



## Feeding guilds of the avifauna of District Kargil in Jammu and Kashmir State

Tsewang Motup and D. N. Sahi

Received: 25.011.2012

Accepted: 8.02.2013

### Abstract

A survey of the avifauna of district Kargil was carried out using a combination of Line Transect method and Point Transect method to record the avifaunal diversity and their feeding guilds. The bird census was carried out from April 2010 to April 2012. The study area lies between 34° 15' to 34° 47' 30" North latitudes and 75° 45' to 76° 3' East longitudes. The area constitutes a part of the Trans-Himalayas in Jammu And Kashmir State. The area is comprised of high rocky mountains with snow bound peaks and arid desert devoid of natural vegetation. The altitudinal range of the area varies between 2430m to 4192m above msl. The study revealed 102 species of birds. Six major feeding categories were considered viz. insectivorous, carnivorous, grainivorous, omnivorous, frugivorous and herbivorous. The highest number of bird species was observed to utilize more than one feeding guild followed by insectivorous, carnivorous, grainivorous and omnivorous bird species. Feeding guild of 1 species i.e., Black-crowned Night Hereon was not recorded during the study.

*Keywords* apricot, avifauna, biogeographical provinces, feeding guild, Ladakh, Kargil.

### Introduction

Man has been curious about birds since time immemorial as birds figure prominently in all aspects of human culture from religion to poetry to popular music. This curiosity of man led to a new branch of Zoology known as Ornithology (from Greek Ornithos, 'bird' and logos, 'knowledge'). India is one of the richest countries in the world in terms of biodiversity and completely houses two of the 34 biodiversity hotspots in the world i.e., the Western Ghats and the Eastern Himalayas. The major factors contributing to the country's species richness is its geographical position in a region of overlap between three biogeographical provinces: the Indomalayan (South and Southeast Asia), Palearctic (Europe and North Asia), and Afrotropical (Africa) realms. As a result, species typical of all three realms occur in India (Grimmett *et al.*, 1998). Kargil, the present study area, is one of the two districts of the Trans-Himalayan region of Jammu and Kashmir State known as Ladakh. It is located on the border between the Palearctic and the Indo-Malayan zoogeographical zone, and is strongly influenced by typical species from both

areas (Pfister, 2001). The present study is related to avian diversity and their feeding ecology. As the review of literature reveals that no such study has been conducted in this area so far, except a few casual records made by workers like Holmes (1986), Mallon (1987), Pfister (2004), Sangha and Naoroji (2005) and Namgail (2005), the present study was undertaken as an attempt to understand the feeding habits of the birds in the area.

### Study area

Kargil district was carved out of erstwhile Ladakh district of Jammu and Kashmir state in 1979. This district is bound by Leh district to the northeastern side, LOC in the north and Kashmir valley and Doda district on southwestern side. The study area falls in the Trans-Himalayan region covering an area of about 14036 Km<sup>2</sup>. The area receives a snowfall of upto 3 feet in winter. Barley, wheat, bajra, peas, vegetables and apricot are grown in the lower valleys during summer months. The study area lies between 34° 15' to 34° 47' 30" North latitudes and 75° 45' to 76° 3' East longitudes. The area is comprised of high rocky mountains with snow bound peaks and arid desert devoid of natural

### Author's Address

P.G. Department of Zoology, University of Jammu, Jammu-  
E-mail: t.motup@yahoo.co.in



vegetation. The altitudinal range of the area varies between 2430m to 4192m above msl.

