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WATERBIRD ASSEMBLAGE IN RURAL PONDS OF SAMAKHIALI REGION, KUTCH DISTRICT, GUJARAT, INDIA[1]

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Abstract. Waterbird species richness was investigated in five rural ponds of Samakhiali region, Kutch District, Gujarat. During September 2011 - May 2012, a total of 53 species of waterbirds from 14 families were recorded. Out of these, 30 were residents and 23 were winter visitors. Among the bird species recorded, Darter (*Anhinga melanogaster*), Painted Stork (*Mycteria leucocephala*), Oriental White Ibis (*Threskiornis melanocephalus*), Black-tailed Godwit (*Limosa limosa*) and Eurasian Curlew (*Numenius arquata*) are listed as Near Threatened by IUCN, indicating the importance of these ponds. It is expected that this study would provide a preliminary database for the waterbirds of this area useful for further research and assessment.

Key words: India, Gujarat, near threatened waterbird species, rural ponds

COMUNIDAD DE AVES ACUATICAS EN LAGUNAS RURALES
DE LA REGION DE SAMAKHIALI, DISTRITO KUTCH, GUJARAT, INDIA

Resumen. La diversidad de especies de aves acuáticas fue investigada en cinco lagunas rurales de la región Samakhiali, Distrito Kutch, Gujarat. Entre septiembre de 2011 y mayo de 2012, fueron registradas un total de 53 especies de aves acuáticas de 14 familias. De éstas, 30 fueron residentesy 23 visitantes invernales. Entre las especies registradas se encuentran la anhinga común (*Anhinga melanogaster*), tántalo indio (*Mycteria leucocephala*), ibis oriental (*Threskiornis melanocephalus*), aguja colinegra (*Limosa limosa*) and zarapito real (*Numenius arquata*), todas listadas como amenazadas por la UICN, lo que indica la importancia de estas lagunas. Esperamos que este estudio aporte una base de datos preliminar sobre las aves acuáticas de esta área que sea útil para investigación y manejo en el futuro.

Palabras clave: India, Gujarat, aves acuáticas amenazadas, lagunas rurales

INTRODUCTION

Human civilizations have typically been founded around water bodies, mainly on the banks of rivers and lakes, with ponds often constructed nearby. Depending on size, artificial impoundments often eventually support various flora and fauna including birds. Birds are one of the most important indicators of the health of ecosystems such as rural ponds, because they respond to both secondary and primary factors and can be monitored relatively easily (Koskimies 1989). Also, because of their mobility, birds react very rapidly to changes in their habitats (Louette et al. 1995).

Wetlands are among the world's most productive and biologically diverse ecosystems (Gibbs 1993). Wetlands and waterbirds are inseparable, and most wetlands support a rich

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array of waterbird communities representing the breadth of trophic levels (Grimmett and Inskipp 2007). Activities of waterbirds are often considered an indicator of wetland ecosystem quality and those species at or near the top of the foodweb can reflect changes originating among a range of ecosystem components (Custer and Osborne 1977). Various ponds and other wetlands in any area serve as a balancing reservoir for sustaining native flora and fauna (Grimmett and Inskipp 2007, Surana et al. 2007). The present work attempt a cataloguing of waterbirds that inhabit rural ponds of Samakhiali region of Bhachau Taluk, Kutch District, Gujarat, India (Fig. 1). Systematic avian surveys are rare in this area.

MATERIALS AND METHODS

Observations were made at five rural ponds, and are located as follows (Fig. 1): 'Samakhiali Pond' at latitude 23°18' 25˝N and longitude 70°30' 23˝E, covering about 1.51 km^2; 'Ambliala Pond' at 23°15' 01˝N and 70°29' 32˝E, covering 1.83 km^2; 'Laliana Pond' at 23°16' 09˝N and 70°32'32˝E, covering 1.92 km^2; 'Jangi Pond 1' at 23°13'32˝N and 70°34' 03˝E, covering 0.32 km^2; and 'Jangi Pond 2' at 23°13' 27˝N and 70°33'55˝E, covering 1.56 km^2. These ponds are surrounded by human habitations and agricultural fields. Local people use these ponds for their domestic and livelihood needs.

