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BIRDS OF GUJARAT UNIVERSITY CAMPUS, AHMEDABAD

Nayan K. Jain, Samir N. Patel and Maulik V. Patel

Department of Zoology, University School of Sciences, Gujarat University, Ahmedabad, Gujarat, India
Email:zooldeptgu@satyam.net.in

Urban biodiversity has received very little attention from conservation biologists as compared to natural and protected ecosystems (Jules, 1997; Vandermeer, 1997). Patvarthan *et al.* (2000) have identified educational and defense premises as hotspots for urban biodiversity. Although educational premises occupy less than 5% of the total urban area, such areas may harbour up to half the biodiversity of the urban biota (Patvarthan *et al.*, 2000).

Gujarat University (23^{0}01'-23^{0}02'N & 72^{0}32'-72^{0}33'E) is situated in the city of Ahmedabad in Gujarat state. The whole area under study is refered to as Gujarat University Campus (GUC), which covers a large area and includes the main university campus, university hostels, as well as academic and research institutions such as ATIRA (Ahmedabad Textile Industries Research Association) campus, L.D. Arts College, L.D. Engineering College, L.M. College of Pharmacy and M.G. Science Institute.

The area experiences extreme variations in temperature, which ranges from maximum of 47^{0}C in summer to a minimum of 4^{0}C in winter. The summer is hot and dry, which is subsequently followed by a humid rainy season. During winter, the temperature falls to 4^{0}C. The minimum relative humidity has been recorded during the late winter months and ranges from 6% to 13% and maximum during the monsoon in July and ranges from 95% to 98%.

The distribution and occurrence of avifauna correlate well with the vegetation patterns of the area, which is of great significance. The vegetation found in this area mainly consists of naturally grown trees and shrubs. The study area supports a number of native as well as exotic floral species. The GUC has rich vegetation comprising of 215 species of 171 genera belonging to 63 families (Joshi, 1997). The GUC also has a very large botanical garden. A large number of tall trees and indigenous fruiting trees occur in this area, which attract many birds (Wadatkar, 2000). Almost all these plants provide some cover and food for the birds throughout the year. The vegetation is dominated by large trees like *Azadirachta indica*, *Acacia leucophloea*, *Acacia nilotica*, *Prosopis cineraria*, *Caesalpinia pulcherrima*, *Delonix regia*, *Cassia fistula*, *Ficus benghalensis*, *Ficus religiosa* and *Ailanthus excelsa* (Chavan, 1993). Checklists of avifauna of the educational premises, cities, states and protected areas of state and country (Rathinasabapathy & Kalairasan, 1992; Kasinathan *et al.*, 1995; Inskipp *et al.*, 1996; Padate & Sapana 1996; Thirumurthi, 1997; Goswami, 1999; Oswin, 1999; Mohan, 2000; Mahabal, 2000; Michael *et al.*, 2000; Palot & Pramod, 2000; Rathore & Sharma, 2000; Sivaperuman & Jayson, 2000; Ramitha & Vijayalaxmi, 2001) have been compiled. The present study is focused not only on preparing the checklist of birds, but also to find out their occurrence, status as well as to create an awareness for their conservation. In addition, the study aims at providing the basic information of the avifauna for further studies related to campus biodiversity. This is the only large green spot in the city, where the birds can get cover. Hence the area should be wisely used without disturbing the activity of the birds and instead encouraging more number of species in the area.

Materials and methods: The work was carried out for a period of more than a year from July 2002 to August 2003. The birds were observed during the most active period in the day, mornings (0600 to 1000 hours) and late afternoons (1630 to 1900 hours). Sightings were carried out for two days a week during all seasons of the year to encounter maximum birds in an area. Moreover, superficial sighting was carried out everyday at the main spots during the morning and evening hours every day. The identification of birds and their occurrence were noted using a 7×35 binocular. Birds sighted during the study period were categorized according to their status as residents (R) (birds that have been known to breed in the study area itself and encountered during every visit), and local migrants (LM) (birds which were encountered many times during the study period and breeding in surrounding areas). Some birds sighted occasionally during specific season of study period, which are not resident of study area, are included as migrant birds (M). Bird identification followed Ali and Ripley (1983), Coomber (1991), Ali and Ripley (1996), Ali (1996), and Grimmett *et al.* (1999).

Based on the frequency of sighting in the field visits, the birds species are categorized as: *Abundant* (A): Birds sighted throughout the study area in good number during every visit (95% -100% encounter); *Common* (C): Sighted throughout the study site during most of the visit (60% - 95% encounter); *Occasional* (O): Found in small numbers and with less frequency of sighting (20% - 60% encounter); *Rare* (R): Frequency of sighting and numbers are very low (less than 20% encounters).

