

OBSERVATIONS ON THE AVIFAUNA OF MUZAFFARNAGAR TOWN AND ADJACENT LOCALITIES, UTTAR PRADESH, INDIA

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ABSTRACT : In the present study, avifauna of Muzaffarnagar town and some adjacent localities was studied. Opportunistic observations on birds were made during July 2010 to October 2014, in different habitats such as riverine, urban areas, mango orchards, tree patches, road-side vegetation and agriculture fields. Analysis of the data revealed the occurrence of total 118 avian species belonging to 18 orders and 52 families. Order Passeriformes with 24 families and 47 species, was the most dominant group. Population status of over 40 % species was rare or very rare. Only 23.7 % species had good population. It was seen that natural habitats of birds are shrinking very fast and most area is facing anthropogenic pressure in terms of unorganised settlements and industrialization/ infrastructure development.

Key words : Avifauna, Muzaffarnagar, agriculture habitat, conservation, anthropogenic pressure.

INTRODUCTION

Uttar Pradesh is India's fifth largest state having 240,928 km² geographical area (ISFR, 2013). It is located in northern India and has a humid subtropical climate. The forest area in the state is 16,583 km² which is about 6.88 % of the geographical area of the state (ISFR, 2013). Most area is plain except northern border lying with Himalayan foothills. The major plain area located in Ganges-Yamuna Doab, and *terai* and *habhar* in north (Bhargava and Bhatt, 2005). Uttar Pradesh is considerably rich in natural resources including wildlife and avian diversity (Islam and Rahmani, 2004). Over 500 species of birds are found in the state, including some rare and endangered species such as *Gyps* vultures, Bengal Florican *Houbaropsis bengalensis*, White-headed Duck *Oxyura leucocephala* and Lesser Florican *Sypheotides indicus* (Rahmani *et al.*, 1990; Narwade *et al.*, 2006). For the sustainability and conservation of biodiversity of the state, one national park and 23 wildlife sanctuaries have been established (WII database, 2014). Faunal wealth of most of protected areas is documented. However, it is restricted to some prominent faunal groups.

Outside the protected area network, there are certain areas which hold fairly good populations and yet to be documented. Muzaffarnagar is one of such areas, where faunal studies are scanty. It is located in the *doab* (area between two close rivers) region of Ganges and Yamuna rivers, in western Uttar Pradesh. Its total area is 3008 km², lying between 29°11' 30" N and 29°45' 15" N and between 77°03' 45" E and 78°07' 00" E. It is one of the

highest producers of sugarcane in the country, thus well known for its agricultural prosperity. The district is covered by two major rivers from two sides (Ganges in east and Yamuna in west). Some minor rivers (such as Kali, Krishna, Hindon, Khokni and Katha) and a network of canals, enrich the area in water resources (Rana and Tyagi, 1971). Thus, ground water level is shallow and soil fertility is high. Consequently, the area is rich in agriculture production. A number of fruit orchards (dominated by *Mangifera indica*), village ponds/ tanks enhance the habitat variability of this area. The major habitat of the area is agriculture followed by tree patches/ fruit orchards, poplar plantation, riverine and urban/ sub-urban areas. Grasslands and forests are almost negligible. Information on the avifauna of this area is limited to some observation carried out by Rana and Tyagi (1971). In the present study, a checklist of the birds of Muzaffarnagar has been produced, based on my observations.

METHODOLOGY

Present article is based on opportunistic observations on birds made during July 2010 to October 2014, in Muzaffarnagar town, some nearby villages and adjacent nullah/ rivers. Suburban areas, mango orchards, tree patches, road-side vegetation, agriculture fields were covered in the study. Area was categorised into habitats namely agriculture fields (AG), fruit orchards, road side vegetation and tree patches (TP), riverine, canals, nullah and riverside vegetation (RI), settlements and urban areas (UR), and village tanks and ponds (VP). Every year about 2-5 days both in winter and summer season, were

spent for observations. About 1-3 hours per day were used for bird watching, mostly in morning or evening hours. Observations were carried out with the help of prismatic field binocular (10x50) and species identification was carried out with the help of field guide of Birds of India (Kazmierczak and Perlo, 2000) and Birds of Prey of the Indian Subcontinent (Naoroji, 2006). The taxonomic order and nomenclature follows IOC World Bird Names (2014) available at <http://avibase.bsc-eoc.org>. Occasional photographs were taken with the help of digital SLR camera with telephoto lens for further identification and documentation. The abundance of the species based on the number of individuals of each species observed in the study area, during last few years. The number of individuals of a species <10 was treated as very rare, followed by 11 to 50 as rare, 50 to 100 as common, and >100 as abundant.

