

Research Paper

Avifauna of “*Pena thathh*”: A lesser known wetland in Banni grassland of Kachchh district, Gujarat, India

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Abstract

Banni is the largest grassland (2,617 km²) of India situated in the Kachchh district of Gujarat state, India. Some perennial and seasonal wetlands are available in this grassland, which are supporting large number of resident and migratory birds. Among them *Pena thathh*, is a lesser known perennial wetland located inside the Banni Grassland Conservation Reserve, adjacent to the Greater Rann of Kachchh. An attempt was made to study for assessment and documentation of avi-faunal component of this wetland. Various surveys were conducted and the avifauna of this wetland was recorded using Flock and block count methods. A total of 1631 individual of birds of 56 species, belongs to 42 genera under 25 families were enumerated. A total 19 species of terrestrial bird belong to 13 genera and 12 families, and total of 37 species of aquatic birds belongs to 29 genera and 13 families were recorded. Out of the 56 species of bird, 23 species were migratory and 5 species were under threatened category of IUCN. Among the aquatic bird recorded from the wetland, the relative percentage higher of omnivorous and insectivorous birds while the relative percentage of insectivorous and granivorous bird was recorded higher among terrestrial birds from the wetland system.

Keywords: Avifauna, Terrestrial, Aquatic, Wetland, *Pena thathh*, Banni, Kachchh

Introduction

Grasslands are one of the largest ecosystems of the world (WRI, 2000), having large diversity of avifauna. In India, four types of grasslands are found *i.e.* arid & semi-arid grasslands, terai grasslands, shola grasslands and cold desert grasslands [1]. In arid semi-arid region of Gujarat, has about 8490 km² (4.33 %) area is under grasslands, popularly known as vidis/rakhals. Banni is one of the largest grassland of the country located in the Kachchh district of Gujarat. Chhari Dhandh Conservation Reserve located inside the Banni Grassland, is an Important Bird Area, known for wintering ground of many migratory birds including flamingo, crane, ibis, spoonbill, cormorant, etc. Notably some workers documented and described the bird species found in Kachchh districts of Gujarat [2, 3, 4, 5, 6, 7, 8]. *Pena thathh* is a seasonal wetland, and a lesser known habitat for large diversity of terrestrial and aquatic birds including migratory and some threatened birds. No any literature is available about the avifauna of this wetland. So, this study was conducted to identify and document of the avifauna of this wetland for future conservation and management.

Materials and Methods

Study Area: “*Pena Thathh*” wetland is located in the eastern part of Banni Grassland Conservation Reserve, Kachchh district of Gujarat (Figure 1). It is a perennial wetland remains dried for 2-3 months and spread in an area about 808 ha. During the monsoon period it spread over an area is approximately 10 km². 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^o-49^o C during May-June and the winter temperature goes down to 8^o-10^o 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.

Observations of birds in *Pena Thathh* were made during the winter and monsoon season of year 2009 covering whole surrounding areas of the wetland. 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^[9,10,11] 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)^[9, 10]. 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^[12].

