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The Water Birds of Nelapattu Bird Sanctuary Andhra Pradesh, India

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Abstract: This study was undertaken to assess the winter migrant (WM) birds, especially water birds population. Total count method was used to estimate water bird population during November 2008 to April 2009 in Nelapattu Bird sanctuary and it is one of the biggest Pelicanary and important breeding and roosting site for long distant and local migrant birds is located in Nellore District andhra Pradesh, India. A total of 37 species were reported belonging to the 14 families. Ardeidae families were represented ten species followed by Ardeidae, Rallidae, Charariidae and Alcidinidae. Highest number of birds were recorded in month of March (3110) followed by February (2966), January (2606), December (2104), November (1809) and April (1216) had lowest population. 21 species are Resident (R) followed by Three (3) species are Summer Migrant (SM) and 11 species are Winter Migrant (WM). Nelapattu birds one the important breeding ground for water birds. For Three (3) species juvenile number was recorded in same study period. Vegetation cover was an important factor to determine the bird abundance and diversity. Further surveys and intensive studies in various seasons of the year will bring out better results for the conservation of the Sanctuary.

Key words: Waterbirds · Nelapattu BirdSanctuary · Threats Conservation · Andhra Pradesh

INTRODUCTION

Wetlands are one among the most important and productive ecosystems of the world, occupying about 6% of the earth's surface [1] and were described as "kidney of the landscape" as they function as the downstream receivers of water and waste from both natural and human resources [2]. Wetlands are the important bird habitats and they use them for feeding, roosting and breeding [3, 4]. Natural wetlands are in decline throughout the world as the human population keeps growing. Wetlands that have been drained, modified, or created to produce or enhance agricultural crops. This degradation has had an incalculable effect on wildlife numbers, water quality, hydrological cycles and other wetland functions and values. A recent study has shown about 38% loss of inland wetland in India during 1971 to 2001 [5]. Wading birds, especially the colonial nesting waders are one of the most conspicuous and well-known components of the wetland ecosystems [6, 7]. Wetland birds are excellent indicators of water quality and measures of biodiversity. The wetland birds were used as an indicator of wetland function or as measures of success in wetland management, restoration and creation [3]. Hence, this study was undertaken to assess their status in the selected wetlands and to evaluate the quality of wetlands based on the status of the birds [8].

MATERIALS AND METHODS

Nelapattu bird sanctuary is one of the biggest pelicanary and also a breeding and roosting site for long distant and local migrant birds is located in Nellore District andhra Pradesh, India, lies between 13°28'-14°2'N and 80° 02' - 80° 16' 30" E. The sanctuary area is approximately 458.92 Ha and consists of freshwater ponds in core area of 82.56 Ha with *Barringtonia acutangula* which grow in water bodies where the birds roost. The water body also consists of *Prosopis juliflora* thorny plants. Both these plants are nesting and or roosting

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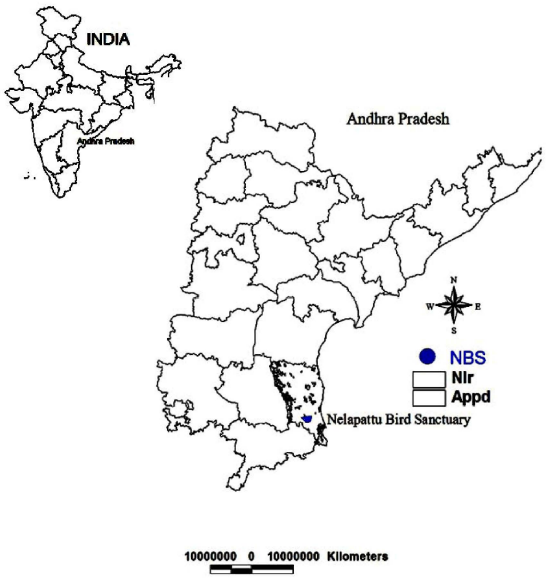

Fig. 1: Map indicating the Nelapattu Bird Sanctuary (NBS), in Andhra Pradesh, India

sites for Grey Pelicans *Pelecanus philippensis*, Open-bill Storks *Anastomus oscitans*, White Ibis *Threskiornis melanocephalus*, Cormorants *Phalacrocorax niger*, Large Egrets *Casmerodius albus*, Small Egrets *Egretta garzetta*, Little Grebe *Tachybaptus ruficollis*, Pond Herons *Ardeola grayii* etc. The Sanctuary is a heaven for a broad spectrum of bird species for both breeding and roosting purposes. The tank portion has " *Barringtonia* Swamp Forest " while the Reserve Forest portion has "Southern Dry Evergreen Scrub" type of forest with species like *Manilkara hexandra, Maba buxifolia, Memecylon edule, Buchnania angustifolia, Terminalia bellerica, Zizyphus xylopyrus, Acacia leucophloea* etc [9]. This study was conducted from November 2008 to April 2009 (Figure 1).

