Birds of Vaduvoor Bird Sanctuary, Tamil Nadu, India: an annotated checklist

Varadharajan Gokula and Ponnuswami Ananth Raj

Abstract

Waterfowls and allied species depend on wetlands that have been threatened by urban, industrial and agricultural expansions, which have jeopardized the integrity of this unique ecosystem. As a result, avifauna that exploits the wetlands has severely been affected. The Vaduvoor Lake in Tamil Nadu, India is one such wetland that supports large number of migratory and resident birds. However, this lake has recently been identified as one of the Important Bird Areas (IBA) of India by Indian Bird Conservation Network, despite which so far no attempt has been made to study this wetland or the avifaunal species dependant on it. Hence, a study was conducted to comprehensively identify the status of birds utilizing the lake for various ecological purposes from April 2008 to September 2010. In total, 118 species of birds were found to utilize this lake, largely during September to April every year. Apart from the regular common migrants to Tamilnadu, the lake harbours near threatened bird species viz. Spot-billed Pelican (Pelecanus philippensis) Darter (Anhinga melanogaster), Painted Stork (Mycteria leucocephala) and Oriental White Ibis (Threskiornis melanocephalus). Vegetation in and around the lake consisted of Acacia nilotica (planted), Prosopis chilensis, Azadirachta indica and Tamarindus indica (natural) formed the prime breeding habitat. As most of the birds depend on the nearby paddy field for foraging, they were hunted or captured alive by the local and Narikuravas and sold in the Mannargudi fish-market. Hence, extensive awareness program targeting the local public, on the significance of the migratory birds and Vaduvoor Bird Sanctuary is one of the main conservation action needed.

Introduction

Waterfowls and allied species depend on wetlands that collect and store runoff and groundwater discharge, which is necessary to abate the effects of drought and flooding, sustain natural vegetation and crops, prevent erosion, and purify water. However, wetlands as wildlife habitats are suffering an accelerating degradation worldwide due to increase in human activities leading to urban, industrial and agricultural expansions that has jeopardized the integrity of this unique ecosystem. The impact of this habitat degradation has seriously affected the species dependent on wetlands; decline in bird populations resulting in many species being placed on threatened list. In India, wetlands receive comparatively little attention than the terrestrial ecosystems. Hence, an attempt was made to understand the status of the feathered visitors from April 2008 to September 2010 with following objectives:

- Identification of numerical and breeding status of waterbirds
- Identification of threats to waterbirds and the lake.

Study area

The Vaduvoor lake, situated at 10° 42′ 19″ N and 79° 18′ 53″ E, spreading over c.128 ha (1.28 sq.km) in Tiruvarur District, Tamil Nadu, India, is one such wetland that supports large number of migratory and resident birds. It was declared as a bird sanctuary by the Forest Department in July 1999. Vegetation of the lake consists of *Prosopis chilensis, Azadirachta indica, Tamarindus indica,* and *Acacia nilotica* including planting of *A. nilotica* by the forest department under the Sanctuary Management Programme. The Vennaru River is the main source of water in addition to northeast monsoon. The lake is surrounded by a large bund around the southern side, while on the northern portion, the bund is short as the elevation serves as natural bund. These

bunds help in holding the water upto a depth of c.2.5m in the lake. Nayvasal and Vaduvoor are the two villages situated around the lake. Recently, this lake has been identified as one of the Important Bird Areas (IBA) of India by Indian Bird Conservation Network, despite no attempt has been made so far to study this wetland or its dependant avifaunal species.

Methodology

Waterbirds of Vaduvoor Lake were monitored from April 2008 to April 2010. Birds were counted using direct count method from selected vantage points following Bibby et al. (1992) and Sutherland (1997). Counts were made four times in a month during which birds were observed from 0600 to 1000hrs in the morning and 1600 to 1800hrs in the evening, being their most active periods of the day. No count was done during extreme weather conditions. The identification of birds was done using field guides (Ali, 2002), while Manakadan and Pittie (2001) was followed for the common and scientific names of birds of India. During the fieldwork, anthropogenic activities viz. hunting, illegal fishing and woodcutting (if any) were monitored and quantified (if possible) following Joshua and Johnsingh (1994). Formal and informal interviews were conducted with the people involved in the above said activities to get the general perception on the need for them to do this and find out alternative options if possible. Shannon and Weaver (1949) were followed to calculate the diversity of birds.