The wetlands were visited twice monthly, September 2011 - May 2012, and waterbirds were counted directly (Bibby et al. 2000). Morning visits occurred between 06:00 and 08:00hrs and those in evening between 16:00 and 18:00hrs (Namgail et al. 2009). For watching, counting and species identification, observations were aided by binoculars. Photography was done using a digital camera with zoom lenses. The birds were identified by their characteristic features in accordance with standard identification manuals and field guides, e.g. Ali and Ripley (1983), Kazmierczak (2000) and Grimmett et al. (2001). The checklist of species was prepared following the nomenclature of Manakadan and Pittie (2001; Table 1)

RESULTS AND DISCUSSION

A total of 53 species of waterbirds belonging to

FIGURE 1. Locations of ponds studied, Gujarat, India.

TABLE 1. Checklist of waterbirds in rural ponds of Samakhiali region, Kutch District, Gujarat, during September 2011 to May 2012.

Scientific Name	Common Name	Status[a]
FAMILY PODICIPEDIDAE		
1 *Tachybaptus ruficollis* (Pallas, 1764)	Little Grebe	Resident
FAMILY PHALACROCORACIDAE		
2 *Phalacrocorax niger* (Vieillot, 1817)	Little Cormorant	Resident
3 *Phalacrocorax fuscicollis* (Stephens, 1826)	Indian Shag	Winter Visitor
4 *Phalacrocorax carbo* (Linnaeus, 1758)	Great Cormorant	Winter Visitor
FAMILY ANHINGIDAE		
5 *Anhinga melanogaster* (Pennant, 1769)	Darter	Resident
FAMILY ARDEIDAE		
6 *Egretta garzetta* (Linnaeus, 1766)	Little Egret	Resident
7 *Ardea cinerea* (Linnaeus, 1758)	Grey Heron	Resident
8 *Ardea purpurea* (Linnaeus, 1766)	Purple Heron	Resident
9 *Casmerodius albus* (Linnaeus, 1758)	Large Egret	Resident
10 *Mesophoyx intermedia* (Wagler, 1829)	Median Egret	Resident
11 *Bubulcus ibis* (Linnaeus, 1758)	Cattle Egret	Resident
12 *Ardeola grayii* (Sykes, 1832)	Indian Pond Heron	Resident
13 *Butorides striatus* (Linnaeus, 1758)	Little Green Heron	Resident
14 *Nycticorax nycticorax* (Linnaeus, 1758)	Black-crowned Night Heron	Resident
FAMILY CICONIIDAE		
15 *Mycteria leucocephala* (Pennant, 1769)	Painted Stork	Resident
16 *Anastomus oscitans* (Boddaert, 1783)	Asian Openbill-Stork	Winter Visitor
FAMILY THRESKIORNITHIDAE		
17 *Plegadis falcinellus* (Linnaeus, 1766)	Glossy Ibis	Resident
18 *Threskiornis melanocephalus* (Latham, 1790)	Oriental White Ibis	Resident
19 *Pseudibis papillosa* (Temminck, 1824)	Black Ibis	Resident
20 *Platalea leucorodia* (Linnaeus, 1758)	Eurasian Spoonbill	Resident
FAMILY PHOENICOPTERIDAE		
21 *Phoenicopterus ruber* (Linnaeus, 1758)	Greater Flamingo	Winter Visitor
FAMILY ANATIDAE		
22 *Dendrocygna javanica* (Horsfield, 1821)	Lesser Whistling Duck	Resident
23 *Sarkidiornis melanotos* (Pennant, 1769)	Comb Duck	Resident
24 *Anas poecilorhyncha* (J.R. Forester, 1781)	Spot-billed Duck	Resident
25 *Anas clypeata* (Linnaeus, 1758)	Northern Shoveller	Winter Visitor
26 *Anas querquedula* (Linnaeus, 1758)	Gargany	Winter Visitor
27 *Anas crecca* (Linnaeus, 1758)	Common Teal	Winter Visitor
FAMILY GRUIDAE		
28 *Grus virgo* (Linnaeus, 1758)	Demoiselle Crane	Winter Visitor
FAMILY RALLIDAE		
29 *Amaurornis phoenicurus* (Pennant, 1769)	White-breasted Waterhen	Resident
30 *Porphyrio porphyrio* (Linnaeus, 1758)	Purple Moorhen	Resident
31 *Gallinula chloropus* (Linnaeus, 1758)	Common Moorhen	Resident
32 *Fulica atra* (Linnaeus, 1758)	Common Coot	Resident
FAMILY CHARADRIIDAE		
33 *Charadrius dubius* (Scopoli, 1786)	Little Ringed Plover	Resident
34 *Charadrius alexandrines* (Linnaeus, 1758)	Kentish Plover	Resident
35 *Vanellus malabaricus* (Boddaert, 1783)	Yellow-wattled Lapwing	Resident
36 *Vanellus indicus* (Boddaert, 1783)	Red-wattled Lapwing	Resident
FAMILY RECURVIROSTRIDAE		
37 *Himantopus himantopus* (Linnaeus, 1758)	Black-winged Stilt	Resident
FAMILY SCOLOPACIDAE		
38 *Limosa limosa* (Linnaeus, 1758)	Black-tailed Godwit	Winter Visitor

