

Avifaunal Diversity of the Pattika Recreational Park, Muzaffarabad, Azad Kashmir, Pakistan

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Abstract: The survey was carried out from June 2006 to May 2007 in the recreational park Pattika situated at 34°27' latitude and 73° 34' longitudes. During the survey a total of 73 species were recorded belonging to 10 orders and 35 families. Out of 73, 55% were Passeriformes, 45% were non-Passeriformes. The distribution and abundance varied with season, the maximum species number was found during the monsoon season when most of the birds migrate to breed. As this park is in the environs of a human population, the human related impacts such as grazing by livestock, removal of shrub cover, disturbance of habitat etc. were also studied.

Key words: Avifauna; Recreational Park Pattika; Muzaffarabad; Pakistan

巴基斯坦穆扎法拉巴德市 Pattika 公园鸟类多样性

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摘要: 2006年6月—2007年5月对位于巴基斯坦自由克什米尔省穆扎法拉巴德市帕蒂卡(Pattika)休闲公园(EW: 73°34', 纬度: NS:34° 27')内的栖息鸟类进行了调查, 共有73种, 分属10目35科。其中雀型目占73.55%, 非雀型目占45%。其分布的多寡随该地区的季节而变化。大量物种出现在迁移繁殖的雨季。该公园处于人口密集之郊外, 其间家畜的放养、灌木的砍伐及生境的干扰等人为因素都会对鸟类的分布和数量造成影响。

关键词: 鸟类区系; Pattika 休闲公园; 穆扎法拉巴德; 巴基斯坦

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Azad Kashmir is situated at the foothills of the Himalayas, approximately between 32-36 latitude & 73-75 longitude. The climate is subtropical and the average rainfall is 150 mm (anonymous, 2006). Due to the diverse ecological zone, the climate varies in different parts of the territory. Different biotopes provide good abode for wildlife species in this area. Fauna of Azad Kashmir consists of both Palearctic and oriental elements (Roberts, 1991).

Pattika, the study area is situated at 34°27' latitude and 73°34' longitude. The park is approximately 20 km from Muzaffarabad city and has an area of 400 acres. Heavy rainfall is a characteristic of the area as it lies in the monsoon zone. The study area has Cheer Pine forest with bushes and grasses.

Many bird species migrate locally or over long distances to avoid adverse conditions or in search of food.

There are a number of seasonal immigrants that breed outside our territory, mostly in the Palearctic region beyond the Himalayas, in Central and Northern Asia and Eastern and Northern Europe. The winter migrants are the ducks, geese, cranes, swallows, flycatchers and finches (Ali & Ripley, 1987).

The Collared Dove (*Streptopelia decaocto*) is very common throughout the area except in the eastern Himalayas. Its sleepy cooing can be heard in all gardens, cultivated areas and light woodland (Woodcock, 1980). The Indian Roller (*Coracias bengalensis*) is also a resident in the area and common in West Pakistan, Baluchistan, Sind and Punjab but its seasonal movements are little understood (Ali and Ripley, 1987).

The Pied Kingfisher (*Ceryle rudis*) occurs in East Africa, the Middle East, India, South China and the Indo-Chinese region, very widely distributed throughout the

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Punjab, Sind Plain and ascends the Jhelum River up to the main valley of Kashmir (Roberts, 1992). The White-breasted Kingfisher (*Halcyon smyrnensis*) is widely spread throughout the Punjab and Indus plain. It is largely absent from mountainous tracts of Baluchistan and North West Frontier province (NWFP) but it occurs up to the lower part of the Bolan pass in Baluchistan and Kurram valleys of NWFP (Head, 1911).

The Hoopoe (*Upupa epops*) bird feeds on the ground and is often found around houses or in cultivated areas (Woodcock, 1980; Ward, 1994). The Koel (*Eudynamis scolopacea*) is more often heard than seen, the fluty double call being a feature of leafy gardens, groves and woodlands (Woodcock, 1980).

The Spotted Owlet (*Athene brama*) is a sedentary resident of this area and is very wide spread throughout the Indus plain, extending extensively into the desert plain (Roberts, 1992). It is found throughout the area except in Sri-Lanka, but avoids thick forest (Woodcock, 1980).