Results and discussion

A list of birds recorded from Vaduvoor Lake with common and scientific names, status, feeding habit, maximum number of individual sighted, and their occurrence in various months is given in the table (Table 1). The study reveals the occurrence of 118 species of birds belonging to 87 genera, 48 families and 18 orders. Among the 18 orders, Passeriformes dominated the list with 39 species of birds followed by Charadriiformes with 15 species, Ciconiiformes with 13 species, Anseriformes with nine species, Falconiformes with eight species, Coraciiformes with six species, Gruiformes and Pelecaniformes with five species each, Columbiformes and Cuculiformes with three species each, Galliformes, Strigiformes, Piciformes and Apodiformes with two species each, and Turniciformes, Podicipediformes, Psittaciformes Caprimulgiformes with one species each. Of the total 118 species of birds, 49 species were waterbirds and 69 species were terrestrial birds.

Although 118 species were listed from Vaduvoor Lake, 16 species were sighted either in flight or outside the lake boundary, but not from the lake. Only, 102 species of birds were found within the lake boundary. Further study may confirm whether these 16 species utilize the lake or not. Of the total 118 birds, 26 species were migrants, 61 residents and 31 were resident migrants that make local movements. As far as food habits are concerned, insectivore dominated the list with 46 species and followed by piscivore (32 species), granivore (10 species), carnivore (10 species), omnivore (9 species), and frugivore (7 species).

Spot-billed Pelican, a globally near threatened (IUCN 2007) and resident species with local movements in India, was found thrice in the lake during the study period. On 24th June 2009, a maximum of 60 Spot-billed Pelicans were

Department of Zoology, National College, Tiruchirappalli 620001, Tamil Nadu, India, Email: gokula@yahoo.com

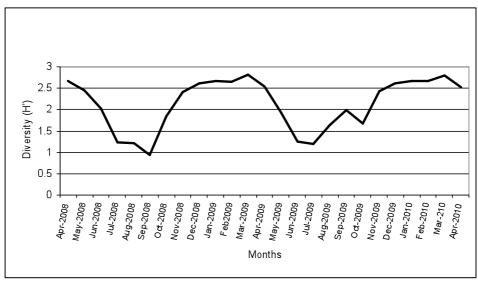


Figure 1. Diversity of Birds in Vaduvoor Bird Sanctuary, Tamil Nadu, India

recorded in this lake that highlights the importance of this lake. Similarly, a maximum of 218 painted storks, another near threatened (IUCN 2007) and resident bird with local movements were also observed in the same year. However, few pairs of Spot-billed pelicans were reported to breed in this lake during 1998-1999, no breeding activities of this species was observed during this study period. It was told by the local wildlife enthusiasts that the use of firecracker by the devotees during festival season in temples adjacent to the lake caused the pelican to desert its nesting activities during the above mentioned period. Oriental white Ibis, another near threatened bird (IUCN 2007) was also frequently recorded from this lake.

Regardless of years, diversity of birds reached its peak in March when almost all birds were with chicks (Figure 1). As



Figure 2. Man selling birds (Chestnut Bittern, a species not sighted in Vaduvoor Lake during the study period but recorded only in the Market) in the Mannargudi fish market

majority of the birds complete their breeding activities and leave the lake before the month of May and the lake goes dry completely between late April and early June, number of bird species showed a decreasing trend after March. The adjacent paddy fields serve as a good foraging ground for majority of the aquatic birds that predominantly feeds on insects, molluscs etc.

As the lake is situated on one side of the Trichy - Mannargudi main road, vehicular sound is a great threat to the breeding birds. Further, use of crackers by locals during festivals in the temples located adjacent to the lake, also a threat for the breeding birds. The Vaduvoor Lake is getting filled with silt every year and needs periodical desilting to increase the depth so as to retain and store water for longer periods of the dry months. Above all, as most of the birds depend on the paddy fields nearby for foraging, they are often hunted or captured alive by the local and *Narikuravas* and sold in the Mannargudi fish-market. (Figure 2). Hence, extensive awareness programme targeting the local public, on the significance of the migratory birds and Vaduvoor Bird Sanctuary is one of the main conservation action needed.