RESULTS AND DISCUSSION

In the present study, on the basis of field observations and further identification from photographs, total 118 avian species belonging to 18 orders and 52 families, are enlisted (Table 1). This list comprised of both resident and migratory birds. Order Passeriformes with 24 families and 47 species was the most dominant group. Family Accipitridae represented by 9 species followed by Ardeidae (6 sp.), Columbidae (6 sp.), and Muscicapidae (6 sp.). Apart from this, five species of cuckoos (including Asian Koel and Greater Coucal), three species of cormorants, two species of francolins, four species of mynas/ starlings, four species of wagtails/ pipits were observed. The details of all species are given in Table 1. Birds such as leaf warblers, fantails, flycatchers, redstarts and some raptors were winter migrants. In terms of abundance, 23.7 % species were very common followed by 34.7 % fairly common. 19.5 % species were very rare followed by 22.1 % rare species.

It was observed that Bank Myna *Acridotheres ginginianus* is well adapted to urban habitats. Large flocks (about 40 to over 100 individuals) of this species were common, even in crowded areas such as railway station and bus stands. It is an omnivorous species, was seen successfully foraging on domestic waste/ garbage, also. The population of House Sparrow *Passer domesticus* was sparse. It is a granivorous, hole-nesting species. About two decades back, it was one of the most common species of the area. Alterations in agriculture techniques (especially in crop harvesting methods led to negligible wastage of food grains) and recent house constructions (have no holes in ceiling, contrary to old pattern housing having plenty of holes available for nesting) in villages, most probably created scarcity of food and nesting sites, and seems accountable for decreasing population of this

species. Moreover, Rock Pigeon *Columba livia*, a fairly common species use same habitat, is dominant over house sparrows in foraging on grains. In the present study, *Gyps* vultures were not seen. However, few decades back, they were very common in the area. Only some individuals of Egyptian Vulture *Neophron percnopterus* were seen quite regularly near Kali and Hindon rivers. The number of Cattle Egret *Bubulcus ibis* was abundant in agriculture habitats. Red-naped Ibis *Pseudibis papillosa* was also observed quite regularly both in riverine habitats and in agriculture fields in hetero-specific flocks with egrets. The population of Indian Chat *Cercomela fusca* is surprisingly! increasing. About 20 years back, this species was rarely seen, but during recent years it is commonly sighted. I observed, it forage on houseflies and even mosquitos (when flying during day time). It seems that this species is replacing the house sparrows in some areas, most probably due to availability of flies.

Review of literature revealed that studies on the avifauna of this area are scanty. I got an article by Rana and Tyagi (1971), which provides glimpse of avian composition of about 4 decades ago. It evidenced that vultures and house sparrows were abundant in those days. However, occurrence of two species of bulbuls, namely Himalayan bulbul *Pycnonotus leucogenys* and White-browed Bulbul *P. luteolus* is dubious, as both species have no distribution ranges in this area. We can speculate that in those days, Himalayan Bulbul would have distribution in this area most probably owing to the presence of fruit orchards and forest fragments along the riversides. However, recently the distribution range of this species is strictly restricted to Shwalik foothills and Himalaya (western Arunachal Pradesh to eastern Afghanistan). Record of White-browed Bulbul seems a case of misidentification as the distribution of this species restricted to peninsular India, very far from study area.

Perusal of the present study revealed that area supports fairly good diversity of birds. However population status of over 40 % species is rare or very rare. Only 23.7 % species have good population, which includes mostly omnivorous birds. It is seen that natural habitats of birds are very limited and most area is facing anthropogenic pressure in terms of unorganised settlements and industrialization/ infrastructure development. However, agricultural areas and fruit orchards provide food and shelter to some species, even though excessive use of pesticides imposes a heavy cost upon them. Many of them unable to cope with this impact and consequently their populations are decreasing very fast. Studies showed that in urban habitats, birds became less diverse and usually dominated by omnivorous and

Table 1 : Systematic list of birds observed in present study in Muzaffarnagar town and adjacent localities.

