ASSEMBLAGES OF WATER BIRD COMMUNITIES IN SOME WETLANDS OF SHWE TANTIT VILLAGE ENVIRONS, PAKOKKU TOWNSHIP, MAGWAY REGION

Yadanar Myo[1], Thant Zin[2]

Abstract

Since water bird communities are often considered biological indicators of wetland ecosystems, assemblages of water birds in wetlands of Shwe Tantit village, Pakokku Township were investigated during August 2019 to July 2020. A total of 37 water bird species belonging to 28 genera, 11 families and seven orders were recorded. Of these, 18 species were migrants and 19 species were residents. During the study period, one near threatened species *Threskiornis melanocephalus* (Black-headed Ibis) was recorded. In the study area, Glossy Ibis and Eastern Cattle Egret revealed to be highest in abundance and percent composition in bird communities in the study area. The results of present study indicated the importance of wetlands in the study area for the conservation of water birds due to assemblages of different bird communities.

Keywords: water bird communities, wetlands, Shwe Tantit, Pakokku

Introduction

Waterbirds depend on wetlands for avariety of activities which include feeding, breeding, nesting and moulting. The highest number of water birds is often found in wetlands which have the greatest diversity of plant species and vegetation types or where there is permanent water. Wetlands are biologically very productive and provide feeding grounds for a diverse range of resident and migratory waterbirds (Balla, 1994).

Wetlands are critical for many waterbird species mainly due to their high primary productivity. Their productivity leads to a high availability of resources which in turn favours the coexistence of many species. (Brandolin and Blendinger, 2015)

Wetlands are the most productive and biologically diverse in the world but very fragile ecosystem. Wetlands and water birds are inseparable elements and thus form a rich array of water bird sommunities. (Grimmett and Inskipp, 2005)

Water birds are an important component of most of the wetland ecosystems as they occupy several trophic levels in the food web of wetland nutrient cycles. Activities of water birds are considered as indicator of quality of the wetland ecosystem and form the terminal links in many aquatic food chains and as a result they reflect changes originating in several different ecosystem components. (Hussein, 2018)

Pakokku is located in the dry zone of central Myanmar. The study area of Shwe Tantit village is situated about 12 km away from the northeast of Pakokku and located near the Ayeyawady River. The water sources in the wetlands of ShweTantit village environs are available throughout the year due to irrigation system. Many paddy fields are also abundant in the study area for performing different activities of water birds. This research investigated the assemblages of water birds in Shwe Tantit village environs to provide the base line information of species composition and abundance of water birds including both residents and migrants in the wetlands of Shwe Tantit village environs and to determine the assemblages of water bird communities in the study area.

[1] Dr, Lecturer, Zoology Department, Myingyan University
[2] Dr, Professor and Head, Zoology Department, University of Mandalay

Materials and Methods

Study area

Shwe Tantit village lies between 21° 20' 36" to 21° 21' 39" N and 95° 8' 1" to 95° 9' 10" E. The total area is about 2.79 square kilometers. The habitat of this study area is open habitat type and microhabitats occurred mostly as woody trees, paddy fields, bushy area, medium and tall trees, cultivated area, garden, wetland with submerged plant, flood plain, Kyi village Dam and some portions of Ayeyawady River (Fig. 1).

(**Source:** Google earth)

Figure 1 A map of Shwe Tantit village environs

Study period

The present study was conducted from August 2019 to July 2020.

Study design

In terms of monitoring birds, the transect method is used. Transect surveys are used to record a variety of birds. It is a simple method that provides a uniform way of counting birds over time or across locations. Five transects were drawn for bird surveys in the study area. Transect line 1 measured in the length of 1.55 km, line 2 in 1.08 km, line 3 in 1.16 km, line 4 in 1.74 km and line 5 in 0.80 km. Therefore, a total of 6.33 km length of transect route was used. Species and individual counts were made along the transect routes by on foot. Birds were viewed by a pair of binocular while traversing the transect routes. Birds watching were taken from 6:30 AM to 10:30 AM. In each occasion of bird watching, bird species and their individuals were recorded. Field marks such as streaks, bars, wings, eyes, tail and birds' behavior were noted down. The photos of birds were taken immediately after viewing the birds.