References

Ali, S. (2002). The Book of Indian Birds (13th revised edition) Oxford University Press, New Delhi. 326 pp Bibby C.J, Hill D.A, Burgess N.D, Mustoe S (2005). Bird census techniques London, UK:Academic Press, 302pp IUCN 2007 (2007) IUCN Red list of Threatened Species. www.iucnredlist.org

Joshua, J., and Johnsingh, A. J. T. (1994). Impact of biotic disturbances on the habitat and population of the endangered grizzled giant squirrel *Ratufa macroura* in South India. *Biol. Conserv.* 68: 29-35.

Manakadan, R. & A.Pittie (2001). Standardized common and scientific names of the birds of Indian Subcontinent. *Buceros.* 6(1):1-37

Shannon, C. and Weaver, W. (1949). The Mathematical Theory of Communication. University of Illinois Press,. 1998

Sutherland W.J. (1997). *Ecological Census Techniques*: A Handbook. Cambridge University Press, UK, 278 pp.

Acknowledgement

We sincerely thank the Tamil Nadu Forest Department for their cooperation and University Grants Commission for funding.

Table 1. List of birds recorded in Vaduvoor Bird Sanctuary, Tamil Nadu, India

S. No	Common Name	Scientific Name	Stat us	Food Habit	Observed Months (maximum number of individuals recorded with year)
	Order: Podicipediformes				,
	Family: Podocipedidae				
1	Little Grebe	Tachybaptus ruficollis	R	Р	Throughout (82, 2009)
	Order: Pelecaniformes				
	Family: Pelecanidae				
2	Spot-billed Pelican	Pelecanus philippensis	RM	Р	June, July** (60, 2009)
	Family: Phalacrocoracidae				
3	Little Cormorant	Phalacrocorax niger	RM	Р	Throughout (178, 2010)
4	Indian Shag	Phalacrocorax fuscicollis	RM	Р	Jun** (2, 2009)
5	Great Cormorant*	Phalacrocorax carbo	RM	Р	Jun-Aug** (28, 2008)
	Family: Anhingidae				
6	Darter	Anhinga melanogaster	RM	Р	Jan-April, Oct-Dec (16, 2009)
	Order: Ciconiiformes				
	Family: Ardeidae				
7	Little Egret	Egretta garzetta	R	P,I	Throughout (40, 2010)
8	Grey Heron	Ardea cinerea	RM	P	Throughout (15, 2010)
9	Purple Heron	Ardea purpurea	RM	P	Throughout (3, 2010)
10	Large Egret	Casmerodius albus	RM	P	Throughout (18, 2010)
11	Median Egret	Mesophoyx intermedia	RM	P	Throughout (16, 2010)
12	Cattle Egret	Bubulcus ibis	RM	I	Throughout (162, 2010)
13	Indian Pond-Heron	Ardeola grayii	R R	P,I P	Throughout (216, 2009)