### Material and Methods

Thorough survey of the study area was conducted using a combination of Line Transect method and Point Transect method to record the avifaunal diversity and feeding guilds. The bird census was carried out from April 2010 to April 2012. In order to maintain uniformity, bird watching was done once a week between 0700 hours to 1100 hours and 1400 hours to 1830 hours during summer and 0800 hours to 1130 hours and 1400 hours to 1700 hours during winter. Several irregular and unscheduled visits were also made during different hours of the day as well. Feeding behaviour of the birds were observed from a distance, sometimes with the help of binoculars (Bushnell 7x50 U.S.A. made), in order to avoid any disturbance to them. Some dead specimens whenever found during the surveys were dissected to examine the gut content of the species. Photographs were taken and video clips were made to record their habits and calls with the help of Sony DSC-HX1 camera with 20x optical zoom and 10x digital zoom, for easy and correct identification of the bird species. Coloured plates with diagnostic descriptions of birds by Ali and Ripley (1983), Grimmett *et al.*, (1998) and Pfister (2004) were always handy and proved quite useful in identification and classification of birds. The common names and nomenclature of the birds reported in the present work are in accordance with Grewal *et al.*, (2002) followed after An Annotated Checklist of the Birds of the Oriental Region by Inskipp *et al.*, (1996).

### Results and Discussion

The diversity and abundance of bird species in a particular area is influenced by a variety of factors. Each bird has some habitat requirement in the form of food availability, nesting sites etc, and different birds require different types of food (Wani *et al.*, 2008). Thus, availability of food in good quantity and quality constitutes one of the prime requisite of the bird species in an area. During the present study, records were made of the feeding guilds of 102 avian species and an attempt has been made to categorize the birds into insectivorous, carnivorous, grainivorous, frugivorous, herbivorous and

omnivorous types (Table 1). Of the total 102 species reported, 34 species were insectivorous, 15 species were carnivorous, 9 species were grainivorous and 8 species were omnivorous. Feeding guild of 1 species i.e. Black-crowned Night Heron (*Nycticorax nycticorax*) could not be ascertained during the present study as this species was recorded as a rare passage migrant and only a single sighting was recorded for a short duration, that too in its roosting site. The remaining 35 species were recorded to utilize more than one feeding guilds. Among these, 5 species were recorded utilizing three feeding guilds and the remaining 30 species utilized two feeding guilds. Insectivorous category was further subdivided into Terrestrial Insectivores (TI), Aquatic Insectivores (AqI), Aerial Insectivores (AI), Shore Insect Probers (SIP), Trunk or Bark Feeders (TBF), Understorey Insectivores (UI), Canopy Insectivores (CI), Wading Insectivores (WI) and Diving Insectivores (DI). Out of these, 13 species belonged to TI category, 7 species belong to ATI, 5 species each belonged to AI and SIP category, DI category were represented by 2 species, 1 species each belonged to TBF and UI feeding categories. Carnivorous category was also categorized into Aquatic Carnivores (AqC), Arboreal Aquatic Carnivores (AAqC), Wading Carnivores (WC), Diving Carnivores (DC), Terrestrial Carnivores (TC) and Arboreal Terrestrial Carnivores (ATC). Among these, ATC was represented by 6 species, TC and WC were represented by 3 species each, while as AqC, AAqC and DC were represented by 1 species each.

Some waterfowls were recorded to utilize the aquatic and shore vegetation as their chief source of food. Accordingly, they were categorized as Herbivores. Thus, Herbivores were further divided into Aquatic Herbivores (AqH) and Terrestrial Herbivores (TH). Karr *et al.* (1990) emphasizes the presence of food resources available to and exploited by birds in defining the trophic structure of the community. The availability of food resources appeared to have a great influence on the composition of the bird communities. Consequently, the bird species that showed a preference for a variety of food were found to be present in the study area in all seasons and the rest migrated from the area on the onset of the winter.