Identification and classification of species

The identification of birds was made by referring to taxonomic descriptions given by Smythies (2001), Robson (2015) and Robson (2016). Classification of birds was followed after Birdlife International (2015).

Status

Status of the birds such as migrant or resident was worked out based on the presence or absence of bird species in each month in the study area according to King and Dickinson (1995).

M = migrant (bird migrate from cold northern to warm southern temperature regions at a definite time of each year to avoid hazard winter)

R = resident (birds that spend throughout the year in one place but some species show local movement).

Results

Throughout the study period from August 2019 to July 2020, a total of 37 water bird species belonging to 28 genera, 11 families and seven orders were recorded in the study area. The water bird species recorded were categorized into 18 migrants and 19 residents. Based on IUCN (2019), *Threskiornis melanocephalus* (Black-headed Ibis) was considered as Near Threatened species and the rest of the species recorded were considered as least concern (Table 1, Plate 1).

During the study period, the order Pelecaniformes was represented with the largest number of species (13 species, 35.14%), followed by the order Charadriiformes (nine species, 24.32%), Gruiformes (eight species, 21.62%), Anseriformes (three species, 8.11%), Suliformes (two species, 5.41%) and Podicipediformes and Ciconiiformes (one species, 2.70% each). (Fig. 2)

The highest number of two families and 13 species were recorded under order Pelecaniformes, followed by order Charadriiformes containing four families and nine species, and Anseriformes, Podicipediformes, Ciconiiformes, Suliformes and Gruiformes containing one family each (Fig. 2).

A total number of 37 species and 2654 individuals were recorded in the study period. The highest number of 33 bird species was recorded in each month of January and February, followed by December (29 species) and November (25 species). With regard to the individuals, the highest total number was observed in February (177 individuals), followed by January (550 individuals), March (439 individuals) and December (413 individuals). Moreover, according to the monthly data, *Plegadis falcinellus* (Glossy Ibis) showed the highest number of individuals (215) in December representing the occurrence of the highest number of single species (Table 2).

The population percentage of water bird communities in the study area was the highest in *Plegadis falcinellus* (Glossy Ibis) (34.63 %), followed by *Bubulcus coromandus* (Eastern Cattle Egret) (26.26 %), *Egretta garzetta* (Little Egret) (5.50 %) and *Anastomus oscitans* (Asian Openbill) (5.16 %) (Table 2).

In the study area, three species of water birds such as *Plegadis falcinellus* (Glossy Ibis), *Bubulcus coromandus* (Eastern Cattle Egret) and *Egretta garzetta* (Little Egret) were found in every month of the study period. (Table 2)

Table 1 List of water bird species recorded in Shwe Tantit village environs, Pakokku Township during August 2019 to July 2020