14	Black-crowned Night Heron	Nycticorax nycticorax	K	P	Throughout (80, 2008)
1.	Family: Cicondae	M. staria la casa a la la	DM		1 A (210, 2000)
15	Painted Stork White-necked Stork*	Mycteria leucocephala	RM R	P P	Jan-April, Oct-Dec (218, 2009) Jul** (2, 2008)
16	Family: Threskiornitidae	Ciconia episcopus	K	P	Jul. (2, 2008)
17	Glossy Ibis	Plegadis falcinellus	RM	P	lan April Oct Doc (16, 2010)
17 18	Oriental White Ibis	Threkiornis melanocephalus	R	P	Jan-April, Oct-Dec (16, 2010) Jan-April, Oct-Dec (150, 2009)
19	Eurasian Spoonbill	Platalea leucorodia	RM	P	Jan-April, Oct-Dec (130, 2009)
19	Order: Anseriformes	riatalea leucoloula	KIT	<u>F</u>	Jan-April, Oct-Dec (29, 2010)
	Family: Anatidae				
20	Lesser Whistling-Duck*	Dendrocygna javanica	М	P	Nov** (2, 2008)
21	Bar-headed Goose*	Anser indicus	М	P	Jan** (16, 2008)
22	Eurasian Wigeon	Anas penelope	М	P	Nov-Jan (2, 2008)
23	Spot-billed Duck	Anas poecilorhyncha	RM	P	Jan-April, Oct-Dec (18, 2008)
24	Northern Shoveller	Anas clypeata	M	P	Nov-Jan (420, 2010)
25	Northern Pintail	Anas acuta	М	P	Nov-Jan (6, 2009)
26	Garganey	Anas querquedula	М	P	Nov-Jan (807, 2009)
27	Common Teal	Anas crecca	М	P	Nov-Jan (6, 2009)
28	Common Pochard	Aythya nyroca	М	P	Nov-Jan (4, 2009)
	Order: Falconiformes				(, , , , , , , , , , , , , , , , , , ,
	Family: Accipitride				
29	Black-Shouldered Kite	Elanus caeruleus	М	С	Jan-Mar (2, 2009)
30	Black Kite	Milvus migrans	R	С	Throughout (6, 2008)
31	Brahminy Kite	Haliastur indus	R	С	Throughout (6, 2010)
32	Western Marsh-Harrier*	Circus aeruginosus	М	С	Jan, Feb* (1, 2010)
33	Pallid Harrier*	Circus macrourus	М	С	Jan, Feb* (2, 2008)
34	Pied Harrier	Circus melanoleucos	М	С	Sep* (2,2008)
35	Shikra	Accipiter badius	R	С	Throughout (4, 2009)
36	Osprey*	Pandion haliaetus	М	С	Nov-Dec (1, 2009)
	Order: Galliformes				,
	Family: Phasianidae				
37	Grey Francolin	Francolinus pondicerianus	R	G	Throughout (2, 2009)
38	Indian Peafowl	Pavo cristatus	R	0	Nov-Jan (2, 2009)
	Order: Turniciformes				
	Family: Turnicidae				
39	Common Buttonquail	Turnix suscitator	R	G	Throughout (1, 2008)
	Order: Gruiformes				
		1		1	
	Family: Rallidae			L	
40	Family: Rallidae White-breasted Waterhen	Amaurornis phoenicurus	R	I	Throughout (4, 2008)