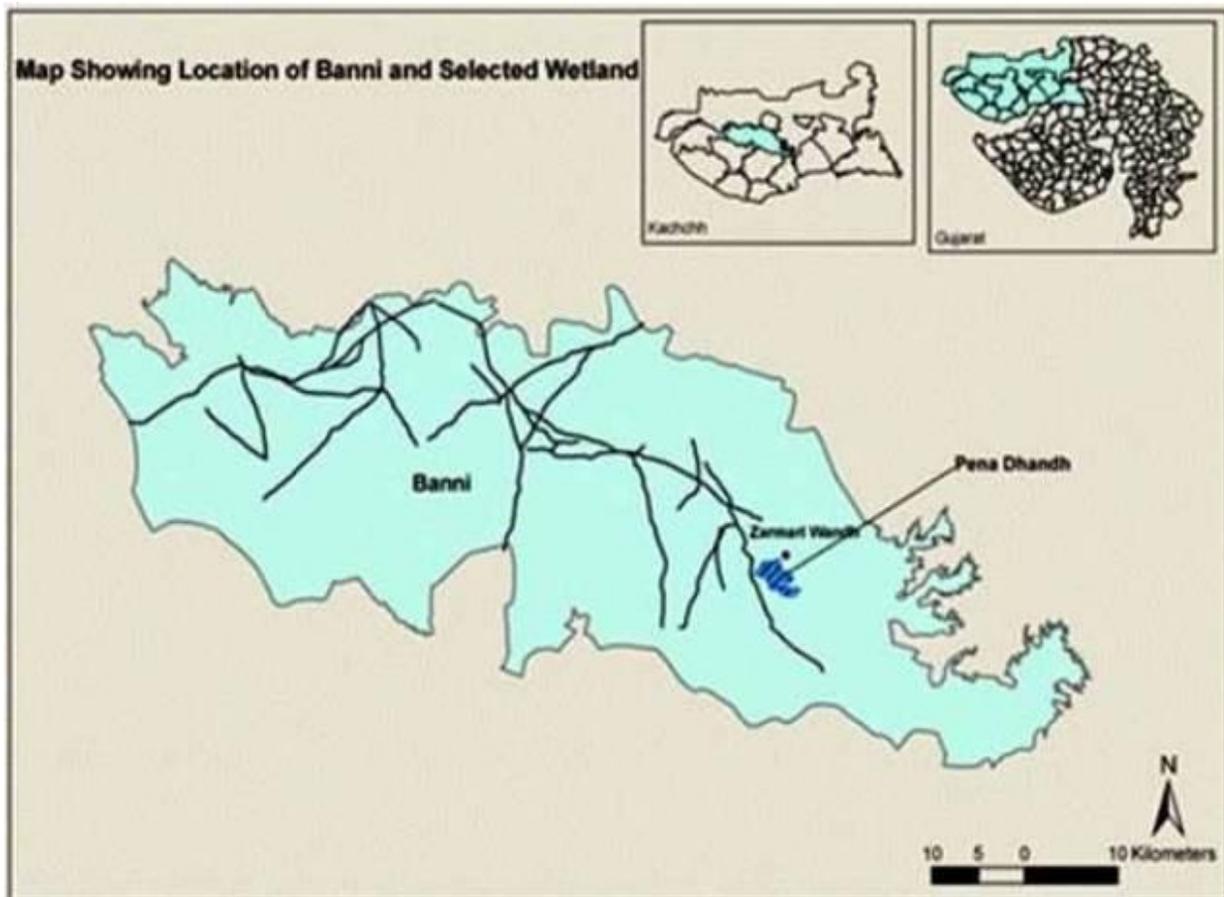


Figure 1: Location of *Penna thathh* in Kachchh, Gujarat

Results and Discussion

A total of 56 species of avi-fauna recorded during the three surveys to the *Pena thatth* Wetland conducted in year 2009-2010. Among the 56 species, 37 were aquatic species of bird (Annexure I) and 19 species were terrestrial (Annexure II). The 37 species of aquatic birds belongs to 29 genera and 13 families while the terrestrial species belongs to 13 genera and 12 families. Out of total species of recorded birds in this wetland, 23 were migratory in nature, 51 were least concern (LC) and 5 numbers of species are near threatened category in IUCN Redlist of threatened animal, 2010. In India a total of 310 species are wetland bird and out of which 51 are threatened and 16 species are Near Threatened (NT) category^[13].

Overall 1631 individuals of birds were recorded from the *Pena thatth* during the three field visits with an average of 543.66 individuals per visit. The diversity of aquatic species (1.03) of bird was found more in comparison to the terrestrial birds (0.69). *Chhari dhandh*, a well known wetland of Banni Conservation Reserve also supports 56 species of birds (GUIDE, 2009). This record supports that *Pena thatth* is also an important site for the wetland birds.

Among the total recorded species, 33 species were resident, 12 winter visitor, 3 migratory and rest 8 species were mixed in nature (see Annexure I & II). According to the feeding habits of birds, it was found that, 26 species were insectivorous, 12 omnivorous, 6 piscivorous, 5 granivorous, 4 herbivorous and 3 species were carnivorous among the observed species of this wetland.