**Table: 1. List of birds with their feeding guilds**

S.No.	Name	Scientific Name	Feeding Guild
<b>I</b>			
<b>Insectivores</b>			
1.	Eurasian Wryneck	<i>Jynx torquilla</i>	TI
2.	Common Hoopoe	<i>Upupa epops</i>	TI
3.	Eurasian Cuckoo	<i>Cuculus canorus</i>	ATI
4.	Asian Koel	<i>Eudynamys scolopacea</i>	ATI
5.	Alpine Swift	<i>Tachymarptis melba</i>	AI
6.	Common Swift	<i>Apus apus</i>	AI
7.	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	SIP
8.	Ibisbill	<i>Ibidorhyncha struthersii</i>	SIP
9.	Lesser Sand Plover	<i>Charadrius mongolus</i>	SIP
10.	Eurasian Golden Oriole	<i>Oriolus oriolus</i>	ATI
11.	Brown Dipper	<i>Cinclus pallasii</i>	DI
12.	White-throated Dipper	<i>Cinclus cinclus</i>	DI
13.	Tickell's Thrush	<i>Turdus unicolor</i>	ATI
14.	Rufous-backed Redstart	<i>Phoenicurus erythronota</i>	TI
15.	Plumbeous Water Redstart	<i>Rhyacornis fuliginosus</i>	SIP
16.	Black Redstart	<i>Phoenicurus ochruros</i>	TI
17.	White-capped Water Redstart	<i>Chaimarrornis leucocephalus</i>	SIP
18.	Variable Wheatear	<i>Oenanthe picata</i>	TI
19.	Desert Wheatear	<i>Oenanthe deserti</i>	TI
20.	Pied Wheatear	<i>Oenanthe pleschanka</i>	TI
21.	Common Stonechat	<i>Saxicola torquata</i>	TI
22.	Bluethroat	<i>Luscinia svecica</i>	TI
23.	Winter Wren	<i>Troglodytes troglodytes</i>	ATI
24.	Rufous-naped Tit	<i>Parus rufonuchalis</i>	TBF
25.	Barn Swallow	<i>Hirundo rustica</i>	AI
26.	Red-rumped Swallow	<i>Hirundo smithii</i>	AI
27.	Northern House Martin	<i>Delichon urbica</i>	AI
28.	White-browed Tit Warbler	<i>Leptopoeile sophiae</i>	ATI
29.	Tickell's Leaf Warbler	<i>Phylloscopus affinis</i>	ATI
30.	Lesser Whitethroat	<i>Sylvia curruca</i>	UI
31.	Crested Lark	<i>Galerida cristata</i>	TI
32.	Oriental Skylark	<i>Alauda gulgula</i>	TI
33.	Tibetan Snowfinch	<i>Montifringilla adamsi</i>	TI
34.	Rock Bunting	<i>Emberiza cia</i>	TI
<b>II</b>			
<b>Carnivores</b>			
1.	Common Kingfisher	<i>Alcedo atthis</i>	AAqC
2.	Common Tern	<i>Sterna hirundo</i>	AqC
3.	Black Kite	<i>Milvus migrans</i>	ATC
4.	Lammergeier	<i>Gypaetus barbatus</i>	TC
5.	Himalayan Griffon	<i>Gyps himalayensis</i>	TC
6.	Eurasian Sparrowhawk	<i>Accipiter nisus</i>	ATC
7.	Booted Eagle	<i>Hieraaetus pennatus</i>	TC
8.	Eurasian Hobby	<i>Falco subbuteo</i>	ATC
9.	Common Kestrel	<i>Falco tinnunculus</i>	ATC
10.	Great Cormorant	<i>Phalacrocorax carbo</i>	DC
11.	Grey Heron	<i>Ardea cinerea</i>	WC
12.	Indian Pond Heron	<i>Ardeola grayii</i>	WC