42.	5 1 14 1	1.5	Τ_	Ι	T
42	Purple Moorhen	Porphyrio porphyrio	R	I	Throughout (2, all the years)
43	Common Moorhen	Gallinula chloropus	RM	I	Throughout (3, 2009)
44	Common Coot	Fulica atra	RM	Р	Throughout (165, 2008)
	Order: Charadriiformes				
4.5	Family: Jacanidae		_		7 4 11 0 1 5 (50 2010)
45	Pheasant-tailed Jacana	Hydrophasianus chirurgus	R	0	Jan-April, Oct-Dec (59, 2010)
	Family: Charadriidae				
46	Yellow-wattled Lapwing	Vanellus malabaricus	R	I	Throughout (8, 2009)
47	Red-wattled Lapwing	Vanellus indicus	R	I	Throughout (12, 2009)
	Family: Scolopacidae				
48	Black-tailed Godwit*	Limosa limosa	М	I	Oct-Dec (48, 2010)
49	Bar-tailed Godwit*	Limosa lapponica	М	I	Oct-Dec (26, 2009)
50	Common Redshank	Tringa totanus	М	I	Oct-Dec (6, 2008)
51	Common Greenshank*	Tringa nebularia	М	I	Oct-Dec (4, 2009)
52	Green Sandpiper	Tringa ochropus	М	I	Oct-Dec (4, 2009)
53	Marsh Sandpiper*	Tringa stagnatilis	М	I	Oct-Dec (4, 2008)
54	Wood Sandpiper	Tringa glareola	М	I	Oct-Dec (2, 2009)
55	Common Sandpiper	Actitis hypoleucos	RM	I	Oct-Dec (4, 2009)
	Family: Recurvirostridae				
56	Black-winged Stilt*	Himantopus himantopus	R	I	Oct-Dec (48, 2009)
	Family: Laridae	1 - 1 - 1 - 1	1	<u> </u>	1
57	Gull-billed Tern	Gelochelidon nilotica	М	P	Nov-Dec (4, 2008)
58	Common Tern	Sterna hirundo	RM	P	Nov-Dec (2, 2009)
59	Black-bellied Tern	Sterna acuticauda	R	Р	Nov-Dec (1, 2009)
	Order: Columbiformes	1	1	<u> </u>	1
	Family: Columbidae	1			
60	Blue Rock Pigeon	Columba livia	R	G	Throughout (2, 2008)
61	Little Brown Dove	Streptopelia senegalensis	R	G	Throughout (1, 2010)
62	Spotted Dove	Streptopelia chinensis	R	G	Throughout, 6, 2009)
	Order: Psittaciformes				
	Family: Psittacidae		<u> </u>	<u> </u>	
63	Rose-ringed Parakeet	Psittacula krameri	R	F	Throughout (4, 2008)
	Order: Cuculiformes				
6.4	Family: Cuculidae		514		N D 1 51 (2 2222)
64	Pied Crested Cuckoo	Clamator jacobinus	RM	I	Nov-Dec, Jan-Feb (3, 2009)
65	Asian Koel	Eudynamys scolopacea	R	F	Throughout (4, 2008)
66	Greater Coucal Order: Strigiformes	Centropus sinensis	R	0	Throughout (1, 2009)
	Family: Tytonidae	+			
67	Barn Owl	Tyto alba	R	С	Throughout (1, all the years)
07	Family: Strigidae	Tyto aiba			Tilloughout (1, all the years)
68	Spotted Owlet	Athene brama	R	С	Throughout (3, 2008)
	Order: Caprimulgiformes	There brama	1		
	Family: Caprimulgidae				
69	Indian Nightjar	Caprimulgus asiaticus	R	I	Throughout (1, all the years)
	Order: Apodiformes	- Caprimaigus usiaticus	1	<u> </u>	imoughout (17 un the years)
	Family: Apodidae		1	 	
70	Asian Palm Swift	Cypsiurus balasiensis	R	I	Throughout (4, 2008)
71	House Swift	Apus affinis	RM	I	Throughout (4, 2009)
	Order: Coraciiformes	,	<u> </u>	İ	
	Family: Alcedinidae				
72	Small Blue Kingfisher	Alcedo atthis	RM	Р	Throughout (6, 2009)
73	White-breasted Kingfisher	Hacyon smymensis	R	P	Throughout (6, 2010)
74	Lesser Pied Kingfisher	Ceryle rudis	R	P	Throughout (18, 2009)
- 1	Family: Meropidae		1	i i	
75	Small Bee-eater	Merops orientalis	R	I	Throughout (8, 2008)
İ	Family: Coraciidae	<u> </u>		İ	
76	Indian Roller	Coracias benghalensis	R	I	Throughout (2, 2009)
	Family: Upupidae				
77	Common Hoopoe	Upupa epops	RM	I	Throughout (1, 2008)
	Order: Piciformes				
	Family: Capitonidae				
78	Coppersmith Barbet	Megalaima haemacephala	R	F	Throughout (1, 2008)
	Family: Picidae				
79	Lesser Golden-backed	Dinopium benghalense	R	I	Throughout (2, 2008)
,	Woodpecker				
	Order: Passeriformes				