Annexure: I Check list of Aquatic Bird Species

S. No.	Order	Family	Scientific Name	Common Name	MS	FS	TS
1			<i>Tadorna tadorna</i>	Common Shel Duck	WV	O	LC
2	Anseriformes	Anatidae	<i>Anas acuta</i>	Northern Pintail	WV	H	LC
3			<i>Anas clypeata</i>	Northern Shoveler	M	H	LC
4	Coraciiformes	Alcedinidae	<i>Alcedo atthis</i>	Common Kingfisher	R	P	LC
5		Cerylidae	<i>Ceryle rudis</i>	Pied Kingfisher	R	P	LC
6		Gruidae	<i>Grus grus</i>	Common Crane	WV	O	LC
7	Gruiformes		<i>Grus virgo</i>	Demoiselle Crane	WV	O	LC
8		Rallidae	<i>Fulica atra</i>	Common Coot	R	H	LC
9			<i>Gallinula chloropus</i>	Common Moorhen	R, WV	H	LC
10			<i>Numenius arquata</i>	Eurasian Curlew	R, WV	I	NT
11			<i>Numenius phaeopus</i>	Whimbrel	R,WV	I	LC
12			<i>Tringa stagnatilis</i>	Marsh Sandpiper	WV	I	LC
13			<i>Tringa ochropus</i>	Green Sandpiper	WV	I	LC
14		Scolopacidae	<i>Tringa glareola</i>	Wood Sandpiper	WV	I	LC
15			<i>Actitis hypoleucos</i>	Common Sandpiper	WV	I	LC
16	Ciconiiformes		<i>Calidris minuta</i>	Little Stint	WV	I	LC
17			<i>Calidris temminckii</i>	Temminck's Stint	WV	I	LC
18			<i>philomachus pugnax</i>	Ruff	M	I	LC
19			<i>Pluvialis squatarala</i>	Grey Plover	WV	I	LC
20		Charadriidae	<i>Himantopus himantopus</i>	Black-winged Stilt	R	I	LC
21			<i>Vanellus indicus</i>	Red-wattled Lapwing	R	I	LC
22			<i>Vanellus malarbaricus</i>	Yellow-wattled Lapwing	R	I	LC
23		Phalacrocoracidae	<i>Phalacrocorax fuscicollis</i>	Indian Cormorant	R	P	LC

24			<i>Bubulcus ibis</i>	Cattle Egret	R	O	LC
25			<i>Ardeola grayii</i>	Indian pond Heron	R	O	LC
26		Ardeidae	<i>Ardea cinerea</i>	Grey Heron	RM	O	LC
27			<i>Casmerodius albus</i>	Great Egret	R	O	LC
28			<i>Egretta garzetta</i>	Little Egret	R	O	LC
29			<i>Mesophoyx intermedia</i>	Intermediate Egret	R	O	LC
30		Phoenicopteridae	<i>Phoenicopterus ruber</i>	Greater Flamingo	R,WV	P	LC
31			<i>Phoenicopterus minor</i>	Lesser Flamingo	RM	P	NT
			<i>Threskiornis</i>				NT
32		Threskiornithidae	<i>melanocephalus</i>	Black headed Ibis	R	O	
33			<i>Pseudibis papillosa</i>	Black Ibis	R	O	LC
34			<i>Platalea leucorodia</i>	Eurasian Spoonbill	R	O	LC
35		Ciconidae	<i>Mycteria leucocephala</i>	Painted Stork	R	C	NT
36			<i>Ephippiorhynchus asiaticus</i>	Black necked Stork	R	C	NT
37	Charadriiformes	Laridae	<i>Sterna aurantia</i>	River Tern	R	P	LC

MS= Migratory Status: R= Resident, RM= Resident Migratory, M= Migratory and WV= Winter Visitor
 FS= Foraging Status : C= Carnivore, H= Herbivore, I= Insectivore, O= Omnivore and P= Piscivore
 TS= Threatened Status: NT = Near Threatened and LC = List Consent

