaston (1995) and Mahabal (2005) who elucidated that Himalayas receive a flood of breeding birds during summer months from adjacent areas and the percentage of these breeding visitors increases with altitude.

Present study revealed the presence of only 62 species of birds in an area of around 100 sq km which can be correlated with extremely harsh and cold climatic conditions, topography and scanty rainfall in Kaza area of Himachal Pradesh. This petite diversity of birdlife can be justified with earlier work of Price et al. (2003) who attributed the change in bird diversity with altitude in Himalayas to various climatic factors mainly precipitation. Similarly, Rahbek and Graves (2001) have correlated the bird diversity of South America with topography, precipitation and an interaction between topography and latitude.

Present study revealed the extension of altitudinal range of distribution of some species like Blue Rock Pigeon, Oriental Turtle-Dove, Spotted Dove, Common Cuckoo, Rufous-backed Shrike, Simla Crested Tit, Eurasian Tree-Creeper, Yellow-breasted Greenfinch, Common Rosefinch, House Sparrow, Eurasian Golden Oriole and Grey Treepie. This extension of range can be correlated with the presence of Spiti river which joins the great gorge of Sutlej river that runs through great Himalayan range, covers the districts of Kinnaur, Shimla, Bilaspur etc. to merge into the Bhakhra Dam. This gorge which was formed well before the rise of Himalayas possibly works as a bird highway for these local migrant species to reach the Kaza area of Trans-Himalayan zone of Himachal Pradesh.

TABLE 1: Systematic list of Birds recorded in Kaza area of Himachal Pradesh

S.No.	Taxon	Res. St.	Rel. Abd.
	Order: Falconiformes		
	Family: Accipitridae		
1.	Black Kite *Milvus migrans* (Boddaert, 1783)	SV	Ra
2.	Bearded Vulture *Gypaetus barbatus* (Linnaeus, 1758)	R/LM	C
3.	Himalayan Griffon *Gyps himalayensis* Hume, 1869	R/LM	C
4.	Golden Eagle *Aquila chrysaetos* (Linnaeus, 1758)	R	C
	Family: Falconidae		
5.	Common Kestrel *Falco tinnunculus* Linnaeus, 1758	R/SV	C
	Order: Galliformes		
	Family: Phasianidae		
6.	Chukor *Alectoris chukar* (J.E. Gray, 1830)	R/LM	VC
	Order: Columbiformes		
	Family: Columbidae		
7.	Blue Rock Pigeon *Columba livia* Gmelin, 1789	SV	VC
8.	Hill Pigeon *Columba rupestris* Pallas, 1811	R/LM	VC
9.	Snow Pigeon *Columba leuconota* Vigors, 1831	R/LM	VC
10.	Oriental Turtle-Dove *Streptopelia orientalis* (Latham, 1790)	SV	UC
11.	Spotted Dove *Streptopelia chinensis* (Scopoli, 1786)	SV	UC
	Order: Cuculiformes		
	Family : Cuculidae		
12.	Common Cuckoo *Cuculus canorus* Linnaeus, 1758	SV	UC