TABLE 1. Continued.

Scientific Name	Common Name	Status
39 *Numenaus arquata* (Linnaeus, 1758)	Eurasian Curlew	Winter Visitor
40 *Tringa erythropus* (Pallas, 1764)	Spotted Redshank	Winter Visitor
41 *Tringa totanus* (Linnaeus, 1758)	Common Redshank	Winter Visitor
42 *Tringa stagnatilis* (Bechstein, 1803)	Marsh Sandpiper	Winter Visitor
43 *Tringa ochropus* (Linnaeus, 1758)	Green Sandpiper	Winter Visitor
44 *Tringa glorioles* (Linnaeus, 1758)	Wood Sandpiper	Winter Visitor
45 *Xenus cinereus* (Guldenstadt, 1774)	Terek Sandpiper	Winter Visitor
46 *Actitis hypoleucos* (Linnaeus, 1758)	Common Sandpiper	Winter Visitor
47 *Calidris minuta* (Leisler, 1812)	Little Stint	Winter Visitor
FAMILY LARIDAE		
48 *Larus ichthyaetus* (Pallas, 1773)	Pallas's Gull	Winter Visitor
49 *Sterna hirundo* (Linnaeus, 1758)	Common Tern	Winter Visitor
50 *Sterna aurantia* (J.E. Gray, 1831)	River Tern	Resident
51 *Sterna albifrons* (Pallas, 1764)	Little Tern	Winter Visitor
52 *Gelochelidon nilotica* (Gmelin, 1789)	Gull-billed Tern	Winter Visitor
53 *Chlidonias hybridus* (Pallas, 1811)	Whiskered Tern	Winter Visitor

[a]Grimmett et al. (2001)

6 orders and 14 families were seen among the five rural ponds (Table 1). Included were five Near Threatened (IUCN 2012) species, namely, Darter (*Anhinga melanogaster*), Painted Stork (*Mycteria leucocephala*), Oriental White Ibis (*Threskiornis melanocephalus*), Black-tailed Godwit (*Limosa limosa*) and Eurasian Curlew (*Numenius arquata*) (Fig. 2); Eurasian Spoonbill (*Platalea leucorodia*), additionally, is included in Schedule - I of the Indian Wildlife (Protection) Act, 1972. The dominant families, Ardeidae and Scolopacidae, were represented by 9 and 10 species respectively. The most dominant order, Charadriiformes, was represented by a wide range of species including lapwings, plovers, sandpipers, gulls and terns; the next most represented order, Ciconiformes, included egrets, herons, storks, ibis and spoonbills (Fig. 3).