Order	Family	Sr. No.	Species	Common Name	Local Name	Residential Status	IUCN (2019) Status
Anseriformes	Anatidae	1.	*Dendrocygna javanica* (Horfield, 1817)	Lesser Whistling-duck	Sitsale-gaung-me	R	LC
		2.	*Tadorna ferruginea* (Pallas, 1764)	Ruddy Shelduck	Hin-thar	M	LC
		3.	*Anas zonorhyncha* Swinhoe, 1866	Chinese Spot-billed Duck	Wun-be	M	LC
Podicipediformes	Podicipedidae	4.	*Tachybaptus ruficollis* (Pallas, 1764)	Little Grebe	Than-sae-moke	R	LC
Ciconiiformes	Ciconiidae	5.	*Anastomus oscitans* (Baddaert, 1783)	Asian Openbill	Khayu-toke	M	LC
Pelecaniformes	Threskiornithidae	6.	*Threskiornis melanocephalus* (Mourer chauvire & Moutou, 1987)	Black-headed Ibis	Khayu-soke-aphyu	M	NT
		7.	*Plegadis falcinellus* (Linnaeus, 1766)	Glossy Ibis	Khayu-soke	M	LC
	Ardeidae	8.	*Ixobrychus sinensis* (Gmelin,1789)	Yellow Bittern	Chone-toe-byaing	R	LC
		9.	*Ixobrychus cinnamomeus* (Gmelin,1789)	Cinnamon Bittern	Sat-byaing	R	LC
		10.	*Nycticorax nycticorax* (Linnaeus, 1758)	Black-crowned Night-heron	Sat-byaing	R	LC
		11.	*Ardeola grayii* (Sykes, 1832)	Indian Pond-heron	Byaing-auk	R	LC
		12.	*Ardeola bacchus* (Bonaparte, 1855)	Chinese Pond-heron	Byaing-auk	R	LC
		13.	*Bubulcus coromandus* (Linnaeus, 1758)	Eastern Cattle Egret	Kywe-kyaung-byaing	R	LC
		14.	*Ardea cinerea*Linnaeus, 1758	Grey Heron	Nga-hit-mwe	R	LC
		15.	*Ardea purpurea*Linnaeus, 1766	Purple Heron	Nga-hit	M	LC
		16.	*Ardea alba* (Linnaeus, 1758)	Great Egret	Byaing-ngan	R	LC
		17.	*Mesophoyx intermedia* (Wagler,1929)	Intermediate Egret	Tha-ya-wadi-byaing	R	LC
		18.	*Egretta garzetta* (Linnaeus, 1766)	Little Egret	Byaing	R	LC
Suliformes	Phalacrocoracidae	19.	*Phalacrocorax niger* (Vieillot, 1817)	Little Cormorant	Tin-kyi	R	LC
		20.	*Phalacrocorax carbo* (Linnaeus, 1758)	Great Cormorant	Tin-kyi	R	LC
Gruiformes	Rallidae	21.	*Gallirallus striatus* (Linnaeus 1766)	Slaty-breasted Rail	Ye-ngone	M	LC
		22.	*Amaurornis phoenicurus* (Pennant, 1769)	White-breasted Waterhen	Ye-kyet-yin-phyu	R	LC
		23.	*Porzana pusilla* (Pallas, 1776)	Baillon's Crake	Ye-ngone	M	LC
		24.	*Porzana fusca* (Linnaeus 1766)	Ruddy-breasted Crake	Ye-ngone	M	LC
		25.	*Gallicrex cinerea* (Gmelin,1789)	Watercock	Baung-don	R	LC
		26.	*Porphyrio poliocephalus* (Linnaeus, 1758)	Grey-headed Swamphen	Mal-nyo	M	LC
		27.	*Gallinula chloropus* (Linnaeus, 1758)	Common Moorhen	Ye-kyet	R	LC
		28.	*Fulica atra* Linnaeus, 1758	Common Coot	Ye-kyet-don	M	LC
Charadriiformes	Recurvirostridae	29.	*Himantopus himantopus* (Linnaeus, 1758)	Black-winged Stilt	Daung-lan-chae-thauk	R	LC
	Charadriidae	30.	*Vanellusc inereus* (Blyth, 1842)	Grey-headed Lapwing	Tit-ti-du	M	LC
		31.	*Vanellus indicus* (Boddaert, 1783)	Red-wattled Lapwing	Sit-ta-laing	R	LC
		32.	*Charadrius hiaticula* Linnaeus, 1758	Common ringed Plover	Ta-ling-kaung	M	LC
		33.	*Charadrius dubius* Scopoli, 1786	Little ringed Plover	Ta-ling-kaung	R	LC
	Rostratulidae	34.	*Rostratula benghalensis* (Linnaeus, 1758)	Greater Painted-spine	Sanaik	M	LC
	Scolopacidae	35.	*Gallinago gallinago* (Linnaeus, 1758)	Common Snipe	Sanaik	M	LC
		36.	*Tringa ochropus* Linnaeus, 1758	Green Sandpiper	Ye-nyaunt-kaung	M	LC
		37.	*Tringa stagnatilis* (Bechstein, 1803)	Marsh Sandpiper	Ye-nyaunt	M	LC

R = Resident M = Migrant LC = Least Concern NT = Near threatened

Table 2 Monthly abundance of water birds in Shwe Tantit village environs during August 2019 to July 2020