S. no.	Common name of the species	Scientific name	IUCN Status	Habitats	Abundance
ORDER: GALLIFORMES					
Family: Phasianidae					
1	Gray Francolin	<i>Francolinus pondicerianus</i>	LC	AG, RI	4
2	Black Francolin	<i>Francolinus francolinus</i>	LC	AG, RI	4
3	Indian Peafowl	<i>Pavo cristatus</i>	LC	AG, TP	1
ORDER: PODICIPEDIFORMES					
Family: Podicipedidae					
4	Little Grebe	<i>Tachybaptus ruficollis</i>	LC	VP	2
ORDER: CICONIIFORMES					
Family: Ciconiidae					
5	Asian Openbill	<i>Anastomus oscitans</i>	LC	RI, AG	3
6	Woolly-necked Stork	<i>Ciconia episcopus</i>	LC	RI, AG	4
ORDER: SULIFORMES					
Family: Phalacrocoracidae					
7	Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	LC	RI	2
8	Great Cormorant	<i>Phalacrocorax carbo</i>	LC	RI	3
9	Little Cormorant	<i>Phalacrocorax niger</i>	LC	RI	2
ORDER: ELECANIFORMES					
Family: Ardeidae					
10	Purple Heron	<i>Ardea purpurea</i>	LC	RI	4
11	Great Egret	<i>Ardea alba</i>	LC	RI	4
12	Intermediate Egret	<i>Mesophoyx intermedia</i>	LC	RI	3
13	Little Egret	<i>Egretta garzetta</i>	LC	RI	2
14	Cattle Egret	<i>Bubulcus ibis</i>	LC	AG	1
15	Indian Pond-Heron	<i>Ardeola grayii</i>	LC	RI, AG	2
ORDER: ELECANIFORMES					
Family: Threskiornithidae					
16	Red-naped Ibis	<i>Pseudibis papillosa</i>	LC	RI, AG	3
ORDER: ACCIPITRIFORMES					
Family: Accipitridae					
17	Black-shouldered Kite	<i>Elanus caeruleus</i>	LC	AG, RI	2
18	Egyptian Vulture	<i>Neophron percnopterus</i>	EN	RI	3
19	Oriental Honey-buzzard	<i>Pernis ptilorhynchus</i>	LC	TP	4
20	Crested Serpent-Eagle	<i>Spilornis cheela</i>	LC	AG	4
21	Steppe Eagle	<i>Aquila nipalensis</i>	LC	RI	4
22	Eurasian Marsh-Harrier	<i>Circus aeruginosus</i>	LC	RI	4
23	Shikra	<i>Accipiter badius</i>	LC	TP, AG	2
24	Eurasian Sparrowhawk	<i>Accipiter nisus</i>	LC	TP, AG	2
25	Black Kite	<i>Milvus migrans</i>	LC	AG, UR, RI	1
ORDER: GRUIFORMES					
Family: Rallidae					
26	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	LC	VP, RI	2
27	Purple Swamphen	<i>Porphyrio porphyrio</i>	LC	RI	4
28	Eurasian Moorhen	<i>Gallinula chloropus</i>	LC	RI	2

Table 1 continued...

Table 1 continued...

	ORDER: CHARADRIIFORMES				
	Family: Recurvirostridae				
29	Black-winged Stilt	<i>Himantopus himantopus</i>	LC	RI	2
30	Pied Avocet	<i>Recurvirostra avosetta</i>	LC	RI	2
	Family: Charadriidae				
31	River Lapwing	<i>Vanellus duvaucelii</i>	NT	RI	2
32	Red-wattled Lapwing	<i>Vanellus indicus</i>	LC	AG	1
	Family: Jacanidae				
33	Bronze-winged Jacana	<i>Metopidius indicus</i>	LC	VP	2
	Family: Scolopacidae				
34	Common Sandpiper	<i>Actitis hypoleucos</i>	LC	RI	2
35	Green Sandpiper	<i>Tringa ochropus</i>	LC	RI	2
36	Common Greenshank	<i>Tringa nebularia</i>	LC	RI	2
37	Common Redshank	<i>Tringa totanus</i>	LC	RI	2
38	Little Stint	<i>Calidris minuta</i>	LC	RI	2
	Family: Turnicidae				
39	Barred Buttonquail	<i>Turnix suscitator</i>	LC	AG	3
	Family: Laridae				
40	River Tern	<i>Sterna aurantia</i>	NT	RI	3
	ORDER: COLUMBIFORMES				
	Family: Columbidae				
41	Rock Pigeon	<i>Columba livia</i>	LC	AG, TP, UR	1
42	Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	LC	AG, UR, TP	1
43	Red Collared-Dove	<i>Streptopelia tranquebarica</i>	LC	UR, TP	3
44	Spotted Dove	<i>Streptopelia chinensis</i>	LC	AG, UR, TP	1
45	Laughing Dove	<i>Streptopelia senegalensis</i>	LC	AG, UR, TP	2
46	Yellow-footed Pigeon	<i>Treron phoenicopterus</i>	LC	TP	4
	ORDER: CUCULIFORMES				
	Family: Cuculidae				
47	Pied Cuckoo	<i>Clamator jacobinus</i>	LC	UR, AG	3
48	Common Hawk-Cuckoo	<i>Hierococcyx varius</i>	LC	TP	2
49	Indian Cuckoo	<i>Cuculus micropterus</i>	LC	TP	3
50	Asian Koel	<i>Eudynamys scolopaceus</i>	LC	AG, TP, UR	1
51	Greater Coucal	<i>Centropus sinensis</i>	LC	AG	1
	ORDER: STRIGIFORMES				
	Family: Strigidae				
52	Eurasian Eagle-Owl	<i>Bubo bubo</i>	LC	TP	4
53	Spotted Owlet	<i>Athene brama</i>	LC	TP, UR, AG	1
	ORDER: CAPRIMULGIFORMES				
	Family: Caprimulgidae				
54	Large-tailed Nightjar	<i>Caprimulgus macrurus</i>	LC	TP	4
	ORDER: APODIFORMES				
	Family: Apodidae				
55	House Swift	<i>Apus nipalensis</i>	LC	UR, TP, RI	1