The Rufous-backed Shrike (*Lanius schach*) is very wide spread and is a common breeding bird throughout the better watered parts of the Indus plain. It is a summer breeding visitor to Baluchistan and the northern mountain Himalayan regions. The Bay-backed Shrike (*Lanius vittatus*) is also very wide spread and is commonly found throughout the Indus basin extending northward to the main valley of Swat and the base of the Murree foot hills (Roberts, 1992).

The Black Drongo (*Dicrurus macrocercus*) is widely distributed throughout India, Sri Lanka and eastwards to China and Indonesia (Roberts, 1992). There is some local migration of this species throughout its range and in the far north the entire breeding population are summer visitors, migrating further south (Roberts, 1992).

The Yellow-billed Blue Magpie (*Urocissa flavirostris*) is a Sino-Himalayan endemic species occurring across the Himalayas from Pakistan to south western China (southern Tibet), Northern Burma, and Assam (Goodwin, 1976). It occurs around Shogran and in the Bunja valley and Azad Kashmir. The Indian Tree Pie (*Denrocitta vagbonda*) is a wide spread oriental species adapted to the plains and foothills area, but dependent upon fairly good tree or bush cover, as they reside in arboreal habitats. They occur all over Burma and Assam, an area of India (Goodwin, 1976). They are probably commoner in the Punjab than anywhere else and the spread of roadside and canal-side tree plantation

has favoured this species. It is also found in the Murree hills (Roberts, 1992).

The Common Myna (*Acrida theerstristis*) occurs everywhere except in the remoter mountainous areas and avoids Himalayan coniferous forests or extensive desert tracts. However, they will penetrate far into such regions where there are large human settlements, but are absent over the remoter areas of Baluchistan and have also penetrated into the Murree hill range.

The study area is the only recreational park of Muzaffarabad city which has a captive breeding center of pheasants and hundreds of visitors come here annually. Unfortunately so far this area is unexplored and no work has been done that can give a clear picture about the status of avian diversity in the area. Keeping this in mind, the present study has been conducted and is an initial step in this direction and has the following objectives: to explore the avifaunal diversity of recreational park Pattika and to find out the major threats to the Avian fauna of the recreational park Pattika.

1 Materials and Methods

The surveys were conducted from June 2006 to May 2007. Direct and indirect methods were used for data collection. For direct data collection, visits were made once or twice a month from early in the morning till sunset. Observations were made using the naked eye as well as binoculars (12X50X) and species were identified using keys of Woodcock (1980) and Kazmierczak (2000).

For indirect data collection, wildlife staff and local residents were interviewed about the present and past status of the birds. Finally the collected data was tabulated and analyzed using standard statistical methods to calculate the relative abundance and %age frequency of the different groups.

2 Results and Discussion

To determine bird diversity, extensive surveys were conducted in the study area. A total of 12 visits were made to determine the distribution and abundance of avifauna in the study area. A total of 73 species belonging to 35 families and 10 orders (Tab. 1) were identified. Of the 73 species, 55% belonged to the order Passeriformes, Coraciiformes 8.1%, Columbiformes 5.40%, Strigiformes 2.70% and Psittaciformes, Falconiformes, Piciformes, Apodiformes, Cuculiformes and Accipitriformes 1.35% each (Fig. 1). The diversity of birds was estimated to be the highest in the months of

Tab. 1 Birds species belonging to different Orders and Families and their Percentage frequencies in the Recreational Park Pattika, Muzaffarabad, Azad Kashmir