Sr. No.	Scientific Name	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Total	Population percentage
1.	*Dendrocygna javanica*	0	6	3	1	5	1	8	6	0	0	0	0	30	1.13
2.	*Tadorna ferruginea*	0	0	0	0	12	2	1	0	0	0	0	0	5	0.57
3.	*Anas zonorhyncha*	3	6	1	0	2	3	0	0	0	0	0	5	20	0.75
4.	*Tachybaptus ruficollis*	0	1	2	2	4	2	4	4	2	0	2	1	24	0.90
5.	*Anastomus oscitans*	0	2	4	10	24	29	35	14	4	8	5	2	137	5.16
6.	*Threskiornis melanocephalus*	2	0	0	5	7	10	5	7	0	0	0	3	39	1.47
7.	*Plegadis falcinellus*	30	35	30	42	215	150	200	150	35	7	5	20	919	34.63
8.	*Ixobrychus sinensis*	0	0	0	3	3	7	0	0	0	0	0	0	13	0.49
9.	*Ixobrychus cinnamomeus*	0	2	0	0	0	0	0	2	0	0	0	0	4	0.15
10.	*Nycticorax nycticorax*	0	0	0	0	0	0	2	0	0	0	0	0	2	0.08
11.	*Ardeola grayii*	6	5	10	11	9	8	8	4	0	0	0	7	68	2.56
12.	*Ardeola bacchus*	6	4	6	8	9	11	12	3	4	2	2	4	71	2.68
13.	*Bubulcus coromandus*	11	15	25	13	47	204	150	175	15	18	14	10	697	26.26
14.	*Ardea cinerea*	0	0	0	0	1	2	1	0	0	0	0	0	4	0.15
15.	*Ardea purpurea*	0	0	0	0	0	0	1	0	0	0	0	0	1	0.04
16.	*Ardea alba*	0	0	0	1	0	2	2	1	0	0	0	0	6	0.23
17.	*Mesophoyx intermedia*	0	5	0	4	6	5	4	4	0	0	0	0	28	1.06
18	*Egretta garzetta*	9	10	8	8	15	20	22	20	10	8	6	10	146	5.50
19.	*Phalacrocorax niger*	2	2	2	4	4	6	2	6	0	0	0	0	28	1.06
20.	*Phalacrocorax carbo*	0	0	0	0	0	0	2	0	0	0	0	0	2	0.08
21.	*Gallirallus striatus*	0	0	0	0	2	2	2	0	0	0	0	0	6	0.23
22.	*Amaurornis phoenicurus*	0	0	0	1	2	4	4	2	0	2	0	0	15	0.57
23.	*Porzana pusilla*	0	0	0	0	2	2	2	0	0	0	0	0	6	0.23
24.	*Porzana fusca*	0	0	0	0	1	2	3	0	0	0	0	0	6	0.23
25.	*Gallicrex cinerea*	0	0	0	2	3	2	2	1	0	0	0	0	10	0.38
26.	*Porphyrio poliocephalus*	0	0	0	0	0	2	0	0	0	0	0	0	2	0.08
27.	*Gallinula chloropus*	0	0	4	2	3	4	4	1	0	0	0	0	18	0.68
28.	*Fulica atra*	0	0	0	0	0	2	4	2	0	0	0	0	8	0.30
29.	*Himantopus himantopus*	7	3	8	6	4	26	40	20	3	0	0	2	129	4.48
30.	*Vanellus cinereus*	2	2	4	6	4	4	2	1	0	0	0	2	27	1.02
31.	*Vanellus indicus*	1	1	2	1	0	1	1	0	0	0	2	0	9	0.34
32.	*Charadrius hiaticula*	0	4	6	6	8	10	15	8	0	0	0	0	57	2.15
33.	*Charadrius dubius*	0	3	8	5	2	6	3	1	0	0	0	0	28	1.06
34.	*Rostratula benghalensis*	0	0	1	3	5	3	5	0	0	0	0	0	17	0.64
35.	*Gallinago gallinago*	0	0	1	1	1	2	3	0	0	0	0	0	8	0.30
36.	*Tringa ochropus*	1	1	2	3	5	6	10	5	0	0	0	2	35	1.32
37.	*Tringa stagnatilis*	0	0	2	3	8	10	4	2	0	0	0	0	29	1.09
	Total number of individuals	80	107	129	151	413	550	563	439	73	45	36	68	2654	
	Total number of species	12	18	20	25	29	33	33	23	7	6	7	12		