Table 1 continued...

Table 1 continued...

	ORDER: CORACIIFORMES				
	Family: Alcedinidae				
56	Common Kingfisher	<i>Alcedo atthis</i>	LC	RI, VP	1
57	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	LC	RI, VP	1
58	Pied Kingfisher	<i>Ceryle rudis</i>	LC	RI	2
	Family: Meropidae				
59	Green Bee-eater	<i>Merops orientalis</i>	LC	RI, AG	2
60	Blue-tailed Bee-eater	<i>Merops philippinus</i>	LC	RI	4
	Family: Coraciidae				
61	Indian Roller	<i>Coracias benghalensis</i>	LC	AG	2
	Family: Upupidae				
62	Eurasian Hoopoe	<i>Upupa epops</i>	LC	AG, TP, UR	1
	Family: Bucerotidae				
63	Indian Gray Hornbill	<i>Ocyrceros birostris</i>	LC	TP, UR	2
	ORDER: PICIFORMES				
	Family: Megalaimidae				
64	Brown-headed Barbet	<i>Megalaima zeylanica</i>	LC	TP	2
65	Coppersmith Barbet	<i>Megalaima haemacephala</i>	LC	TP	2
	Family: Picidae				
66	Yellow-crowned Woodpecker	<i>Dendrocopos mahrattensis</i>	LC	TP	3
67	Black-rumped Flameback	<i>Dinopium benghalense</i>	LC	TP	3
	ORDER: FALCONIFORMES				
	Family: Falconidae				
68	Eurasian Kestrel	<i>Falco tinnunculus</i>	LC	TP	4
	ORDER: PSITTACIFORMES				
	Family: Psittacidae				
69	Alexandrine Parakeet	<i>Psittacula eupatria</i>	LC	TP	4
70	Rose-ringed Parakeet	<i>Psittacula krameri</i>	LC	AG, TP, UR	1
71	Plum-headed Parakeet	<i>Psittacula cyanocephala</i>	LC	AG, TP	3
	ORDER: PASSERIFORMES				
	Family: Laniidae				
72	Bay-backed Shrike	<i>Lanius vittatus</i>	LC	AG	2
73	Long-tailed Shrike	<i>Lanius schach</i>	LC	AG	2
	Family: Oriolidae				
74	Black-hooded Oriole	<i>Oriolus xanthornus</i>	LC	TP	4
	Family: Dicruridae				
75	Black Drongo	<i>Dicrurus macrocercus</i>	LC	AG, UR	3
	Family: Rhipiduridae				
76	White-browed Fantail	<i>Rhipidura aureola</i>	LC	TP	4
	Family: Corvidae				
77	Rufous Treepie	<i>Dendrocitta vagabunda</i>	LC	UR, TP	2
78	House Crow	<i>Corvus splendens</i>	LC	UR, TP, RI	1
79	Large-billed Crow	<i>Corvus macrorhynchos</i>	LC	TP	2

Table 1 continued...

Table 1 continued...

