

Research Article

STATUS OF AVI-FAUNA IN LAKHARA WETLAND, KACHCHH BIOSPHERE RESERVE, GUJARAT, INDIA

***M.H. Koladiya, A.K.R. Mahato and M. Pardeshi**

Gujarat Institute of Desert Ecology (GUIDE), Bhuj-370001, Kachchh, Gujarat

**Author for Correspondence*

ABSTRACT

Wetlands of the many areas of kachchh region are reduced day to day by the natural processes as well as developmental activities and as a result the population of birds depend upon these wetlands are under threat. This paper was attempted to assess the composition of avifauna in Lakhara, a fragmented wetland inside the Kachchh Biosphere Reserve. Regular survey was made in year 2009 to observe and identifying the avifauna using standard field guide and field equipments. A total of 57 species of bird recorded during the whole survey period and their feeding and threatened status was also analyzed. A good number of birds recorded in Lakhara wetland in spite of the small area. Most of the recorded birds of this wetland were belong to the Least Concern category of IUCN red list, 2010 and Schedule IV of the Indian Wildlife (Protection) Act, 1972. Lakhara wetland is also proved to be an important bird area of Kachchh for conservation aspects.

Keywords: *Status, Avifauna, Wetland, Lakhara, Kachchh*

INTRODUCTION

Wetlands form an important area for birds and in supporting species diversity and to regulate the ecological web (Mitsch and Gosselink, 1986; Guadagnin, *et al.*, 2005). The land use land cover changes by increasing urbanization and conversion of open space to agriculture are primary factors on the loss of natural wetlands. Natural wetlands are in decline throughout the world as the human population grows and as a result the dependent aquatic bird species are under threat (Czech and Parson, 2002). The avian species richness in this area is largely due to presence of water bodies (Ghosh *et al.*, 1996) and is essential on building sound conservation programs for water bird assemblages (Guadagnin, *et al.*, 2005). The distribution and diversity of avian species in India is well documented by Ali and Ripley (1983), Ali (1996), Grimmett (1998), Kazmierczak (2000) and Rasmussen PC, Anderton (2005). The documentation of avian species present in Kachchh was attempted by some author notably; Stoliczka (1872), Lester (1904) and Ali (1945). Later on few works like Hussain *et al.*, (1992), Tiwari *et al.*, (2006) and Pardesi *et al.*, (2010) are available on the distribution of birds in kachchh.

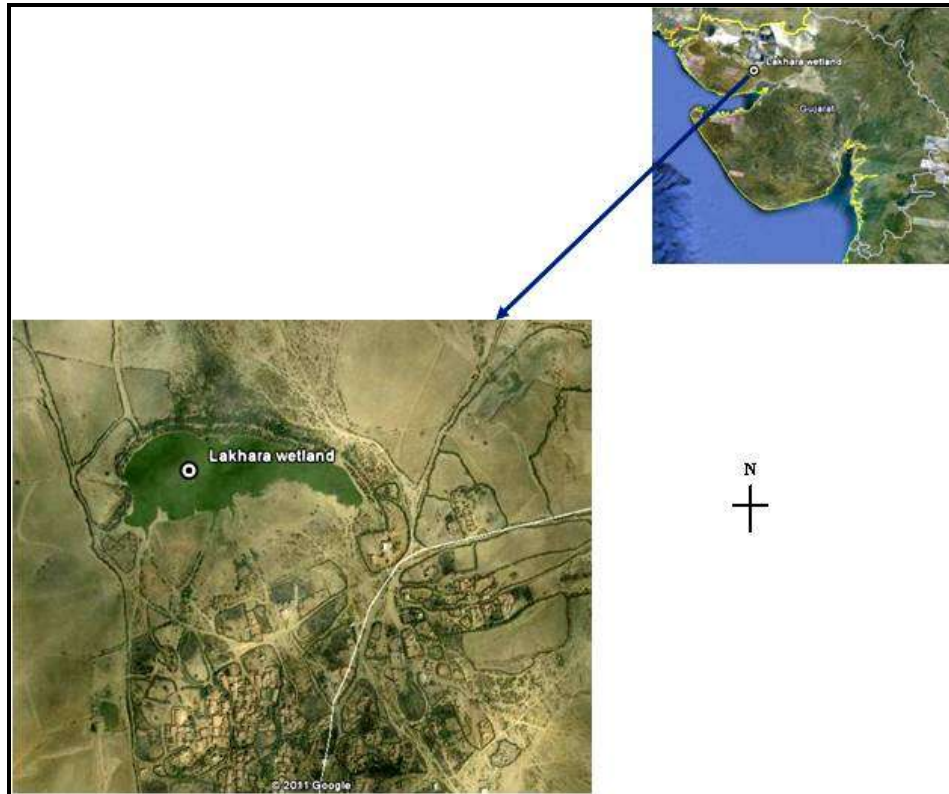
About 243 species of water bird found in India (Kumar *et al.*, 1995). The diversity, composition and structure of water bird community in fragmented wetlands have been poorly documented in particular to the Kachchh region. Thus, the present survey was conducted to document and assesses the avifauna found in Lakhara wetland, a fragmented wetland present in arid region of Kachchh Biosphere Reserve, Gujarat.