Observations: The GUC supports a good number of avifauna as it has a rich and varied vegetation pattern and possesses small water bodies. The GUC (260acres) comprises of different vegetation patterns that include scrubland, dense shrub vegetation with scattered trees, open garden vegetation with sparse trees, wetlands, and open degraded grounds and buildings.

A total number of 85 species of birds belonging to 40 families were observed, which is comparable to any small reserve forest. However, the low diversity may be due to constant human activities within and around the study area. Bird diversity in some protected areas in Gujarat indicates the following: Shoolpaneshwar Wildlife Sanctuary - 173 species (Desai, 1996), Vansda National Park - 115 species (Singh *et al.*, 2000), and Ratanmahal Wildlife Sanctuary - 147 species (Singh, 2002). The state of Gujarat hosts 479 bird species and contributes 39% of

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India's total bird diversity (Singh, 2001). A bird watcher Mr. P.S. Thakker (GEER foundation) had carried out a field survey of birds of Ahmedabad in 1985 and found 206 birds species.

Among the total bird species observed in GUC, 67 (78.8%) were residents, 14 (16.5%) were local migrants and four (4.7%) were migrants. Forty-three species (50.5%) were abundant, 20 (23.5%) were common, 16 (18.8%) were occasional and six (7.1%) were rare.

The major influencing factor on the composition and distribution of bird species is the direct human intervention. The diversity recorded in such a human impacted area must not mislead one to those of large green parks and reserves in urban areas, as they support high species diversity because these protected urban areas are the habitat fragments of highly diverse ecosystem (Schaefer, 1994) while most of the urban habitats are unable to sustain their own biota and they often get the diversity from surrounding less impacted areas.

There are large number of thorny trees and thickets, which support a good number of avifauna. The study site possesses small water bodies in many numbers resulting mainly due to water overflow from the buildings and rain that supports water birds in the site. It was found that the occurrence of avifauna was significantly varied according to the vegetation patterns and anthropogenic pressure. The study site is rich in avifauna but problems have arisen recently as the habitat of these birds are threatened, due to unplanned activities being carried out in favour of human development, for which the thickets of the area have been cleared. Birds are sensitive to the local landscape and change in vegetation patterns can affect the population of birds in the area (Sauvjot *et al.*, 1998; Savard *et al.*, 1999). Such a rare green spot should be managed well to attract more bird species and make the premises favourable for various birds.

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Table 1. Checklist of birds found in and around Gujarat University Campus