Annexure: II Terrestrial Bird Species

S. No	Order	Family	Scientific Name	Common Name	MS	FS	TS
1	Galliformes	Phasianidae	<i>Francolinus pondicerianus</i>	Grey Francolin	R	G	LC
2	Coraciiformes	Meropidae	<i>Merops orientalis</i>	Green Bee-eater	R	I	LC
3			<i>Merops leschenaulti</i>	Chestnut-headed Bee-eater	R	I	LC
4	Apodiformes	Apodidae	<i>Apus affinis</i>	House Swift	R	I	LC
5	Columbiformes	Columbidae	<i>Streptopelia decaocto</i>	Eurasian-collared Dove	R	G	LC
6			<i>Streptopelia tranquebarica</i>	Red-collared Dove	R	G	LC
7	Ciconiiformes	Pteroclididae	<i>Pterocles indicus</i>	Painted Sandgrouse	R	G	LC
8			<i>Corvus splendens</i>	House Crow	R	I	LC
9		Corvidae	<i>Corvus macrorhynchos</i>	Jungle Crow	R	C	LC
10			<i>Dicrurus macrocerus</i>	Black Drongo	R	I	LC
11		Muscicapidae	<i>Saxicoloides fulicata</i>	Indian Robin	R	I	LC
12		Hirundinidae	<i>Hirundo rustica</i>	Barn Swallow	WV	I	LC
13	Passeriformes		<i>Hirundo daurica</i>	Red-rumped Swallow	R	I	LC
14		Pycnonotidae	<i>Pycnonotus cafer</i>	Red-vented Bulbul	R	I	LC
15			<i>Pycnonotus leucotis</i>	White-eared Bulbul	R	I	LC
16		Sylviidae	<i>Orthotomus sutorius</i>	Common Tailorbird	R	I	LC
17		Alaudidae	<i>Calandrella raytal</i>	Short-toed lark	M	G	LC
18		Passeridae	<i>Motacilla alba</i>	White Wagtail	RM,WV	I	LC
19			<i>Motacilla flava</i>	Yellow Wagtail	RM,WV	I	LC

MS= Migratory Status: R= Resident, RM= Resident Migratory, M= Migratory and WV= Winter Visitor
 FS= Foraging Status : C= Carnivore, G= Granivore and I= Insectivore
 TS= Threatened Status: LC = List Consent

According to the various foraging guild of birds, this study analyzed that among aquatic birds the relative number of individuals of omnivorous species were recorded maximum followed by insectivore (Table 1). Similarly, the relative number of individuals of insectivore species was recorded maximum among terrestrial bird species followed by granivore species (Table 1). Foraging guild has been suggested that food is the main limiting factor for abundance, distribution and diversity of bird species in tropical forests [14, 15, 16] as most tropical bird species are supposed to be insectivores [17].

Table 1: Foraging guild wise distribution of birds

Foraging guild	Aquatic Birds		Terrestrial Birds	
	No. of Individual	Relative percentage	No. of Individual	Relative percentage
Carnivore	39	3.05	6	1.71
Granivore	0	0	105	29.91
Herbivore	53	4.14	0	0
Insectivore	361	28.20	240	68.38
Omnivore	771	60.23	0	0
Piscivore	56	4.38	0	0
Diversity H'	1.037		0.6905	

During the study also recorded 10 species of flora viz; three species of shrub, grass and aquatic flora, and one species of tree reported from wetland and its peripheral boundary. The floral species recorded from the wetland was belongs to 10 genus under 7 families (Table 2).

Table 2: Plant species recorded from “Pena thathh” wetland

Family	Species
Convolvulaceae	<i>Cressa cretica</i> L.
Cyperaceae	<i>Cyperus haspan</i> L.
	<i>Cyperus rotundus</i> L.
Chenopodiaceae	<i>Suaeda nudiflora</i> Moq.
Mimosaceae	<i>Prosopis juliflora</i> L.
Tamaricaceae	<i>Tamarix ericoides</i> Rottl.
Fabaceae	<i>Sesbania sesban</i> (L.)
	<i>Aeluropus lagopoides</i> (L.)
Poaceae	<i>Sporobolus coromandelianus</i> (Retz.)
	<i>Eleusine indica</i> (L.) Gaertn.