Out of these 53 species, 30 (56.6%) were residents and 23 (43.4%) were winter visitors. The significant number of winter migratory waterbirds can be attributed partly to the fact that the study area is located close to the major, western Indian migratory avian flyway (Khacher 1996). Prominent winter migratory species included Greater Flamingo (*Phoenicopterus ruber*), Gargany (*Anas querquedula*), Common Teal (*Anas clypeata*), Northern Shoveller (*Anas crecca*), Demoiselle Crane (*Grus virgo*), Black-tailed Godwit (*Limosa limosa*), Spotted Redshank (*Tringa erythropus*), Marsh Sandpiper (*Tringa stagnatilis*), Green Sandpiper (*Tringa ochropus*), Wood Sandpiper (*Tringa glorioles*), Eurasian Curlew (*Numenaus arquata*), Little Stint (*Calidris minuta*), Pallas's Gull (*Larus ichthyaetus*) and Little Tern (*Sterna albifrons*) (Table 1). One highlight of the study was the record of around 1,200 migratory Demoiselle Cranes (*Grus virgo*) at Laliana Pond during December 2011. Demoiselle Cranes, basically birds of dry grasslands, are the second most abundant crane species in this part of the world. India is the wintering ground for the Demoiselle Crane, which travels from northern parts of Asia, Magnolia and China covering over 2000 km in 5 to 7 days to inhabit wetlands and agricultural fields in India.

Some of the species like Little Grebe (*Tachybagptus ruficollis*), Little Cormorant (*Phalacrocorax niger*), Little Egret (*Egretta garzetta*), Cattle Egret (*Bubulcus ibis*), Indian Pond Heron (*Ardeola grayii*), Painted Stork (*Mycteria leucocephala*), Black Ibis (*Pseudibis papillosa*), Spot-billed Duck (*Anas poecilorhyncha*), Red-wattled Lapwing (*Vanellus indicus*), Black-winged Stilt (*Himantopus himantopus*) and Common Coot (*Fulica atra*) were recorded throughout the study period in all the ponds. For some species, there were only one or two records, namely, Darter (*Anhinga melanogaster*),

Darter (*Anhinga melanogaster*)

Painted Stork (*Mycteria leucocephala*)

Oriental White Ibis (*Threskiornis melanocephalus*)

Black-tailed Godwit (*Limosa limosa*)

Eurasian Curlew *(Numenius arquata)*

FIGURE 2. Near threatened bird species recorded at the rural ponds studied; photos: A. Mohamed Samsoor Ali

