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RESEARCH PAPER

A comparative study of two avian communities of Taranga Hill forest and Balram-Ambaji Wildlife Sanctuary, Gujarat

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ABSTRACT

The avifaunal survey was carried out to highlight the importance of the study areas as well adapted and the most favourable habitat for bird populations. A total of 123 species of birds belonging to 13 orders, 43 families and 92 genera were recorded, of which 4.88% were abundant, 18.70% were common and 13.01% were rare in occurrence. A total of 101 residents, 9 residents and migratory and 13 migratory accounted for the diversity of avifauna of these regions. The avifauna was more dominant in Balaram-Ambaji Wildlife Sanctuary as compared to Taranga Hilly-forest. Perhaps, it could be due to more agricultural croplands, undisturbed banks of Balaram and Saraswati rivers, dense forest, high trees, water bodies and scattered patches of human settlements in village vicinities, natural forest areas which provided shelter to more birds.

Key words : Avian community, Avifauna, Hilly-forest, Biodiversity, Wetland, Water bodies.

India ranks 6th in biodiversity and that is a prideful talk, yet due to human interference in various aspects and habitat destruction there is decrease in few species, which is a topic to worry. Keeping this idea centrally, positive steps should be taken first on investigating small habitats. This type of small attempts which provides various results and its comprehensive study shows new rays towards natural conservation, than after proper planning should be done. Keeping these views in mind mainly the avifauna of North Gujarat in selected forest areas are scinarionised.

In Gujarat, very few attempts have been made to study the biodiversity. Acharya (2003) and Vyas (2005) have also investigated the avifauna of wetland and urban areas of Visnagar, respectively. So far, any type of systematic probing into these forests of North Gujarat has not been made. Hence, it is very essential to collect some sufficient documentation regarding the distribution and status of birds in these areas. The present study comprises a survey of avifauna of Taranga Hill forest and Balaram-Ambaji Wildlife Sanctuary, which will be useful in providing baseline data for planning effective management to study bird diversity in their respective habitats. This paper presents the systematic list of birds with their orders and families.

Study area :

Taranga Hill forest (THf):

The Taranga Hill forest is situated at 72° 46' E and 24° 00' N in the North Gujarat region, India (Fig.1) and at elevated 365.76 meters above. It is located 56 km away from the terminus railway station of Mehsana-Taranga Hill meter gauge railway line. The Sabarmati River passes through at the Western end of the forest, which is about 4.5 km away from it. Gujarat State Forest Department considers this forest as an unclassified (Under Section-IV) of Satalasana taluka reserve forest of the Mehsana district of North Gujarat. It is included under Division & Circle of Gandhinagar. The authority of this forest is under the Timba village Gram-Panchayat, which is very nearest village to this forest. Total forest area of Mehsana district is 48.28 sq km out of this, the Taranga forest covers 18.12 sq km, which is the largest study area for the present work. It is one of the protected natural habitats for leopard, wolf, beer, fox and other animals.

The climate is semiarid with irregular rainfall. Average temperature remains 32.10°C to 21.98°C. Temperature is high in May and low in December and January. Total rainfall remains 591.25 mm with 153 rainy days. Xerophytes vegetation is dominant. Agro-ecosystems exist at the peripheral areas of the forest.

Balaram-Ambaji Wildlife Sanctuary (BAWS):

Balaram-ambaji wild life sanctuary (BAWS) is a dense patch of forest in Gujarat. The sanctuary derives its name from two historical temples Balaram and Ambaji. It is declared as a sanctuary on 7th August 1989 by Government of Gujarat, vide its notification No. GVN/ 27/WLP/1088/850-V2. It lies between 24° 10' to 24° 30' N and 72° 20' to 73° 00' E. The total area of this sanctuary is 542.08 sq km.

Balaram-Ambaji wildlife sanctuary is situated at Northeast part of Banaskantha district of Gujarat State, India (Fig.1). The Sanctuary area are well connected with roads. Palanpur and Abu-road is the major nearby towns. In the North, the sanctuary merges with the forests of Rajasthan state spreading over hillocks, which facilitates easy movement of wild animals across the border. In the South there are planes and agricultural fields. In the East it merges with the forests of Sabarkantha district while on the West lays the Jessore Sloth Bear Sanctuary (JSBS) with similar habitat condition.