Motup and Sahi

13.	Little Egret	<i>Egretta garzetta</i>	WC
14.	Long-tailed Shrike	<i>Lanius schach</i>	ATC
15.	Grey-backed Shrike	<i>Lanius tephronotus</i>	ATC
<b>III</b>	<b>Grainivores</b>		
1.	Rock Pigeon	<i>Columba livia</i>	G
2.	Hill Pigeon	<i>Columba rupestris</i>	G
3.	Oriental Turtle Dove	<i>Streptopelia orientalis</i>	G
4.	Laughing Dove	<i>Streptopelia senegalensis</i>	G
5.	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	G
6.	Fire-fronted Serin	<i>Serinus pusillus</i>	G
7.	Common Rosefinch	<i>Carpodacus erythrinus</i>	G
8.	European Goldfinch	<i>Carduelis carduelis</i>	G
9.	Brandt's Mountain Finch	<i>Leucosticte brandti</i>	G
<b>IV</b>	<b>Birds using more than one feeding guilds</b>		
1.	Chukar Partridge	<i>Alectoris chukar</i>	G/H/F
2.	Himalayan Snowcock	<i>Tetrao gallus tibetanus</i>	G/H
3.	Northern Shoveler	<i>Anas clypeata</i>	AqI/PI
4.	Gadwall	<i>Anas strepera</i>	AqH/PI
5.	Eurasian Wigeon	<i>Anas penelope</i>	AqH/TH/PI
6.	Garganey	<i>Anas querquedula</i>	AqH/PI
7.	Red-crested Pochard	<i>Rhodonessa rufina</i>	AqH/PI
8.	Common Pochard	<i>Aythya ferina</i>	AqH/PI
9.	Tufted Duck	<i>Aythya fuligula</i>	AqI/AqH
10.	Scaly-bellied Woodpecker	<i>Picus squamatus</i>	TI/TBF
11.	Common Moorhen	<i>Gallinula chloropus</i>	WC/SIP
12.	Common Coot	<i>Fulica atra</i>	AqI/AqH
13.	Common Redshank	<i>Tringa totanus</i>	WI/SIP
14.	Common Sandpiper	<i>Actitis hypoleucos</i>	WI/SIP
15.	Black-winged Stilt	<i>Himantopus himantopus</i>	WI/SIP
16.	Red-billed Chough	<i>Pyrrhocorax pyrrhocorax</i>	TI/G/F
17.	Blue Rock Thrush	<i>Monticola solitarius</i>	TI/F
18.	Blue Whistling Thrush	<i>Myophonus caeruleus</i>	UI/TC
19.	Dark-throated Thrush	<i>Turdus ruficollis</i>	UI/F
20.	Rufous-tailed Rock Thrush	<i>Monticola saxatilis</i>	TI/F
21.	White-winged Redstart	<i>Phoenicurus erythrogaster</i>	TI/F
22.	Brahminy Starling	<i>Sturnus pagodarum</i>	TI/G/F
23.	Common Starling	<i>Sturnus vulgaris</i>	TI/G
24.	Wallcreeper	<i>Tichodroma muraria</i>	TI/SAI
25.	Mountain Chiffchaff	<i>Phylloscopus sindianus</i>	CI/SAI
26.	Horned Lark	<i>Eremophila alpestris</i>	TI/G
27.	House Sparrow	<i>Passer domesticus</i>	TI/G/F
28.	White Wagtail	<i>Motacilla alba</i>	SIP/TI
29.	White-browed Wagtail	<i>Motacilla maderaspatensis</i>	SIP/TI
30.	Citrine Wagtail	<i>Motacilla citreola</i>	SIP/TI
31.	Grey Wagtail	<i>Motacilla cinerea</i>	SIP/TI
32.	Long-billed Pipit	<i>Anthus similis</i>	G/F
33.	Tree Pipit	<i>Anthus trivialis</i>	TI/G
34.	Robin Accentor	<i>Prunella rubeculoides</i>	TI/G
35.	Brown Accentor	<i>Prunella fulvescens</i>	TI/G
<b>V</b>	<b>Omnivores</b>		
1.	Mallard	<i>Anas platyrhynchos</i>	O
2.	Black-billed Magpie	<i>Pica pica</i>	O
3.	Yellow-billed Chough	<i>Pyrrhocorax graculus</i>	O