Common Name	Scientific Name	Status	
Phalacrocoracidae			
I Little Cormorant	*Phalacrocorax niger*	LM	R
Ardeidae			
2 Little Egret	*Egretta garzetta*	R	O
3 Large Egret	*Casmerodius albus*	R	O
4 Cattle Egret	*Bubulcus ibis*	R	A
5 Pond Heron	*Ardeola grayii*	R	A
Ciconidae			
6 Painted Stork	*Mvcteria leucocephala*	LM	O
Threskiornithidae			
7 Oriental White Ibis	*Threskiornis aethiopica*	R	C
8 Black Ibis	*Pseudibis papillosa*	R	C
9 Eurasian Spoonbill	*Platalea leucorodia*	LM	R
Accipitridae			
10 Black Kite	*Milvus migrans*	R	A
11 Shikra	*Accipiter badius*	R	C
12 White-eyed Buzzard	*Butastur teesa*	R	C
13 Indian White-backed Vulture	*Gvps bengalensis*	R	A
14 Egyptian Vulture	*Neophron percnopterus*	LM	C
Phasianidae			
15 Common Or Grey Quail	*Coturnix coturnix*	R	A
16 Indian Peafowl	*Pavo cristatus*	R	A
Rallidae			
17 White-breasted Waterhen	*Amaurornis phoenicurus*	R	A
Charadriidae			
18 Little Ringed Plover	*Charadrius dubius*	LM	C
19 Yellow-wattled Lapwing	*Vanellus malabaricus*	R	O
20 Red-watted Lapwing	*Vanellus indicus*	R	A
Scolopacidae			
21 Common Sandpiper	*Tringa hvpoleucos*	LM	O
Recurvirostridae			
22 Black-winged Stilt	*Himantopus himantopus*	LM	O
Laridae			
23 River Tern	*Sterna aurantia*	M	R
24 Whiskered Tern	*Chlidonias hvbriba*	M	R
Columbidae			
25 Blue Rock Pigeon	*Columba livia*	R	A
26 Common Green Pigeon	*Treron phoenicoptera*	R	O
27 Red Turtle Dove	*Strepotpelia tranquebarica*	R	A
28 Ring Dove	*Strepotpelia decaocto*	R	A
29 Little Brown Dove	*Strepotpelia senegalensis*	R	A
Psittacidae			
30 Rose-ringed Parakeet	*Psittacula krameri*	R	A
Cuculidae			
31 Indian Cuckoo	*Cuculus micropterus*	R	C
32 Asian Koel	*Eudvnamvs scolopacea*	R	A
33 Coucal or Crow-pheasant	*Centropus sinensis*	R	A
Strigidae			
34 Spotted Owlet	*Athene brama*	R	C
Apodidae			
35 House Swift	*Apus affinis*	R	A
Alcedinidae			
36 White-breasted Kingfisher	*Halcyon smyrnensis*	LM	C
37 Small Blue Kingfisher	*Alcedo atthis*	LM	C
Meropidae			
38 Small Bee-eater	*Merops orientalis*	R	A
Coraciidae			
39 Indian Roller	*Coracias benghalensis*	LM	O
Upupidae			
40 Common Hoopoe	*Upupa epops*	R	A
Capitonidae			
41 Coppersmith Barbet	*Megalaima haemacephala*	R	C
Picidae			
42 Eurasian Wryneck	*Jynx torquilla*	LM	O
43 Lesser Golden-backed Woodpecker	*Dinopium benghalense*	R	A
44 Yellow-fronted Pied Woodpecker	*Dendrocopos mahrattensis*	R	O
Laniidae			
45 Bay-backed Shrike	*Lanius vittatus*	R	C
46 Rufous-backed Shrike	*Lanius schach*	R	C
Oriolidae			
47 Golden Oriole	*Oriolus oriolus*	R	C
Dicruridae			
48 Black Drongo	*Dicrurus macrocercus*	R	A
49 White-bellied Drongo	*Dicrurus caerulencens*	LM	O
Sturnidae			
50 Brahminy Myna	*Sturnus pagodarum*	R	A
51 Rosy Starling	*Sturnus roseus*	M	C
52 Starling	*Sturnus vulgaris*	LM	R
53 Bank Myna	*Acridotheres ginginianus*	R	A
54 Indian Myna	*Acridotheres tristis*	R	A
Corvidae			
55 Indian Tree Pie	*Dendrocitta vagabunda*	R	A
56 House Crow	*Corvus splendens*	R	A
57 Jungle Crow	*Corvus macrorhyncus*	R	A
Irenidae			
58 Common Iora	*Aegithina tiphia*	R	C
59 Marshall's Iora	*Aegithina nigrolutea*	R	C
Pycnonotidae			
60 Red-vented Bulbul	*Pycnonotus cafer*	R	A
61 Common Babbler	*Turdoides caudatus*	R	A
62 Large Grey Babbler	*Turdoides malcolmi*	R	A
63 Jungle Babbler	*Turdoides striatus*	R	A
64 Brown Flycatcher	*Muscicapa dauurica*	R	C
65 Red-throated Flycatcher	*Ficedula parva*	R	O
66 Blue-throated Flycatcher	*Cyornis rubeculoides*	R	C
67 White-browed Fantail-Flycatcher	*Rhipidura aureola*	R	C
68 Ashy Wren-Warbler	*Prinia socialis*	R	A
69 Plain Wren-Warbler	*Prinia subflava*	R	A
70 Jungle Wren-Warbler	*Prinia sylvatica*	R	A
71 Franklin's Wren-Warbler	*Prinia hodgsonii*	R	A
72 Booted Warbler	*Hippolais caligata*	R	A
73 Tailorbird	*Orthotomus sutorius*	R	A
74 Bluethroat	*Luscinia svecica*	R	O
75 Magpie-Robin	*Copsychus saularis*	R	A
76 Indian Robin	*Saxicoloides fulicata*	R	A
77 Black Redstart	*Phoenicurus ochruros*	M	R
Motacilidae			
78 White Wagtail	*Motacilla alba*	R	O
79 Yellow Wagtail	*Motacilla flava*	R	O
Nectariniidae			
80 Purple Sunbird	*Nectarinia asiatica*	R	A
Zosteropidae			
81 White-eye	*Zosterops palpebrosus*	R	A
Ploceidae			
82 House Sparrow	*Passer domesticus*	R	A
83 Baya Weaver Bird	*Ploceus philippinus*	R	A
Estrildinae			
84 White-throated Munia	*Lonchura malabarica*	R	A
85 Red Munia or Avadavat	*Estrilda amandava*	LM	O

A - Abundant; C - Common; LM - Local Migrants; M - Migrants; O - Occasional; R - Rare; R - Residents