MATERIAL AND METHODS

Study Area

The study was carried out in Lakhara wetland (23° 23' N and 70° 7' E) situated in the south-eastern part of Banni grassland in the region of Kachchh Biosphere Reserve, Gujarat (Fig 1). Lakhara wetland is perennial wetland with one to two month dried in a year or very less availability of water. The surrounding area of this wetland is a part of Banni grassland, now the areas are dominated by *Prosopis juliflora*, an invasive species of plant. The climate of the study area falls under arid and semi arid, the temperature is high during most of the time and it reaches a maximum of 48°-49° C during May-June and the winter temperature goes down to 8°-10° C during the month of January. The total annual rainfall, occurring through south-west monsoon between June and September, is very low with an average of 317 mm per year and droughts are a recurring phenomenon.

Research Article



Methodology

Observations were made during the winter and monsoon season of year 2009 covering whole surrounding areas of the wetland of size 2 km² approximately. Birds were mostly observed during the time between 600 to 1000 hr in the morning and 1600 to 1800 hr. in afternoon. Observations were made with the aid of 8×40 Nikon binoculars and camera. Identification of birds was made using field guides (Ali and Ripley, 1987; Grimmet *et al.*, 1999) and only those species with confirmed identity are reported in this paper. The feeding status of birds are categorized as carnivore (C), grainivore (G), herbivore (H), insectivore (I), omnivore (O) and piscivore (P) after (Ali and Ripley, 1987; Grimmet *et al.*, 1999). The threatened status of the recorded bird species were tabulated using the Red list category of IUCN, 2010 and Indian Wildlife (Protection) Act, 1972. The checklist was prepared using standardized common and scientific names of the birds following Manakadan and Pittie (2001).

RESULTS AND DISCUSSION

A total of 57 species of avifauna belonging to 44 genera, 27 families and of 9 orders were recorded during the whole survey period. Out of total recorded species, the aquatic bird represented 31 species (Table 1) belonging to 26 genera, 14 families and 5 orders and rest of the 26 species under 18 genera, 13 families and 6 orders were terrestrial bird species (Table 2). Among the recorded aquatic bird species, most of them were under order Ciconiiformes (21) and only one species recorded under order Charadriiformes. On analysis of the feeding status of the recorded species of aquatic birds it was found that, the 12 species were omnivore, 7 species piscivore, 6 species insectivore, 4 species herbivore and 2 species were carnivore. Similarly, 19 out of 26 species of terrestrial bird recorded in Lakhara wetland boundary were belong to the order Pesseriformes and only species of each of the families viz., Galliformes, Coraciiformes, Apodiformes and Ciconiiformes were recorded during the survey periods. Reviewing the feeding status of the terrestrial bird observed in Lakhara wetland, it was found that, 16 species were insectivorous, 6 species were granivorous, 3 species were omnivorous and only one species was carnivorous habit.