- 1	Family, Alaudidae				
80	Family: Alaudidae Red-winged Bush-Lark	Mirafra anythrontora	R	I	Throughout (1, 2008)
	Eastern Skylark	Mirafra erythroptera	R	I	
81	Family: Hirundinidae	Alauda gulgula	K	1	Throughout (1, 2008)
02	Wire-tailed Swallow	Hirundo smithii	DM	т	Oct May (4, 2010)
82			RM	I	Oct-Mar (4, 2010)
83	Common Swallow	Hrundo rustica	RM	I	Oct-Mar (4, 2010)
84	Red-rumped Swallow	Hirundo daurica	RM	I	Oct-Mar (6, 2008)
	Family: Motacillidae		D14	-	N 7 (6 2000)
85	White Wagtail	Motacilla alba	RM	I	Nov-Jan (6, 2008)
86	Large Pied Wagtail	Motacilla maderaspatensis	R	I	Throughout (8, 2008)
87	Yellow Wagtail*	Motacilla flava	RM	I	Dec-Jan (2, 2010)
88	Grey Wagtail	Motacilla cinerea	M	I	Nov-Jan (2, 2010)
89	Paddyfield Pipit	Anthus rufulus	R	I	Nov-Jan (2, 2010)
	Family: Campephagidae				
90	Common Woodshrike	Tephrodornis pondicerianus	R	I	Throughout (2, 2009)
	Family: Pycnonotidae				
91	Red-whiskered Bulbul	Pycnonotus jocosus	R	F	Throughout (4, 2009)
92	Red-vented Bulbul	Pycnonotus cafer	R	F	Throughout (6, 2010)
	Family: Laniidae				
93	Brown Shrike	Lanius cristatus	М	I	Sep-Jan (2, 2008)
94	Rufous-backed Shrike	Lanius schach	R	I	Nov-Jan (1, 2009)
	Family: Turdinae				
95	Indian Robin	Saxicoloides fulicata	R	I	Throughout (5, 2010)
	Family: Timaliinae				
96	White-headed Babbler	Turdoides affinis	R	I	Throughout (16, 2010)
	Family: Sylviinae				
97	Ashy Prinia	Prinia socialis	R	I	Throughout (4, all the years)
98	Paddyfield Warbler	Acrocephalus agricola	RM	I	Nov-Dec (2, 2009)
99	Blyth's Reed Warbler	Acrocepalus dumetorum	RM	I	Nov-Dec (5, 2010)
100	Common Tailor Bird	Orthotomus sutorius	R	I	Throughout (12, 2009)
101	Greenish Leaf-Warbler	Phylloscopus trochiloides	М	I	Nov-Dec (4, 2008)
	Family: Monarchinae				,
102	Asian Paradise-Flycatcher	Terpsiphone paradisi	RM	I	Throughout (2, 2010)
	Family: Dicaeidae				
103	Tickell's Flowerpecker	Dicaeum erythrorhynchos	R	F	Throughout (2, 2010)
	Family: Nectariniidae				, , , ,
104	Purple-rumped Sunbird	Nectarinia striata	R	N,I	Throughout (2, 2010)
105	Purple Sunbird	Nectarinia asiatica	R	N,I	Throughout (2, 2010)
100	Family: Estriididae	Treetarina asiatrea		11/2	1111 dag11dat (2) 2010)
106	White-rumped Munia	Lonchura striata	R	G	Throughout (6, 2008)
107	Spotted Munia	Lonchura punctulata	R	G	Throughout (8, 2008)
108	•	Lonchura malacca	R	G	Throughout (8, 2009)
100	Family: Passerinae	Lonerara maiacea			1111 Oughout (0, 2005)
109	House Sparrow	Passer domesticus	R	G	Throughout (6, 2010)
109	Family: Ploceinae	, asser domesticus		<u> </u>	11110agiloat (0, 2010)
110	Baya Weaver	Ploceus philippinus	R	G	Throughout (6,2009)
110	Family: Sturnidae	Toceus prinippinus	IX.	0	1111 Jugilout (0,2003)
111		Sturus rosque	М	_	Doc-lan (16, 2009)
111	Rosy Starling*	Sturus roseus	М	F	Dec-Jan (16, 2008)
112	Common Myna	Acridotheres tristis	R	0	Throughout (20, 2009)
112	Family: Oriolidae	Omintus amintus	D14		Nov. Jon. (2, 2008)
113	Eurasian Golden Oriole	Oriolus oriolus	RM	0	Nov-Jan (2, 2008)
114	Black-headed Oriole*	Oriolus xanthornus	R	0	Dec (2, 2008)
4.5-	Family: Dicruridae	1 8:		 -	The section 1 (6, 2000)
115	Black Drongo	Dicrurus macrocercus	R	I	Throughout (6, 2009)
	Family: Corvidae				
116	Indian Treepie	Dendrocitta vagabunda	R	0	Throughout (4, 2009)
117	House Crow	Corvus splendens	R	0	Throughout (12, 2009)
118	Jungle Crow	Corvus macrorhynchos	R	0	Throughout (4, 2008)
\neg	*sighted outside the lake or			İ	** sighted only once
	_	i	1	Ì	1 - '

 $R = Resident, \ M = Migrant, \ RM = Resident-Migrant, \ I = Insectivore, \ G = Granivore, \ O = Omnivore, \ N = Nectarivore, \ P = Piscivore, \ F = Frugivore, \ C = Carnivore, \ Throughout = Observed almost all the months of the year$