Conclusion

The wetlands are integral part of rural people of Kachchh and play significant role in the culture and livelihood of local communities. In the arid region of Kachchh wetland regain water which is an important source of human and wildlife, and avifauna are the important component of this ecosystem. In an estimate approximately 34 smaller and bigger size Dhandhs (meaning shallow lakes or depression) are present in the Banni Grassland Reserve, Kachchh. As monsoon starts many these perennial and seasonal water body come up and this provide good habitats for the birds for rest and roost. As many species of birds are in the edge of extinction due to habitat loss, disturbances and climate change, this *Pena thathh* wetland be conserved and managed properly for sustenance of birds.

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References

1. Rahmani A.R., Conservation Priorities for Grassland birds of India. In: A study on the ecology of grasslands of the Indian Plains with particular reference to their endangered fauna. Final Report, Bombay Natural history Society, Mumbai, 549 (1997).
2. Stoliczka F., Notice of the Mammals and Birds inhabiting Kachh [Cutch]. J. Asiatic Soc Bengal, 41 (2), 211-258, (1872).
3. Lester C.D., The birds of Kutch. Bhuj, Kutch: Kutch Darbar (1904).
4. Ali S., The birds of Kutch. Kutch: Oxford University Press. 175, (1945).
5. Tiwari J. K., Varu S.N. and Langa A.O. Eurasian Sparrowhawk, *Accipiter nisus* in Kachchh, Gujarat, India. Indian Birds 2 (4), 107, (2006).
6. Hussain S.A., Akhtar S.A. and Tiwari J.K., Status and distribution of White-winged Black Tit *Parus nuchalis* in Kachchh, Gujarat, India, Bird Conservation International, 2, 115-122, (1992).
7. GUIDE Study of Wetland Habitats in Kachchh District and Suggesting Stakeholder Driven Management Strategies, Report submitted to Training and Research Circle, Gujarat State, Forest Department, Gandhinagar, 278, (2009).
8. Pardesi M., Gajera N. and Joshi P.N., Kachchh Biosphere Reserve: Rann and Biodiversity. Research J. Forestry, 4(2), 72-76, (2010).
9. Ali S. and Ripley S.D., A Pictorial Guide to the birds of the Indian Subcontinent. Bombay Natural History Society. Oxford University Press, Bombay, 165, (1983).
10. Grimmett R., Inskipp C. and Inskipp T., Birds of the Indian Subcontinent. Oxford University Press, Delhi. 480, (1998).
11. Ali S., The Book of Indian Birds (13th Revised Edition). Oxford University Press, New Delhi, 326 (2002).
12. Manakadan R. and Pittie A., Standardized common and scientific names of the birds of the Indian subcontinent. Buceros, 6(1), 1-37, (2001).
13. Kumar A., Sati J.P., Tak P.C. and Alfred J.R.B., Handbook on Indian wetland birds and their conservation. Zoological Survey of India, Kolkata, 472, (2005).

14. Karr J. R. and Brawn J. D. Food resources of understory birds in Central Panama: quantification and effects on avian populations, *Studies in Avian Biology*, 13, 58–64, **(1990)**.
15. MacArthur R., *Geographical ecology*. Princeton University Press, Princeton, N.J. 288, **(1972)**.
16. Terborgh J., *Habitat selection in Amazonian birds*. (in M. L. Cody, editor), *Habitat selection in birds*. Academic Press, New York, USA. 558, 311–338,**(1985)**.
17. Sultana A., Hussain M.S. and Khan J.A., Bird communities of the proposed Naina and Pindari wildlife sanctuaries in the Kumaon Himalaya, Uttarakhand, India. *J. of Bombay Natural History Society*, 104, 19-29, **(2007)**.