Research Article

Table 1: Check list of aquatic bird species recorded in Lakhara wetland, Kachchh, Gujarat, India

Sr. No	Family	Scientific Name	Common Name	FS	IUCN, 2013	IWPA, 1972	
Order: Anseriformes							
1	Anatidae	<i>Sarkidiornis melanotos</i>	Comb Duck	H	LC	Sch. IV	
2		<i>Anas clypeata</i>	Northen Shoveler	H	LC	Sch. IV	
Order: Coraciiformes							
3	Alcedinidae	<i>Alcedo atthis</i>	Common Kingfisher	P	LC	Sch. IV	
4	Dacelonidae	<i>Halcyon smyrnensis</i>	White-throated Kingfisher	P	LC	Sch. IV	
5	Cerylidae	<i>Ceryle rudis</i>	Pied Kingfisher	P	LC	Sch. IV	
Order: Gruiformes							
6	Gruidae	<i>Grus grus</i>	Common Crane	O	LC	Sch. IV	
7		<i>Grus antigone</i>	Sarus Crane	O	VU	Sch. IV	
8	Rallidae	<i>Fulica atra</i>	Common Coot	H	LC	Sch. IV	
9		<i>Gallinula chloropus</i>	Common Moorhen	H	LC	Sch. IV	
Order: Ciconiiformes							
10	Scolopacidae	<i>Tringa stagnatilis</i>	Marsh Sandpiper	I	LC	Sch. IV	
11		<i>Tringa ochropus</i>	Green Sandpiper	I	LC	Sch. IV	
12		<i>Tringa glareola</i>	Wood Sandpiper	I	LC	Sch. IV	
13		<i>Actitis hypoleucos</i>	Common Sandpiper	I	LC	Sch. IV	
14		<i>Calidris minuta</i>	Little Stint	I	LC	Sch. IV	
15		Charadriidae	<i>Vanellus indicus</i>	Red-Wattled Lapwing	I	LC	Sch. IV
16		Anhingidae	<i>Anhinga melanogaster</i>	Oriental Darter	P	NT	Sch. IV
17		Phalacrocoracidae	<i>Phalacrocorax fuscicollis</i>	Indian Cormorant	P	LC	Sch. IV
18			<i>Phalacrocorax carbo</i>	Great Cormorant	P	LC	Sch. IV
19			<i>Bubulcus ibis</i>	Cattle Egret	O	LC	Sch. IV
20			<i>Ardeola grayii</i>	Indian Pond Heron	O	LC	Sch. IV
21			<i>Ardea cinerea</i>	Grey Heron	O	LC	Sch. IV
22		Ardeidae	<i>Ardea goliath</i>	Golieth Heron	O	LC	Sch. IV
23			<i>Nycticorax nycticorax</i>	Black-Crowned Night-Heron	O	LC	Sch. IV
24	<i>Casmerodius albus</i>		Great Egret	O	LC	Sch. IV	
25	<i>Egretta garzetta</i>		Little Egret	O	LC	Sch. IV	
26	<i>Mesophoyx intermedia</i>		Intermediate Egret	O	LC	Sch. IV	
27	Threskiornithidae		<i>Pseudibis papillosa</i>	Red -naped Ibis	O	LC	Sch. IV
28		<i>Platalea leucorodia</i>	Eurasian Spoonbill	O	LC	Sch I, Part III	
29	Ciconidae	<i>Mycteria leucocephala</i>	Painted Stork	C	NT	Sch. IV	
30		<i>Anastomus oscitans</i>	Asian Openbill-Stork	C	LC	Sch. IV	
Order: Charadriiformes							
31	Laridae	<i>Sterna aurantia</i>	River Tern	P	LC	Sch. IV	

Research Article

Table 2: Check list of terrestrial bird species recorded in Lakhara Wetland, Kachchh, Gujarat.