### Feeding guilds of the avifauna of District Kargil

4.	Carrion Crow	<i>Corvus corone</i>	O
5.	House Crow	<i>Corvus splendens</i>	O
6.	Large-billed Crow	<i>Corvus macrorhynchos</i>	O
7.	Common Raven	<i>Corvus corax</i>	O
8.	Great Tit	<i>Parus major</i>	O
<b>VI</b>	<b>Not recorded</b>		
1.	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	NR

**Abbreviations and terminologies used in the present work are defined as under:**

**Feeding Guilds:**

AI- Aerial Insectivore	AqI- Aquatic Insectivore
CI- Canopy Insectivore	UI- Under storey Insectivore
TI- Terrestrial Insectivore	TBF- Trunk or Bark Feeder
SIP- Shore Insect Prober	DI- Diving Insectivore
WI- Wading Insectivore	ATI- Arboreal Terrestrial Insectivore
ATC- Arboreal Terrestrial Carnivore	TC- Terrestrial Carnivore
AqC- Aquatic Carnivore	AAqC- Arboreal Aquatic Carnivore
WC- Wading Carnivore	DC- Diving Carnivore
H- Herbivore	TH- Terrestrial Herbivore
AqH- Aquatic Herbivore	G- Grainivore
F- Frugivore	PI- Plankton Feeder
O- Omnivore	

**Insectivore:** Feeding on insects.

**Carnivore:** Feeding on animal matter like fishes, amphibians, reptiles, birds and small mammals.

**Frugivore:** Feeding on fruits and berries of *Hippophae* and Berberry shrubs.

**Herbivore:** Feeding on young shoots, roots, leaves and sprouts of vegetations.

**Omnivore:** Feeding on all types of food including vegetable matter, fruits, insects and other animal matter included in carnivore category.

### Acknowledgment

The authors are highly thankful to the Head, Department of Zoology, University of Jammu, Jammu for providing the required facilities to carry out the present study.

### References

- Ali, S. and Ripley, S. D. (ed.) 1983. *Handbook of Birds of India and Pakistan*, Compact Edition, Oxford University Press, Bombay.
- Grewal, B., Harvey, B. and Pfister, O. (ed.) 2002. *A photographic guide of the Birds of India*, Periplus Edition (HK) Ltd., Singapore.
- Grimmett, R., Inskipp, C. and Inskipp, T. (ed.) 1998. *Birds of the Indian Subcontinent*, Oxford University Press, Delhi.
- Holmes, P. R., 1986. The avifauna of the Suru River Valley, Ladakh. *Forktail*, 2: 21-41.
- Inskipp, T., Lindsey, N. and Duckworth, W., 1996. *An Annotated Checklist of the Birds of the Oriental Region*. Oriental Bird Club, Sandy, UK.
- Karr, J.R., Robinson, S.K., Blake, J.G. and Berregard, R.O., 1990. *The bird communities of four neotropical forest* In. A. Gentry (ed.), *Four Neotropical Forest*, Yale University Press, New Haven, C.T. pp: 237-269.
- Mallon, D. P., 1987. The winter birds of Ladakh. *Forktail*, 3: 27-41.
- Namgail, T., 2005. Winter birds of the Gya-Miru Wildlife Sanctuary, Ladakh, Jammu and Kashmir, India. *Indian Birds*, 1(2): 26-28.
- Pfister, O., 2001. Birds recorded during visits to Ladakh, India from 1994 to 1997. *Forktail*, 17: 81-90
- Pfister, O. (ed.) 2004. *Birds and Mammals of Ladakh*, Oxford University Press, New Delhi.
- Sangha, H. and Naoroji, R., 2005. Birds recorded during seven expeditions to Ladakh from 1997 to 2003. *J. Bomb. Nat. Hist. Soc.*, 102(3): 290-304.
- Wani, A. A., Sahi, D. N. and Kumar, S., 2008. Feeding ecology of avifauna of Doda, Jammu and Kashmir. *J. The Bioscan*, 3(4): 477-478.