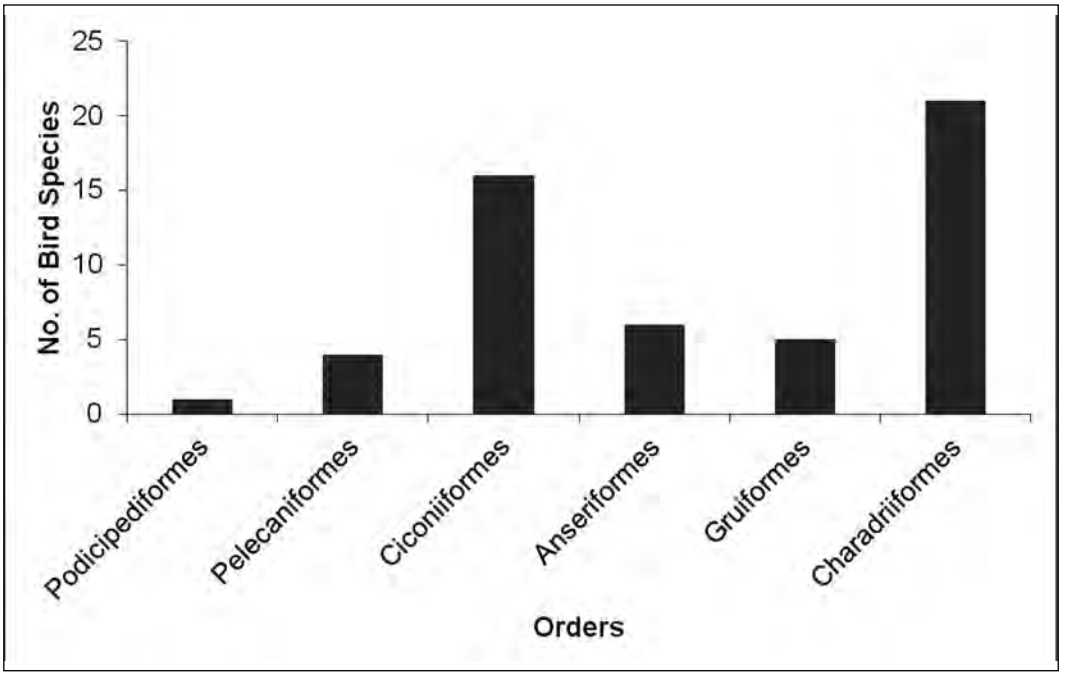

FIGURE 3. Waterbird richness, by taxonomic order, among of the rural ponds studied.

Asian Openbill-Stork (*Anastomus oscitans*), Greater Flamingo (*Phoenicopterus ruber*), Little Ringed Plover (*Charadrius dubius*), Spotted Redshank (*Tringa erythropus*), Eurasian Curlew (*Numenaus arquata*), Little Stint (*Calidris minuta*) and Common Tern (*Sterna hirundo*).

The wetland dependent birds such as Small Blue Kingfisher (*Alcedo atthis*), White-breasted Kingfisher (*Halcyon smyrnensis*), Lesser Pied Kingfisher (*Ceryle rudis*), Common Swallow (*Hirundo rustica*), Red-rumped Swallow (*Hirundo daurica*), Large Pied Wagtail (*Motacilla maderaspatensis*) and Yellow Wagtail (*Motacilla flava*) were also seen around the ponds. The tree species of *Acacia nilotica, Azadirachta indica, Ficus benghalensis, Prosopis juliflora, Phoenix sylvestris* and *Pongamia pinnata* found at the banks of the ponds gave shelter and roosting sites to doves, koel, bulbuls, babblers and parakeets. Human habitations around the village ponds also supported large number of Indian Peafowl (*Pavo cristatus*), Blue Rock Pigeon (*Columa livia*) and House Sparrow (*Passer domesticus*), which often fed on grains scattered by local people.

A number of anthropogenic pressures affect the ponds and their avifauna. Water from the ponds is used for domestic purposes, as well as cattle crazing and bathing; predatory dogs are a disturbance as well. On the other hand, the occurrence of waterbirds indicates the healthy status of these rural ponds providing water, safe habitat and essential nesting/ roosting sites. The ponds also support fishes, amphibians, molluscs, aquatic insects and their larvae, all of which are a good food source for waterbirds. As water depth, quality and trophic structure are the important habitat characteristics that influence the abundance and diversity of waterbirds in ponds, proper maintenance of these ponds would further increase the waterbird populations.

The results of this study highlight the importance of rural ponds as a habitat for waterbirds including migratory species as well as species with conservation priorities. The results also point towards the need for conserving waterbird populations in rural wetlands and associated landscapes. However, further research should identify seasonal and interannual patterns of

abundance as well as the physio-chemical parameters, food availability and other wetland characteristics that potentially affect these patterns. This would ultimately result in better understanding of the population dynamics and ecology of waterbirds of our rural landscapes.

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