Order	Family	Common name	Scientific name	Local name	% age frequency
Apodiformes	Apodidae	House swift	<i>Apus affinis</i>	Terni	2.6000
Columbiformes	Columbidae	Collard dove	<i>Streptopelia decaocto</i>	Fakhta	1.9200
		Spotted dove	<i>Streptopella chinensis</i>	Fakhta	1.4000
		Red turtle dove	<i>Streptopelia tranquabarica</i>	Fakhta	1.2850
		Blue rock pigeon	<i>Columbia livia</i>	Kabooter	0.8200
Coraciiformes	Alcedinidae	Pied king fisher	<i>Ceryle rudis</i>	Dada maroo	1.2850
		White breasted king fish	<i>Halcyon smyrnensis</i>	Dada maroo	1.4700
		Common king fisher	<i>Aleedo alths</i>	Dada maroo	1.5600
	Upupidae	Hoopoe	<i>Upupa epops</i>	Hud-hud	1.5600
	Coraciidae	Indian roller	<i>Coracias bengalensis</i>	Neel kant	2.5000
		Kashmir roller	<i>Coracias garrulous</i>	Neel kant	2.3000
Cuculiformes	Cuculidae	Koel	<i>Eudynamys scolopacea</i>	Kali kawal	1.5600
Falconiformes	Falconidae	Kestrel	<i>Falco tinnunculus</i>	Basha	1.1000
Passeriformes	Sylviidae	Tickell's leaf warbler	<i>Phylloscopus affinis</i>	pitha	0.9100
	Sylviidae	Grey headed fly catcher warbler	<i>Scicercus xanthoschistos</i>	pitha	0.7300
	Sylviidae	Common chiffchaff	<i>Phylloscopus collybita</i>	pitha	0.7300
	Sylviidae	Brown hill warbler	<i>Primia criniger</i>	pitha	0.6400
	Sylviidae	Tailor bird	<i>Orthotomus sutorius</i>		0.8200
	Sylviidae	Streaked fantail warbler	<i>Cisticola juncidis</i>	pitha	0.8200
	Turdidae	Indian magpie robin	<i>Copsychus saularis</i>		1.0100
	Turdidae	Dark gray bush chat	<i>Saxicola ferrea</i>		0.6420
	Turdidae	Blue rock thrush	<i>Monticola solitarius</i>	Dora	1.1000
	Turdidae	Blue whistling thrush	<i>Myiophonus caeruleus</i>		0.9100
	Turdidae	Plumbeous redstart	<i>Rhyacornis fuligenosis</i>		1.4700
	Turdidae	Common stonechat	<i>Saxicala torqata</i>		1.1900
	Turdidae	River chat	<i>Chainerrornis leucocephalus</i>	Chano cheri	0.8200
	Dicaeidae	Tickle flower pecker	<i>Dicaeum erythrorhynchus</i>	Rhynchus	0.9100
	Muscicapidae	Grey headed fly catcher	<i>Culicica paceylonensis</i>		1.1900
	Muscicapidae	Slaty blue flycatcher	<i>Ficedula tricolor</i>		0.6420
	Monarchidae	Paradise fly catcher	<i>Terpsiphone paradisi</i>	Dood malai	1.1900
	Rhipiduridae	white throated fantail flycatcher	<i>Rhipiadrra albicollis</i>		0.9100
	Carduelinae	Himalayan green finch	<i>Carduelis spinoides</i>		0.8200
	Carduelinae	Common rose finch	<i>Carpodacus erythrinus</i>		1.0100
	Prunellidae	Alpine accentor	<i>Prunella collaris</i>		0.6420
	Laniidae	Rufous backed shrike	<i>Lanius schach</i>		1.1900
	Laniidae	Indian gray shrike	<i>Lanius excubitar</i>		1.1000
	Laniidae	Bay backed shrike	<i>Lanius vittatus</i>		1.1000
	Enicurinae	Little fork tail	<i>Enicurus scouleri</i>		1.0100
	Enicurinae	Spotted forktail	<i>Enicurus maculatus</i>		1.4700
	Motacillidae	Yellow wagtail	<i>Montacilla flava</i>		1.2850
	Motacillidae	Yellow headed wagtail	<i>Monticiua citreola</i>		0.8200
	Motacillidae	Large pied wagtail	<i>Montacila maderaspatensis</i>		0.9100
	Motacillidae	White wagtail	<i>Motacilla alba</i>	Chidi mabola	1.0100
	Campephagidae	Scarlet mini vet	<i>Pericrocotus flammeus</i>	Guddi	0.8200
	Timaliidae	Streaked laughing thrush	<i>Garrulax lineatus</i>	Shoar	1.5600
	Emberizinae	Rock bunting	<i>Embriza cia</i>		1.2850
Emberizinae	Pine bunting	<i>Embriza leucocephalus</i>		1.1900	
Emberizinae	White caped bunting	<i>Embiza stewarti</i>		1.4920	
Emberizinae	Crested bunting	<i>Melophus lathamii</i>	Kundku	0.9100	
Oriidae	Golden oriole	<i>Oriolus oriolus</i>	Peel waru	1.1000	
Hirundinidae	Common swallow	<i>Hirundo rustica</i>		1.4000	
Certhiidae	Himalayan tree creeper	<i>Certhia himalayana</i>		1.2850	
Passeridae	House sparrow	<i>Passer domesticus</i>	Gar cheri	5.1542	