	Order: Apodiformes		
	Family: Apodidae		
13.	Himalayan Swiftlet *Collocalia brevirostris* (Horsfield, 1840)	R/SV	C
14.	Common Swift *Apus apus* (Linnaeus, 1758)	SV	C
	Order: Coraciiformes		
	Family: Upupidae		
15.	Common Hoopoe *Upupa epops* Linnaeus, 1758	SV	VC
	Order: Passeriformes		
	Family: Alaudidae		
16.	Eastern Skylark *Alauda gulgula* Franklin, 1831	SV	VC
17.	Horned Lark *Eremophila alpestris* (Linnaeus, 1758)	R/LM	C
	Family: Hirundinidae		
18.	Plain Martin *Riparia paludicola* (Vieillot, 1817)	R/SV	VC
19.	Eurasian Crag-Martin *Hirundo rupestris* Scopoli, 1769	SV	VC
20.	Red-rumped Swallow *Hirundo daurica* Linnaeus, 1771	SV	UC
21.	Asian House-Martin *Delichon dasypus* (Bonaparte, 1850)	SV	VC
	Family: Motacillidae		
22.	White Wagtail *Motacilla alba* Linnaeus, 1758	SV	VC
23.	Citrine Wagtail *Motacilla citreola* Pallas, 1776	SV	C
24.	Grey Wagtail *Motacilla cinerea* Tunstall, 1771	SV	C
25.	Eurasian Tree Pipit *Anthus trivialis* (Linnaeus, 1758)	SV	C
26.	Oriental Tree Pipit *Anthus hodgsoni* Richmond, 1907	SV	C
	Family: Laniidae		
27.	Rufous-backed Shrike *Lanius schach* Linnaeus, 1758	SV	UC
28.	Grey-backed Shrike *Lanius tephronotus* (Vigors, 1831)	SV	UC
	Family: Troglodytidae		
29.	Winter Wren *Troglodytes troglodytes* (Linnaeus, 1758)	SV	UC
	Family: Muscicapidae		
	Subfamily: Turdinae		
30.	Himalayan Rubythroat *Luscinia pectoralis* (Gould, 1837)	SV	C
31.	Bluethroat *Luscinia svecica* (Linnaeus, 1758)	SV	C
32.	Orange-flanked Bush-Robin *Tarsiger cyanurus* (Pallas, 1773)	SV	UC
33.	Black Redstart *Phoenicurus ochruros* (Gmelin, 1774)	SV	VC
34.	Blue-fronted Redstart *Phoenicurus frontalis* (Vigors, 1832)	SV	C
35.	White-capped Redstart *Chaimarrornis leucocephalus*(Vigors, 1831)	SV	UC
36.	Plumbeous Redstart *Rhyacornis fuliginosus* (Vigors, 1831)	SV	UC
37.	Grey Bushchat *Saxicola ferrea* Gray, 1846	SV	C
38.	Desert Wheatear *Oenanthe deserti* (Temminck, 1825)	SV	Ra
	Subfamily: Sylviinae		
39.	Brown-flanked Bush-Warbler *Cettia fortipes* (Horsfield, 1845)	SV	C
40.	Olivaceous Leaf-Warbler *Phylloscopus griseolus* Blyth, 1847	SV	UC
	Family: Paridae		
41.	Simla Crested Tit *Parus rufonuchalis* Blyth, 1849	SV	UC
42.	Great Tit *Parus major* Linnaeus, 1758	SV	UC
	Family: Certhiidae		
43.	Eurasian Tree-Creeper *Certhia familiaris* Linnaeus, 1758	SV	UC
	Family: Emberizidae		
	Subfamily: Emberizinae		
44.	Rock Bunting *Emberiza cia* Linnaeus, 1766	SV	C
	Family: Fringillidae		
45.	Fire-fronted Serin *Serinus pusillus* (Pallas, 1811)	SV	C
46.	Yellow-breasted Greenfinch *Carduelis spinoides* Vigors, 1831	SV	C
47.	Eurasian Goldfinch *Carduelis carduelis* (Linnaeus, 1758)	SV	C
48.	Twite *Carduelis flavirostris* (Linnaeus, 1758)	R/LM	VC
49.	Hodgson's Mountain-Finch *Leucosticte nemoricola* (Hodgson, 1836)	R/LM	C
50.	Black-headed Mountain-Finch *Leucosticte brandti* Bonaparte, 1850	R/LM	C
51.	Common Rosefinch *Carpodacus erythrinus* (Pallas, 1770)	SV	UC
52.	Red-mantled Rosefinch *Carpodacus rhodochlamys* (Brandt, 1843)	SV	UC
53.	Common Great Rosefinch *Carpodacus rubicilla* (Guldenstadt, 1775)	R/LM	UC
	Family: Passeridae		
	Subfamily: Passerinae		
54.	House Sparrow *Passer domesticus* (Linnaeus, 1758)	R/LM	VC
55.	Cinnamon Tree Sparrow *Passer rutilans* Temminck, 1835	SV	UC

56.	Tibetan Snowfinch *Montifringilla adamsi* Adams, 1858	R/LM	C
	Family: Oriolidae		
57.	Eurasian Golden Oriole *Oriolus oriolus* (Linnaeus, 1758)	SV	UC
	Family: Corvidae		
58.	Grey Treepie *Dendrocitta formosae* Swinhoe, 1863	SV	UC
59.	Red-billed Chough *Pyrrhocorax pyrrhocorax* (Linnaeus, 1758)	R/LM	VC
60.	Yellow-billed Chough *Pyrrhocorax graculus* (Linnaeus, 1766)	R/LM	VC
61.	Jungle Crow *Corvus macrorhynchos* Wagler, 1827	R/SV	C
62.	Common Raven *Corvus corax* Linnaeus, 1758	R/LM	C

Res. St. = Residential status: R= Resident, R/LM= Seasonal-local migrant, R/SV= Resident with summer influx, SV= Summer visitor

Rel. Abd. = Relative abundance: VC= Very common, C= Common, UC= Uncommon, Ra= Rare

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