Birds are being counted following wide variety of methods, for water birds, direct counting method was used. In this method, a suitable vantage point is selected and all visible birds are counted. Another method, "total count" was used wherever possible, by walking around the wetlands or from specific vantage points to count the birds [10]. If not completely covered, the percentage of coverage was marked. (b) Block count: During counts, each site was divided into many sections and each section was counted. Birds flying from behind the observer were not counted. Systematically this survey was conducted in early morning around 6.00 hrs to 10.00 hrs, all the birds on the ground or in the water were counted using Bushnell binocular (8x42) and birds were identified [11,12].

RESULTS

A total of 37 species were reported belonging to the 14 families during study period (Appendix 1). Ardeidae families were represented ten species followed by Ardeidae, Rallidae, Charariidae and Alcidinidae (Image 1). Highest number of birds were recorded in month of March (3110) followed by February (2966), January (2606), December (2104) and November (1809). April (1216) had lowest population (Figure 2). Out of 37 species open billed stork (619), Grey or Spot billed Pelican *Pelecanus philippensis* (582), Oriental White Ibis *Threskiornis melanocephalus* (204) had highest number and Grey Heron *Ardea cinerea* (0.23) and Red Crested Pochard *Rhodonessa rufina* (0.24) was very low (Image 3,4,5&6). 21 species are resident such as Grey or Spot billed Pelican *Pelecanus philippensis*, Oriental White Ibis *Threskiornis melanocephalus*, Spot-bill Duck *Anas poecilorhyncha*,