(to be continued)

(continued)

Order	Family	Common name	Scientific name	Local name	% age frequency
	Passeridae	Russet sparrow	<i>Passer rutilans</i>		1.7400
	Sturnidae	Common starling	<i>Sturnus vulgaris</i>	Tiliar	1.4000
	Sturnidae	Brahminy starling	<i>Sturnus pagodarum</i>		1.2850
	Sturnidae	Common myna	<i>Acrida thestristis</i>	Sharik	3.6700
	Corvidae	Indian tree pie	<i>Denrocitta vagbonda</i>	Matta	1.0100
	Corvidae	Jungle crow	<i>Corvus macrorhynchos</i>	Jungli kagh	1.6500
	Corvidae	Yellow billed blue magpie	<i>Urocissa flavirostris</i>	Chinkara	0.8260
	Corvidae	House crow	<i>Corvus splendens</i>	Kagh	3.1220
	Paridae	Grey tit	<i>Parus major</i>	Chilchil pitha	1.7400
	Dicruridae	Black drongo	<i>Dicrurus macrocercus</i>	Kal cheet	1.5600
	Pycnonotidae	Black bulbul	<i>Hypsipetes madagascariensis</i>	Ainak	0.8260
	Pycnonotidae	Red vented bulbul	<i>Pycnonotus cafer</i>	Bul bul	3.4820
	Pycnonotidae	White cheeked bulbul	<i>Pycnonotus leucogenys</i>	Bul bul	2.9300
	Zosteropidae	Indian white-eye	<i>Zosterops palpebrosa</i>	Tessa	0.0900
	Nectariniidae	Purple sunbird	<i>Nectarinia asiatica</i>	Sona pitha	1.4000
Piciformes	Picidae	Scally billed wood pecker	<i>Picus squamatus</i>	Tuktuka	1.2800
Psittaciformes	Psittacidae	Rose ringed parakeet	<i>Psittacula knameri</i>	Tota	1.4600
Strigiformes	Strigidae	Spotted owl	<i>Athene brama</i>	Ulloo	0.8200
	Strigidae	Brown wood owl	<i>Strix leptogrammica</i>	Ulloo	1.1900
Accipitriformes	Accipitridae	Pallid harrier	<i>Circus macrourus</i>	Hel	1.1000

August and September. The abundance of avifauna in these months is due to the migration of birds in August and September from the lower plains of the Punjab and Sind, where the higher temperatures are the reason the birds migrate to the hilly areas of Azad Kashmir.

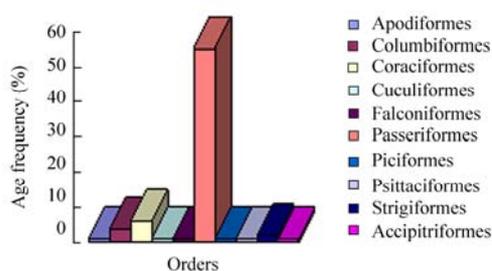


Fig. 1 Graph showing percentage of different orders of birds in the recreational park Pattika, Muzaffarabad, Azad Kashmir

The prominent bird species includes wagtail, kingfisher, bulbul, doves, crows, warblers, chats, thrushes, woodpeckers, flycatchers, magpies, tree pies, swallows and leaf birds.

The Common Kestrel (*Falco tinnunculus*) was recorded as a resident species. Overall % age frequency of species was calculated to be 1.10% (Tab. 1). This bird is a common winter visitor throughout the area and also resides in the Himalayas, south west India and Sri Lanka in open or hilly country (Woodcock, 1980). Whistler (1930) found nests with eggs in the Murree Hills in May.

The Indian Roller was also recorded as a resident species. The overall % age frequency of the species was calculated to be 2.50%. This bird is distributed in Baluchistan, Sind Punjab and all continental areas along the Himalayan Sub mountain tract (Ali & Ripley, 1987), occurring throughout the area (Woodcock, 1980). Awan (2004) reported Rollers as common and a resident species of Muzaffarabad.