The climate of this area is of the typical 'semi-arid' type. Annual maximum and minimum temperatures here range between 42° C and 7° C, the morning and afternoon humidity values vary between 70 per cent and 23 per cent, respectively. Rainfall in the area is very erratic and unevenly distributed, and frequent periodic droughts are observed. The intensity of rainfall is generally higher in the month of July. Average rainy days are 53 during monsoon.

MATERIALS AND METHODS

As the study was of qualitative nature, all the observations were made during the morning hours between 7.00 a.m. and 11.00 a.m. The study was done from May 2005 to October 2007. Routine field trips were conducted over a considerable period throughout the area. All observations were made by walking along sloppy areas, steeply hills, riverbanks, mudflats, croplands, natural forests, man-made plantations, village vicinities and human settlements, by using a pair of binoculars of 8 x 40 of magnification. Identification of different species of birds was aided by using standard books (Ali, 1949, 2002 and Richard *et al.,*1999).

Comparation of two study area :

By minute observation and study it can easily be differentiated that BAWS is more suitable habitat for avifauna than THf (Table 1). The reasons for this are as follows.

– BAWS has more dense forest area than THf, which provides good dwelling places to birds.

– In BAWS a great number of tall trees are found such as *Terminalia arjuna, Tamarindus indica, Butea monosperma, Ficus religiosa, Ficus benghalensis, Bombax ceiba* etc. which was more suitable for raptors.

– There exist agricultural areas in BAWS at an interval of small distance, which enhances availability of food and water for birds. While in THf there lies agricultural area in surrounding part of land.

– BAWS has the river Balaram and Saraswati and their banks while THf there doesn't lay any water body except monsoon water bodies.

RESULTS AND DISCUSSION

Avifauna composition of both the study areas is represented by 123 species belonging to 13 orders and 43 families with 92 genera (Table 1 and 2). Of the total, the most abundant species recorded belonged to Order Passeriformes, and the most common species found belonged to Orders Galliformes, Coraciiformes, Cuculiformes, Columbiformes and Ciconiiformes. While out of rare sightings one species belonged to Orders Piciformes, Strigiformes and Columbiformes each, *viz., Megalaima haemacephala*, *Athene brama* and *Treron phoenicoptera*, and four species belonged to Order Ciconiiformes, *viz., Burhinus oedicnemus*, *Milvus migrans*, *Pernis ptilorhyncus* and *Casmerodius albus*, and nine species belonged to Order Passeriformes, *viz., Terpsiphone paradisi*, *Aegithina tiphia*, *Oriolus oriolus*, *Aegithina nigrolutea*, *Phoenicurus ochruros*, *Parus nuchalis*, *Zosterops palpebrosus*, *Motacilla alba* and *Melophus lathami* which are notable.

On the other hand, the largest Order was Passeriformes with 15 families and 61 species, followed by Order Ciconiiformes with 11 families and 30 species. Order with 4 families was Coraciformes (6 species). Orders with 2 families are Piciformes (3 species), Cuculiformes (4 species), Apodiformes (2 species) and Strigiformes (3 species), while having only one family each with varying significant number of species were represented the remaining Orders.

Status wise, 101 species (82.11%) were resident, 9 species (7.32%) are resident and migratory within the areas 13 species (10.57%) were migratory.

In THf, of the total taxa, 12 species (9.76%) were abundant, 47 species (38.21%) are common, while 26 species (21.14%) are rare in occurrence. And in BAWS, 14 species (11.38%) are abundant, 32 species (26.02%) were common, while 60 species (48.78%) were of occurrence. The commonness of presence of avifauna between both study areas indicated that 6 species (4.88%) are abundant, 23 species (18.70%) were common, while 16 species (13.01%) were rare in occurrence.