Sr. No	Family	Scientific Name	Common Name	FS	IUCN, 2013	IWPA, 1972
	Order: Galliformes					
1	Phasianidae	<i>Francolinus pondicerianus</i>	Grey Francolin	G	LC	Sch. IV
	Order: Coraciiformes					
2	Meropidae	<i>Merops orientalis</i>	Green Bee-eater	I	LC	Sch. IV
	Order: Apodiformes					
3	Apodidae	<i>Apus affinis</i>	House Swift	I	LC	Sch. IV
	Order: Columbiformes					
4		<i>Columba livia</i>	Blue Rock Pigeon	G	LC	Sch. IV
5	Columbidae	<i>Streptopelia decaocto</i>	Eurasian Collared Dove	G	LC	Sch. IV
6		<i>Streptopelia tranquebarica</i>	Red Collared Dove	G	LC	Sch. IV
	Order: Ciconiiformes					
7	Pteroclididae	<i>Pterocles indicus</i>	Painted Sandgrouse	G	LC	Sch. IV
	Order: Passeriformes					
8		<i>Corvus splendens</i>	House Crow	I	LC	Sch. IV
9	Corvidae	<i>Corvus macrorhynchos</i>	Jungle Crow	C	LC	Sch. IV
10		<i>Dicrurus macrocerus</i>	Black Drongo	I	LC	Sch. IV
11	Muscicapidae	<i>Saxicoloides fulicata</i>	Indian Robin	I	LC	Sch. IV
12		<i>Sternus roseus</i>	Rosy Starling	O	LC	Sch. IV
13	Sturnidae	<i>Acridotheres tristis</i>	Common Myna	O	LC	Sch. IV
14		<i>Acridotheres ginginias</i>	Bank Myna	O	LC	Sch. IV
15		<i>Hirundo rustica</i>	Barn Swallow	I	LC	Sch. IV
16	Hirundinidae	<i>Hirundo smithii</i>	Wire-tailed Swallow	I	LC	Sch. IV
17		<i>Hirundo daurica</i>	Red-Rumped Swallow	I	LC	Sch. IV
18		<i>Delichon urbica</i>	Northern House-Martin	I	LC	Sch. IV
19	Pycnonotidae	<i>Pycnonotus cafer</i>	Red-Vented Bulbul	I	LC	Sch. IV
20		<i>Pycnonotus leucotis</i>	White-eared Bulbul	I	LC	Sch. IV
21		<i>Orthotomus sutorius</i>	Common Tailorbird	I	LC	Sch. IV
22	Sylviidae	<i>Hippolais caligata</i>	Booted Warbler	I	LC	Sch. IV
23	Alaudidae	<i>Calandrella raytal</i>	Short-toed lark	G	LC	Sch. IV
24		<i>Motacilla alba</i>	White Wagtail	I	LC	Sch. IV
25	Passeridae	<i>Motacilla flava</i>	Yellow Wagtail	I	LC	Sch. IV
26		<i>Motacilla cinerea</i>	Grey Wagtail	I	LC	Sch. IV

FS=Feeding status, C=Carnivore, G=Granivore, H=Herbivore, I=Insectivore, O=Omnivore and P= Piscivore, IUCN= International Union for Conservation of Nature and Natural Resources, VU= Vulnerable, NT= Near Threatened, LC= Least Concern. IWPA= Indian Wildlife (Protection) Act, 1972, Sch. = Schedule

Research Article

In view of the threatened status of the recorded aquatic species of avifauna, one species Sarus crane (*Grus antigone*) is under vulnerable category, 2 species viz., Oriental Darter (*Anhinga melanogaster*), Painted stork (*Mycteria leucocephala*) under Near Threatened (NT) category and rest of the species are under least concern under of red list category of IUCN, 2010. The all terrestrial bird species recorded in Lakhara wetland during the survey period were fall under the least concern category of IUCN Red list, 2010. According to the Indian Wildlife (Protection) Act, 1972, all the bird species recorded during the survey were belongs to Schedule IV category except Eurasian Spoonbill (*Platalea leucorodia*) recorded in Lakhara wetland is under Schedule I, Part III category.