Kingfishers are much more closely tied to an aquatic environment (Roberts, 1991). They are distributed in West Pakistan and in the Northern Subcontinent, including the Himalayas area, Nepal, Sikkim, Bhutan and East Pakistan (Ali & Ripley, 1987). The % age frequency of Pied, White-breasted and Common Kingfishers were calculated as 1.285, 1.47 and 1.56 respectively (Tab.1) and all the three species were recorded as residents in the recreational park Pattika. Kingfishers are also resident in Muzaffarabad (Awan et al, 2004).

Hoopoes were also observed in all the months with % age frequency of 1.56 (Tab. 1). They feed on the ground often around houses or in cultivated areas. They are tame and a familiar species widely distributed in open or cultivated country (Woodcock, 1980).

The Spotted Owllet was also recorded as resident with % age frequency of 0.82 (Tab. 1). The bird was usually recorded in forests and preferred cultivated tracts. It is found throughout the country up to about 1 800 m in

the outer Himalayan area, preferring open forest and orchard cultivation areas (Grewal, 1993).

The percentage frequency of the Rose Ring Parakeet (*Psittacula krameri*) was 1.46 (Tab. 1), indicating higher numbers in the month of July. This bird is recorded as a summer visitor in the recreational park Pattika. It is found in India, south of the Himalayan foot hills and in light forest, orchards and villages (Grewal, 1993). This parakeet is also found in light woodland, parks, gardens and cultivated areas (Woodcock, 1980). Awan (2004) reported it as a common resident in Muzaffarabad.

Spotted Doves, Collared Doves and Red-Turtle Doves were recorded as common summer species to the study area with % age frequency of 1.40, 1.92 and 1.285 respectively (Tab. 1). The birds were mostly recorded perching in trees and walking on the ground, usually preferring habitats like gardens, parks and cultivated areas. Roberts (1991) reported it as a summer visitor to Pakistan confined to subtropical pine and in the areas of Dir, Swat and Murree foothills, they were rarely found above 6000 m elevation. One was seen in Margella hills (Corfield, 1983). The Collared Dove is the most common bird found throughout the Punjab, an occasional bird can be seen in winter in Baluchistan but entire populations arrive in March and leave after breeding in October (Meinertzhagen, 1920).

The Paradise Flycatcher (*Terpsiphone paradise*) is distributed in the Himalayan foothills, north India, south to Bharatpur, is wide spread in peninsular India but absent in a broad belt across the Gangetic plains. It inhabits light forests, gardens and open country (Grewal, 1993). Overall % age frequency was calculated to be 1.19, (Tab. 1) with the highest population in the month of July. The bird was mostly recorded perching in trees and flying vertically, preferring villages and forests. Paradise Flycatchers are common summer visitors in Muzaffarabad (Awan, 2004).

Among wagtails, the Yellow Wagtail was recorded as a resident species with % age frequency of 1.285 and Yellow-headed, Large Pied and White Wagtail were recorded as winter visitors with % age frequency of 0.82, 0.91 and 1.01 respectively. The Yellow Wagtail is a winter visitor throughout the area and is especially found in wet grassy places or lush fields (Woodcock, 1980). It breeds in the northern Himalayan ranges of Pakistan, particularly in the alpine zone or in marshy meadows away from the forest in the Himalayan valley. It is distributed in the Chitral, Swat and Hazara districts. In

summer it nests on the ground and they regularly perch in trees and bushes (Holden & Sharrock, 1994).

The White Wagtail is the most wide spread and common wagtail in winter, throughout the Indus basin, including areas away from water, along roads, in cultivated areas and around the margins of ponds and lakes (Roberts, 1992). The Large Pied Wagtail is a sedentary wagtail and a truly oriental species which is endemic to the subcontinent. It occurs in the southern Punjab and lower streams of the Indus in the NWFP (Roberts, 1992). They are also found in dry places residing in short grasses or flat areas (Holden & Sharrock, 1994).

The Himalayan Tree Creeper was recorded throughout the study period with the % age frequency of 0.007 (Tab. 1). The bird was always recorded in trees and seemed to prefer areas covered with trees and forest. Ali & Ripley (1987) reported its distribution from eastern Kashmir to Kumoon, breeding at elevations between 1 500 and 3 600 m. This species is found in the hills of Kashmir, Western Nepal in coniferous forests, moving down to adjacent plains in the winter (Woodcock, 1980). The Himalayan Tree Creeper is a Palearctic species and is found from the mountains of northern Baluchistan to the northern mountains and eastward along the Himalayan ranges to Burma (Mirza, 1998). Awan (2004) also reported this species as a common resident in the Muzaffarabad district.