Thus, rich and varied avifauna in THf and BAWS is mainly because of diversified natural habitats of these regions. Moreover, the study shows that there is much richness and diversity of bird species in BAWS than in THf. Since BAWS has more agricultural croplands, undisturbed banks of Balaram and Saraswati rivers, dense forest, high trees, water bodies and scattered patches of human settlements in village vicinities, natural forest areas

Table 1 : List of birds with their status and abundance in THf and BAWS

Sr. No.	Family / Common name	Scientific name	Status*	SA-1	SA-2
Order : Galliformes					
Family : Phasianidae					
1.	Common / Indian peafowl	*Pavo cristatus*	R	+ + +	+ +
2.	Gray francolin	*Francolinus pondicerianus*	R	+ +	+ +
Order : Anseriformes					
Family : Anatidae					
3.	Northern pintail	*Anas acuta*	M	-	+
Order : Piciformes					
Family : Picidae					
4.	Black-rumped flameback	*Dinopium benghalense*	R	++	+
5.	Greater flameback	*Chrysocolaptes lucidus*	R	-	+
Family : Megalaimidae					
6.	Coppersmith barbet	*Megalaima haemacephala*	R	+	+
Order : Upupiformes					
Family : Upupidae					
7.	Common hoopoe	*Upupa epops*	RM	++	+
Order : Coraciiformes					
Family : Coraciidae					
8.	European roller	*Coracias garrulus*	M	+	-
9.	Indian roller	*Coracias benghalensis*	R	++	++
Family : Dacelonidae					
10.	White-throated kingfisher	*Halcyon smyrnensis*	R	+	+++
Family : Cerylidae					
11.	Pied kingfisher	*Ceryle rudis*	R	-	+
Family : Meropidae					
12.	Blue-cheeked bee-eater	*Merops persicus*	RM	+++	+
13.	Green bee-eater	*Merops orientalis*	R	+++	+++
Order : Cuculiformes					
Family : Cuculidae					
14.	Asian koel	*Eudynamys scolopacea*	R	++	++
15.	Eurasian cuckoo	*Cuculus canorus*	RM	-	+
16.	Pied cuckoo	*Clamator jacobinus*	RM	++	++
Family : Centropodidae					
17.	Greater coucal	*Centropus sinensis*	R	++	++
Order : Psittaciformes					
Family : Psittacidae					
18.	Plum-headed parakeet	*Psittacula cyanocephala*	R	+++	+
19.	Rose-ringed parakeet	*Psittacula krameri*	R	+++	+++
Order : Apodiformes					
Family : Apodidae					
20.	House swift	*Apus affinis*	R	+++	+
Family : Hemiprocnidae					
21.	Crested treeswift	*Hemiprocne coronata*	R	-	++
Order : Strigiformes					
Family : Strigidae					

Table 1 contd.....

Contd..... Table 1

22.	Spotted owlet	*Athene brama*	R	+	+
Family : Caprimulgidae					
23.	Gray nightjar	*Caprimulgus indicus*	R	-	+
24.	Indian nightjar	*Caprimulgus asiaticus*	R	-	+
Order : Columbiformes					
Family : Columbidae					
25.	Eurasian collared dove	*Streptopelia decaocto*	R	++	++
26.	Lauging dove	*Streptopelia senegalensis*	R	++	++
27.	Red collared dove	*Streptopelia tranquebarica*	R	-	++
28	Rock pigeon	*Columba livia*	R	+++	+++
29.	Spotted dove	*Streptopelia chinensis*	R	-	++
30.	Yellow-footed green pigeon	*Treron phoenicoptera*	R	+	+
Order : Gruiformes					
Family : Rallidae					
31.	Purple swamphen	*Porphyrio porphyrio*	R	-	+
32.	Common coot	*Fulica atra*	RM	-	++
Order : Ciconiiformes					
Family : Scolopacidae					
33.	Curlew sandpiper	*Calidris ferrugina*	M	-	+
34.	Dunlin	*Calidris alpina*	M	-	+
Family : Burhinidae					
35.	Eurasian thick-knee	*Burhinus oedicnemus*	R	+	+
Family : Charadridae					
36.	Black-winged stilt	*Himantopus himantopus*	R	-	++
37.	Red-wattled lapwing	*Vanellus indicus*	R	++	++
Family : Accipitridae					
38	Black Kite	*Milvus migrans*	R	+	+
39.	Black-shouldered Kite	*Elanus caeruleus*	R	++	++
40.	Egyptian Vulture	*Neophron percnopterus*	RM	-	+
41.	Oriental Honey-buzzard	*Pernis ptilorhyncus*	R	+	+
42.	Shikra	*Accipiter badius*	R	++	++
43.	Tawny Eagle	*Aquila rapax*	R	-	+
44.	White-eyed Buzzard	*Butastur teesa*	R	+	-
Family : Podicipedidae					
45.	Black-necked Grebe	*Podiceps nigricollis*	M	-	+
46.	Little Grebe	*Tachybaptus ruficollis*	R	-	+++
Family : Anhingidae					
47.	Darter	*Anhinga melanogaster*	R	-	+
Family : Phalacrocoracidae					
48.	Great Cormorant	*Phalacrocorax carbo*	R	-	+
49.	Indian Cormorant	*Phalacrocorax fuscicollis*	R	-	+
50.	Little Cormorant	*Phalacrocorax niger*	R	-	+
Family : Ardeidae					
51.	Black-crowned Night Heron	*Nycticorax nycticorax*	R	-	+
52.	Cattle Egret	*Bubulcus ibis*	R	++	+++
53.	Great Egret	*Casmerodius albus*	R	+	+