Conclusions

Lakhara is an important wetland provide feeding and breeding ground for large number aquatic and terrestrial species of avifauna in an around in spite of its small size. It support large number of bird population and proved to be an important wetland for the conservation of rare and threatened birds.

ACKNOWLEDGEMENTS

We are grateful to the Dr. V. Vijaykumar, Director IC, Gujarat Institute of Desert Ecology, Bhuj for his support and providing facility. We are also grateful to Dr. S. F. W. Sunderraj, Scientist, GUIDE for his suggestion and encouragements. We are like to thanks Dr. P. N. Joshi, Scientist, Dr. Somasundaram, Mr. Nikunj Gajera and Mr. Yatin Patel of GUIDE for their helps in manuscript writing.

REFERENCES

- Ali S (1945).** *The birds of Kutch* (Kutch: Oxford University Press).
- Ali S (1996).** *Book of Indian Birds* (Bombay Natural History Society) 345.
- Ali S and Ripley SD (1983).** *A Pictorial Guide to the Birds of the Indian Subcontinent* (Bombay Natural History Society, Oxford University Press, Bombay) 165.
- Czech HA and Parsons KC (2002).** Agricultural Wetlands and Waterbirds: A Review. *The International Journal of Waterbird Biology* **25**(2) 56-65
- Grimmett R, Inskipp C and Inskipp T (1998).** *Birds of the Indian Subcontinent* (London: Christopher Helm, A and C Black).
- Guadagnin DL, Peter ÂS, Fernando L, Perello C and Maltchik L (2005).** Spatial and Temporal Patterns of Waterbird Assemblages in Fragmented Wetlands of Southern Brazil. *The International Journal of Waterbird Biology* **28**(3) 261-272
- Hussain SA, Akhtar SA and Tiwari JK (1992).** Status and distribution of White-winged Black Tit *Parus nuchalis* in Kachchh, Gujarat, India. *Bird Conservation International* **2** 115-122
- Javed S and Rahmani AR (1993).** *Ecology of the Grasslands of Indian Plains with Special Reference to their Fauna* (Bombay: Bombay Natural History Society).
- Kazmierczak K (2000).** *A Field Guide to the Birds of India, Sri Lanka, Pakistan, Bhutan, Bangladesh, and Maldives* (Mountfield: Pica Press).
- Kumar A, Sati JP, Tak PC and Alfred JRB (2005).** Handbook on Indian wetland birds and their conservation (Zoological Survey of India, Kolkata) 472.
- Lester CD (1904).** *The Birds of Kutch* (Bhuj, Kutch: Kutch Darbar).
- Manakadan R and Pittie A (2001).** Standardized common and scientific names of the birds of the Indian subcontinent. *Buceros* **6**(1) 1-37.
- Mitsch WI and Gosselink IG (1986).** *Wetlands* (Van Nostrand Reinhold, New York).
- Pardesi M, Gajera N and Joshi PN (2010).** Kachchh Biosphere Reserve: Rann and Biodiversity. *Research Journal of Forestry* **4**(2) 72-76.
- Rasmussen PC and Anderton JC (2005).** *Birds of South Asia: The Ripley's guide* (Washington D.C. and Barcelona: Smithsonian Institution and Lynx Edition).
- Stoliczka F (1872).** Notice of the Mammals and Birds inhabiting Kachh [Cutch]. *Journal of the Asiatic Society of Bengal* **XLI**(Part II CLXXVII) 211-258.
- Tiwari JK, Varu SN and Langa AO (2006).** Eurasian Sparrow hawk *Accipiter nisus* in Kachchh, Gujarat, India. *Indian Birds* **2**(4) 107.