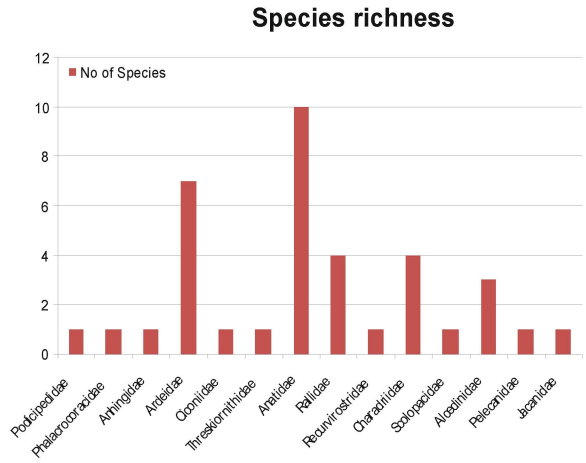

Image 1: Species richness from the study area

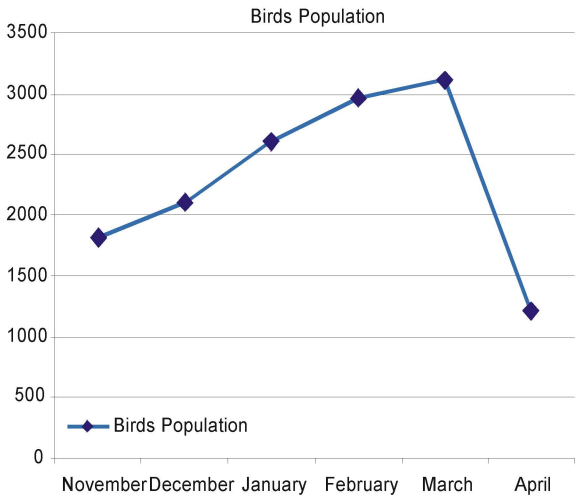

Image 2: Water Birds Population from the study area

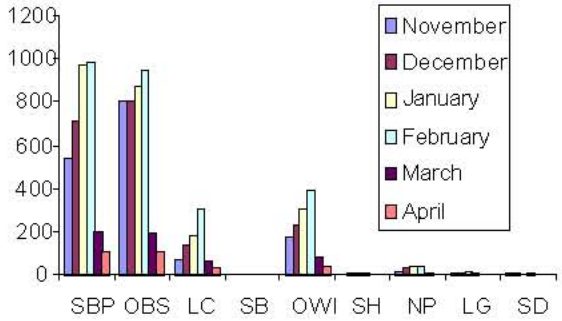

Image 3: Species abundance in study area

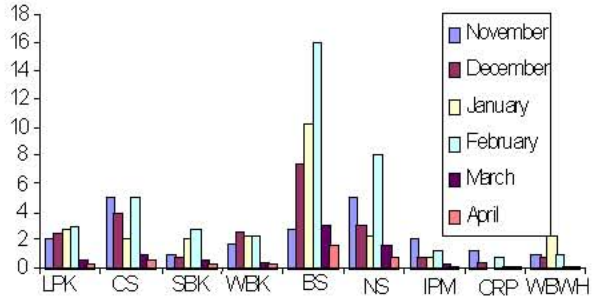

Image 5: Species abundance in study area

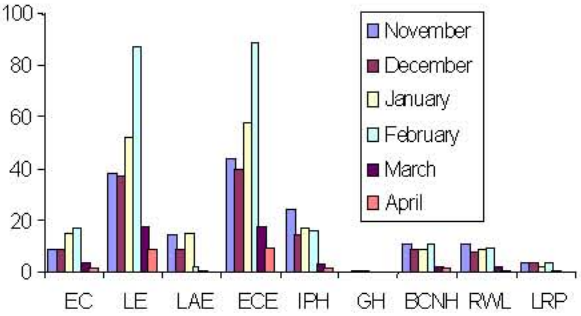

Image 4: Species abundance in study area

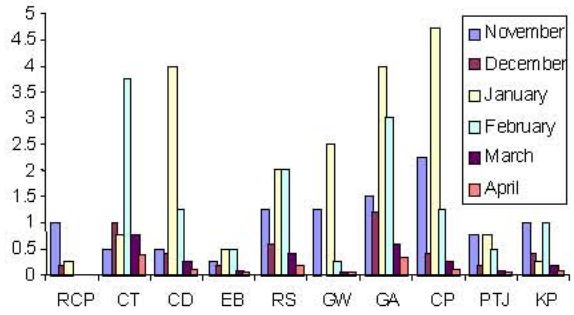

Image 6: Species abundance in study area

Breeding Site at Nelapattu Bird Sanctuary

three species are Summer Migrant they are Darter or Snake Bird *Anhinga melanogaster*, Little Ringed Plover *Charadrius dubius*, Kentish Plover *Charadrius alexandrinus* and 11 species are Winter Migrant such as Ruddy Shelduck *Tadorna ferruginea*, Northern Pintail *Anas acuta*, Common Teal *Anas crecca*, Northern Shoveller *Anas clypeata*, Garganey *Anas querquedula*, Gadwall *Anas strepera* and Red Crested Pochard *Rhodonessa rufina*. Nelapattu birds one the important breeding ground for water birds. For three species juvenile number was recorded they are Grey or Spot billed Pelican *Pelecanus philippensis*, Oriental White Ibis *Threskiornis melanocephalus* and Open billed stork *Anastomus oscitans*.

During month of January juveniles are very low and it was started to hatching the eggs and month of February and March the juvenile was almost equal to adult and month of April juvenile number was very low. Number of Juvenile recorded in month of March and April respectively, Spot billed pelican *Pelecanus philippensis*

View of Nelapattu Bird Sanctuary

(797 and 545), Open billed stork *Anastomus oscitans* (562 and 81) and Oriental White Ibis *Threskiornis melanocephalus* (343 and 21).

DISCUSSION

Eight heronry species breeding were recorded in Nelapattu during the study period: Little Cormorant, Indian Shag, Spot-billed Pelican, Little Egret, Eastern Cattle Egret, Black-crowned Night-Heron, Asian Openbill and Black headed Ibis. The Eurasian Spoonbill breeding was not recorded at during present study and earlier studies (since 2000) though a few birds arrived each year during the breeding season. More than 500 pairs of Spot-billed Pelican were recorded breeding during the 2005-2006 and 2006-07 breeding seasons, these numbers being much higher than those recorded during 2004-2005 and during an earlier 3-year project [13], when around 250 pairs nested annually [14].

The Nelapattu Heronry is well protected and the Forest Department has been taking up activities for the development and conservation of the heronry. The main problem now facing Nelapattu is from tourist activity - though the birds are apparently unaffected, judging from the nesting success. The influx of tourists is extremely high (in the thousands) during the annual Flamingo Festival organised by the Tourism Department in collaboration with other governmental departments. A lot of noise and litter is generated during the festival. Probably, the barrier of water and the densely vegetated walkway considerably reduce the disturbance by tourists [14]. Another conservation issue that will be especially relevant in the future will be the need to have more nesting trees to accommodate the increase in nesting birds taking into account the breeding success each year. An alternative would be to develop an additional heronry, like the Kudiri Heronry suggested earlier [15, 16]. Considering these above mentioned factors and since the future of village based heronries is more prone to risks compared to those in protected areas [13], we do not offer recommendations for the conservation of this heronry.