Table 1 contd.....

Table 1 contd.....

54.	Indian Pond Heron	*Ardeola grayii*	R	+	++
55.	Intermediate Egret	*Mesophoyx intermedia*	R	-	+
56.	Little Egret	*Egretta garzetta*	R	-	++
57.	Little Heron	*Butorides striatus*	R	-	+
Family : Threskiornithidae					
58.	Black-Headed Ibis	*Therskiornis melanocephalus*	RM	++	+
59.	Black Ibis	*Pseudibis papillosa*	R	++	+
Family : Ciconidae					
60.	Asian Openbill	*Anastomus oscitans*	R	-	+
61.	Painted Stork	*Mycteria leucocephala*	R	-	+
62.	Woolly-necked Stork	*Ciconia episcopus*	R	-	+
Order : Passeriformes					
Family : Pittidae					
63	Indian Pitta	*Pitta brachyuran*	M	-	+
Family : Lanidae					
64.	Great Grey Shrike	*Lanius excubitor*	R	++	-
65.	Long-tailed Shrike	*Lanius schach*	R	++	++
Family : Corvidae					
66.	Asian Paradise-Flycatcher	*Terpsiphone paradisi*	R	+	+
67.	Black Drongo	*Dicrurus macrocercus*	R	++	+++
68.	Common Iora	*Aegithina tiphia*	R	+	+
69.	Eurasion Golden Oriole	*Oriolus oriolus*	RM	+	+
70.	House Crow	*Corvus splendens*	R	++	+++
71.	Large-billed Crow	*Corvus macrorhynchos*	R	++	++
72.	Marshall's Iora	*Aegithina nigrolutea*	R	+	+
73	Rufous Treepie	*Dendrocitta vagabunda*	R	++	++
74.	Small Minivet	*Pericrocotus cinnamomeus*	R	++	+
75.	White-browed Fantail	*Rhipidura aureola*	R	++	++
76.	White-bellied Drongo	*Dicrurus caerulescens*	R	++	+
77.	White-throated Fantail	*Rhipidura albicollis*	R	-	+
Family : Muscicapidae					
78.	Black Redstart	*Phoenicurus ochruros*	RM	+	+
79.	Brown Rockchat	*Saxicola fusca*	R	+ +	+
80.	Common Redstart	*Phoeniurus pohenicurus*	R	+	-
81.	Common Stonechat	*Saxicola torquata*	M	+	-
82.	Grey-headed Canary Flycatcher	*Culicicapa ceylonensis*	M	-	+
83.	Indian Robin	*Saxicoloides fulicata*	R	+ +	+ + +
84.	IsabellineWheatear	*Oenanthe isabellina*	M	+	-
85.	Jerdon's Bushchat	*Saxicola jerdoni*	R	+	-
86.	Oriental Magpie Robin	*Copsychus saularis*	R	+ +	+ +
87.	Tickell's Blue Flycatcher	*Cyornis tickelliae*	R	-	+
Family : Sturnidae					
88.	Bank Myna	*Acridotheres ginginianus*	R	++	++
89.	Brahminy Starling	*Sturnus pagodarum*	R	++	+++

Table 1 contd...