The Rufous-backed Shrike was observed perching on the top of bushes or in town gardens or the surrounding country side, keeping watch for insects or lizards and gliding down to catch its prey (Woodcock, 1980). The Bay-backed Shrike is distributed in India at elevations of 1800 m in the Himalayas, absent in open country, light forest and scrub (Woodcock, 1980). The Grey Shrike is distributed in the dry areas of NWFP and west India and inhabits open country, semi deserts and the scrub edges of cultivated areas, scattered trees or shrubs but is not found in Sri Lanka (Woodcock, 1980; Grewal, 1993). The Rufous-backed Shrike, Bay-backed Shrike and Grey Shrike, are all summer visitors to the recreational park with a frequency of 1.19, 1.10 and 1.10 respectively. According to Roberts (1992) shrikes are common summer visitors, while Whistlers (1949) has reported them as common and residential.

The Scarlet Minivet was recorded with an overall frequency of 0.82% showing highest recorded numbers in the month of July and is a summer migratory bird to the study area. According to Woodcock (1980) it breeds

in the hill forest in the Himalayan area, on the peninsula and in the north-east of India and Sri Lanka.

The Golden Oriole was recorded in June, July, and August. Overall frequency was calculated to be 1.10 (Tab. 1). It prefers cultivated tracts and gardens. Roberts (1992) reported its distribution in Pakistan and this bird is a summer breeding species found mainly in the Northern part of the country. Awan (2004) also reported it as a common summer migratory bird but is scarce in number.

Before the earthquake of October 08, 2005 the recreational park Pattika was thickly vegetated and was an asylum for avian species. After the earthquake and landslides due to heavy rainfall the park was badly damaged resulting in the destruction of the habitat, which in turn affected the diversity of the avian fauna of the

park. Landslides due to the earthquake and heavy rainfall after the earthquake, earthquake relief activities, and construction of roads linking adjoining villages and extraction of damaged forest from the park area were found to be major threats in the rehabilitation of the habitat for the birds of the recreational park Pattika.

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Reference:

- Ali S, Ripley SD. 1987. Bird of India, Pakistan. Ed.2[M]. Oxford University Press, 223-669.
- Awan MN, Awan MS, Ahmad KB, Khan AA, Dar NI. 2004. A preliminary study on distribution of Avian Fauna of Muzaffarabad, Azad Jammu & Kashmir, Int [J]. *J Agri Biol*, 6 (2): 300-302.
- Kazmierczak K. 2000. A field Guide of the Birds of the Indian Subcontinent[M]. Yale University Press, 1-352.
- Corfield DM. 1983. Birds of Islamabad, Pakistan and the Murree Hills[M]. Islamabad: Asian Study Group.
- Goodwin, Derek. 1976. Crows of the World, British Museum (Natural History) [M]. Oxford University Press, 354.
- Grewal B. 1993. Bird of India[M]. The Guidebook Company Limited.
- Holden P, Sharrock JTR, Burn H. 1994. The RSPB Book of British Birds Ed.3[M]. Pan Macmillan.
- Meinertzhagen R. 1920. The birds of Quetta [J]. *Ibis*, 132-195.
- Mirza ZB. 1998. Illustrated handbook of biodiversity of Pakistan, Ist[M]. Oxford University Press.
- Roberts TJ. 1991. The Birds of Pakistan. Vol. I, (Non-Passeriformes) [M]. Oxford University Press, 170-527.
- Roberts TJ. 1992. The Birds of Pakistan. Vol.2, (Passeriformes)[M]. Oxford University Press, 40-541.
- Ward G. 1994. Islamabad Birds[M]. Islamabad: The Asian study group.
- Whistler H. 1949. A Popular Handbook of Indian Birds[M]. Oxford. University Press(Bombay).
- Whistler. 1930. The Birds of the Rawalpindi Districts NW[M]. India Ibis, Part I, 67-119; Part II, 247-790.
- Woodcock MW. 1980. Collins Hand Guide to the Birds of Indian Subcontinent[M]. Harper Collins Publishers, 30-123.