Regarding threats and Conservation issues, droppings of pelican and other birds enrich the soil and water, which is used by the villagers for irrigation. The pivotal conservation issue on which the survival of this pelicanry depends is the growth of Barringtonia trees. Since the devastating cyclone of 1984, during which large numbers of old Barringtonia trees were uprooted and the tank bund breached, the Sanctuary has not regained its past glory. Of the 120 trees in the tank before the cyclone, less than 40 now survive and even they are under tremendous pressure [17]. Another problem is the pumping out of tank water by rich farmers, exposing the nests to terrestrial predators and human disturbance. The pelican and other birds nest on submerged *Barringtonia acutangula*. Earlier, the trees used to be surrounded by water for many months, till the chicks were able to fly. But now, influential farmers draw out the water through motor pumps, thus the tank dries up much faster [18] have shown a direct correlation between rainfall (and water level in the tank) and breeding success of the Pelicans. If Nelapattu Bird Sanctuary is to be saved, the Forest Department and the local villagers should regulate the use of water to ensure that some water remains till the pelican chicks are able to fly. To safeguard the interests of the villagers, the Wildlife Wing has taken up eco-developmental activities. These include an agricultural

improvement programme by drilling bore wells for irrigation and drinking water facility. To reduce dependency on the sanctuary area for their fuel wood requirement, alternate energy sources like biogas plants, smokeless "chullas" are provided. To meet the fodder requirement of cattle, silvipasture plantations are being raised. Apart from this, laying of road to the village and planting avenue trees has also been taken up [19]. Tank bund are damaged during rainy season, have to make strength to the bund.

Appendix 1: Checklist of Water Birds in Nelapattu Bird Sanctuary

S.No	Family/Common name	Scientific name	Species ID	Status
	Podicipedidae			
1	Little Grebe	*Tachybaptus ruficollis*	LG	R
	Phalacrocoracidae			
2	Little Cormorant	*Phalacrocorax niger*	LC	R
	Anhingidae			
3	Darter or Snake Bird	*Anhinga melanogaster*	SB	SM/ Ra
	Ardeidae			
4	Grey Heron	*Ardea cinerea*	GH	R
5	Indian Pond-Heron	*Ardeola grayii*	IPH	R
6	Black-crowned Night-Heron	*Nycticorax nycticorax*	BCNH	R
7	Eurasian Bittern	*Botaurus stellaris*	EB	R VRa
8	Eastern Cattle Egret	*Bubulcus ibis*	ECE	R
9	Little Egret	*Egretta garzetta*	LE	R
10	Large Egret	*Casmerodius albus*	LAE	R
	Ciconiidae			
11	Openbilled Stork	*Anastomus oscitans*	OBS	R
	Threskiornithidae			
12	Oriental White Ibis	*Threskiornis melanocephalus*	OWI	R
	Anatidae			
13	Ruddy Shelduck	*Tadorna ferruginea*	RS	WM
14	Northern Pintail	*Anas acuta*	NP	WM
15	Common Teal	*Anas crecca*	CT	WM
16	Spot-bill Duck	*Anas poecilorhyncha*	SD	R
17	Gadwall	*Anas strepera*	GW	WM
18	Garganey	*Anas querquedula*	GA	WM
19	Northern Shoveller	*Anas clypeata*	NS	WM
20	Common Pochard	*Aythya ferina*	CP	WM
21	Red Crested Pochard	*Rhodonessa rufina*	RCP	WM /Ra
22	Comb Duck	*Sarkidiornis melanotos*	CD	Locally Extinct?
	Rallidae			
23	Whitebreasted Waterhen	*Amaurornis phoenicurus*	WBWH	R
24	Indian purple Swaphen	*Porphyrio porphyrio*	IPM	R/SM/ Ra
25	Swamphen	*Gallinula chloropus*	SH	R
26	Eurasian Coot	*Fulica atra*	EC	R/Ra
	Recurvirostridae			
27	Black winged Stilt	*Himantopus himantopus*	BWS	WM
	Charadriidae			
28	Redwattled lapwing	*Vanellus indicus*	RWL	R
29	Little Ringed Plover	*Charadrius dubius*	LRP	R/SM
30	Kentish Plover	*Charadrius alexandrinus*	KP	R/SM
31	Common Ringed Plover	*Charadrius hiaticula*	CRP	WM /Ra
	Scolopacidae			
32	Common Sandpiper	*Actitis hypoleucos*	CS	WM
	Alcedinidae			
33	Lesser-Pied Kingfisher	*Ceryle rudis*	LPK	R
34	Small Blue Kingfisher	*Alcedo atthis*	SBK	R
35	Whitebreasted Kingfisher	*Halcyom smyrensis*	WBK	R
	Pelecanidae			
36	Grey or Spotbilled Pelican	*Pelecanus philippensis*	SBP	R
	Jacanidae			
37	Pheasant-tailed Jacana	*Hydrophasianus chirurgus*	PTJ	SM? O

R = Resident, WM = Winter Migrant, SM = Seasonal Migrant, V = Vagrant, VC = Very Common, C = Common, O = Occasional and Ra = Rare

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