Contd.... Table 1

90.	Common Myna	*Acridotheres tristis*	R	++	+++
Family : Paridae					
91.	Black-lored Tit	*Parus xanthogenys*	R	-	+
92.	Great Tit	*Parus major*	R	++	+
93.	White-naped Tit	*Parus nuchalis*	R	+	+
Family : Hirundinidae					
94.	Plain Martin	*Riparia paludicola*	R	+	-
95.	Red-rumped Swallow	*Hirundo daurica*	R	++	++
96.	Wire-tailed Swallow	*Hirundo smithii*	R	++	-
Family : Pycnonotidae					
97.	Red-vented Bulbul	*Pycnonotus cafer*	R	+++	+++
98.	White-eared Bulbul	*Pycnonotus leucotis*	R	++	-
Family : Cisticolidae					
99.	Ashy Prinia	*Prinia socialis*	R	++	++
100.	Common Tailorbird	*Orthotomus sutorius*	R	++	++
101.	Gray-breasted Prinia	*Prinia hodgsonii*	R	++	++
102.	Plain Prinia	*Prinia inornata*	R	++	++
103.	Rufous-fronted Prinia	*Prinia buchanani*	R	++	++
Family : Zosteropidae					
104.	Oriental white-eye	*Zosterops palpebrosus*	R	+	+
Family : Silvidae					
105.	Common babbler	*Turdoides caudates*	R	++	-
106.	Jungle babbler	*Turdoides striatus*	R	+++	+++
107.	Large grey babbler	*Turdoides malcolmi*	R	+++	+++
108.	Lesser whitethroat	*Sylvia curruca*	M	+	-
109.	Tawny-bellied babbler	*Dumetia hyperythra*	R	-	+
110.	Yellow billed babbler	*Turdoides affinis*	R	++	-
Family : Alaudidae					
111.	Ashy-crowned sparrow lark	*Eremopterix grisea*	R	++	-
112.	Indian bushlark	*Mirafra erythroptera*	R	++	-
Family : Nectarinidae					
113.	Purple sunbird	*Nectarinia asiatica*	R	+++	++
Family : Passeridae					
114.	Baya weaver	*Ploceus philippinus*	R	+ +	+ +
115.	Black-headed munia	*Lonchura malacca*	R	-	+
116.	Chestnut-shouldered petronia	*Petronia xanthocollis*	R	+ + +	-
117.	House sparrow	*Passer domesticus*	R	+ +	+
118.	Indian silverbill	*Lonchura malabarica*	R	+ +	+
119.	Tree pipit	*Anthus trivialis*	M	-	+
120.	White-browed wagtail	*Motacilla maderaspatensis*	R	+	-
121.	White wagtail	*Motacilla alba*	M	+	+
122.	Yellow wagtail	*Motacilla flava*	M	-	+
Family : Fringillidae					
123.	Crested bunting	*Melophus lathami*	R	+	+

* - Indicates reference is taken from Gujarat Forest Department's book " Birds of Gujarat "
SA-1 = Study area (i) Taranga Hilly-forest; SA-2 = Study area (ii) Balaram-Ambaji Wildlife Sanctuary; SA1&2 = Both Study areas (i) & (ii); R = Resident; RM = Resident and Migratory; M = Migratory; - = Not observed; + = Rare; + + = Common; + + + = Abundant.

Table 2 : Status of birds recorded in THf and BAWS

Sr. No.		SA-1		SA-2		SA-1 & 2		Status		
		F	S	F	S	F	S	R	RM	M
1.	Galliformes	1	2	1	2	1	2	2	-	-
2.	Anseriformes	0	0	1	1	1	1	-	-	1
3.	Piciformes	2	2	2	3	2	3	3	-	-
4.	Upupiformes	1	1	1	1	1	1	-	1	-
5.	Coraciiformes	3	5	4	5	4	6	4	1	1
6.	Cuculiformes	2	3	2	4	2	4	2	2	-
7.	Psittaciformes	1	2	1	2	1	2	2	-	-
8.	Apodiformes	1	1	2	2	2	2	2	-	-
9.	Strigiformes	1	1	2	3	2	3	3	-	-
10.	Columbiformes	1	4	1	6	1	6	6	-	-
11.	Gruiformes	0	0	1	2	1	2	1	1	-
12.	Ciconiiformes	5	12	11	29	11	30	25	2	3
13	Passeriformes	14	52	14	46	15	61	51	2	8
	Total	32	85	43	106	44	123	101	9	13

where, F = No. of families; S = No. of species

provide shelter to more birds. The agricultural croplands and wide river basin may be suitable in compensating the food and water requirements of birds, respectively.

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