	Family: Alaudidae				
80	Crested Lark	<i>Galerida cristata</i>	LC	AG, RI	3
81	Oriental Skylark	<i>Alauda gulgula</i>	LC	AG	3
	Family: Hirundinidae				
82	Gray-throated Martin	<i>Riparia chinensis</i>	LC	RI, UR	3
83	Dusky Crag-Martin	<i>Ptyonoprogne concolor</i>	LC	UR	2
84	Wire-tailed Swallow	<i>Hirundo smithii</i>	LC	UR	1
	Family: Stenostiridae				
85	Gray-headed Canary-Flycatcher	<i>Culicicapa ceylonensis</i>	LC	TP	4
	Family: Paridae				
86	Great Tit	<i>Parus major</i>	LC	TP	3
	Family: Sittidae				
87	Chestnut-bellied Nuthatch	<i>Sitta cinnamoventris</i>	LC	TP	4
	Family: Pycnonotidae				
88	Red-vented Bulbul	<i>Pycnonotus cafer</i>	LC	UR, TP, RI	1
	Family: Phylloscopidae				
89	Common Chiffchaff	<i>Phylloscopus collybita</i>	LC	AG, TP	3
90	Hume's Warbler	<i>Phylloscopus humei</i>	LC	AG, TP	3
91	Greenish Warbler	<i>Phylloscopus trochiloides</i>	LC	AG, TP	4
	Family: Acrocephalidae				
92	Moustached Warbler	<i>Acrocephalus melanopogon</i>	LC	RI	4
	Family: Cisticolidae				
93	Common Tailorbird	<i>Orthotomus sutorius</i>	LC	UR	1
94	Ashy Prinia	<i>Prinia socialis</i>	LC	UR, AG	1
95	Plain Prinia	<i>Prinia inornata</i>	LC	AG	2
	Family: Sylviidae				
96	Lesser Whitethroat	<i>Sylvia curruca</i>	LC	AG, RI	3
	Family: Zosteropidae				
97	Oriental White-eye	<i>Zosterops palpebrosus</i>	LC	TP	3
	Family: Leiotherichidae				
98	Large Gray Babbler	<i>Turdoides malcolmi</i>	LC	RI, AG	3
99	Jungle Babbler	<i>Turdoides striata</i>	LC	AG, TP, RI, UR	1
	Family: Muscicapidae				
100	Indian Robin	<i>Copsychus fulicatus</i>	LC	UR, TP	2
101	Oriental Magpie-Robin	<i>Copsychus saularis</i>	LC	UR, TP	2
102	Black Redstart	<i>Phoenicurus ochruros</i>	LC	RI	4
103	Siberian Stonechat	<i>Saxicola maurus</i>	LC	AG	3
104	Pied Bushchat	<i>Saxicola caprata</i>	LC	AG	2
105	Indian Chat	<i>Cercomela fusca</i>	LC	UR, TP	1
	Family: Sturnidae				
106	Bank Myna	<i>Acridotheres ginginianus</i>	LC	UR	1
107	Common Myna	<i>Acridotheres tristis</i>	LC	AG, TP, UR, RI	1

Table 1 continued...

Table 1 continued...

108	Asian Pied Starling	<i>Gracupica contra</i>	LC	UR, AG	1
109	Brahminy Starling	<i>Temenuchus pagodarum</i>	LC	UR, AG	1
	Family: Nectariniidae				
110	Purple Sunbird	<i>Cinnyris asiaticus</i>	LC	UR, TP	1
	Family: Motacillidae				
111	Gray Wagtail	<i>Motacilla cinerea</i>	LC	AG, UR, RI	2
112	White Wagtail	<i>Motacilla alba</i>	LC	AG, UR, RI	2
113	White-browed Wagtail	<i>Motacilla madaraspatensis</i>	LC	AG, UR, RI	2
114	Olive-backed Pipit	<i>Anthus hodgsoni</i>	LC	AG	3
	Family: Passeridae				
115	House Sparrow	<i>Passer domesticus</i>	LC	UR, AG, TP, RI	1
	Family: Ploceidae				
116	Baya Weaver	<i>Ploceus philippinus</i>	LC	RI, AG	2
	Family: Estrildidae				
117	Indian Silverbill	<i>Euodice malabarica</i>	LC	AG, RI	3
118	Nutmeg Mannikin	<i>Lonchura punctulata</i>	LC	AG, RI, TP	2

(LC- Least Concern, NT- Near Threatened, EN- Endangered, AG- Agriculture fields, TP- Tree patches, RI- River sides, UR- Urban areas, VP- Village ponds, 1- Very Common, 2- Common, 3- Rare, 4- Very rare).

frugivorous than insectivorous and carnivorous species, and adapted to nesting and/or roosting in artificial structures such as buildings (Clergeau *et al.*, 1998; Wheeler, 1999; Lim and Sodhi, 2004). The rapid developmental activities cause alterations in natural habitats of the living beings. These activities often force them to either disappear or to adapt in new niches. In such changed landscape the survival of a species depends on how fast it alters its foraging and breeding behaviour. In the present study, the case of decreasing population of house sparrow and increasing population of Indian chat is most probably enough to justify the arguments.

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