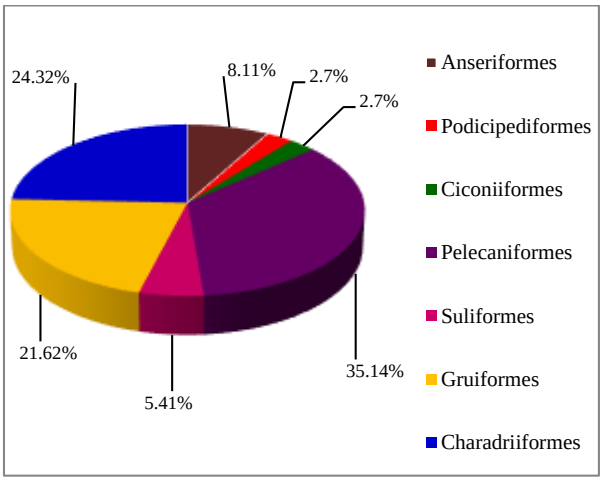

Figure 2 Percentage composition of water bird species in different orders in Shwe Tantit village environs

Discussion

Throughout the study period from August 2019 to July 2020, a total of 37 water bird species confined to 28 genera belonging to 11 families of seven orders were identified and recorded in some wetlands of Shwe Tantit village environs, Pakokku Township. Among them, 18 species were migrants and 19 species were residents. In this study, the highest number of 33 water bird species was found in each month of January and February. This may be due to complete arrival of winter migrants in addition to local residents.

Based on IUCN (2019), *Threskiornis melanocephalus* (Black-headed Ibis) is considered as near threatened and the remaining 36 species as least concern.

During the study period, three species of water birds were found in every month of the study period and these species may be considered very common and they are dominated species in the study area. It is evident that the area well supports the complete life stages of these water birds for the continuation of species existence.

Concerned with studies on the occurrence of bird species in different areas in Upper Myanmar undertaken by local researchers, Hla Toe (2012) stated nine species of migratory birds and 24 species of resident birds at Sunye In in Sintkaing Township, Mandalay Region; Nwet Nwet Win (2012) observed 13 species of migratory birds and 23 species of resident birds at Pauk In in Pakokku Township, Magway Region and Htay Khaing (2017) recorded 12 species of migratory birds and 19 species of resident at Inmagyi wetland in Myinmu Township, Sagaing Region. When comparison was made on the about mentioned studies from different areas, some species are common for all areas and some species are recorded in particular area. Variations in the number of abundance among different works may relate to the factors such as topography, habitat condition and availability of food sources, environmental conditions and habitat sensitivity of some bird species. In this work 18 species of migrants and 19 species of residents were recorded in ShweTantit Village environs of Pakokku Township.

In the study area, *Plegadis falcinellus* (Glossy Ibis) represented the highest population percentage, followed by *Bubulcus coromandus* (Eastern Cattle Egret), *Egretta garzetta* (Little Egret) and *Anastomus oscitans* (Asian Openbill). Therefore, these species are considered as predominant species in the study area. They utilized wetland areas, adjacent plantations and also human settlements for foraging, loafing and breeding purposes.

Bird species distribution and abundance are influenced by habitat structure. Habitat may be used for resources, survival, reproduction, foraging, cover, nesting, escape, denning or other life history traits. Thus, the conservation of natural habitats across the country is the most essential factor in maintaining bird populations.

The wetland habitats of Shwe Tantit village environs were inhabited with different life stages of bird species including juveniles, adult, male, female, breeding and non-breeding.

Based on the results, Shwe Tantit environs is considered good habitat for water bird species because this site has food resources, shady trees, dam and artificial ponds. Moreover, this area is located nearby lake and Ayeyawady River.

Conclusion

Occurrence of many water bird species of residents as well as migrants in the wetlands of Shwe Tantit village environs is evident for the depending of these species on these wetlands for their survival via performances of various activities of living processess and also reveals the importance of the area for the conservation of water bird species. Due to population increase and growing demand on fresh water resources there may be a heavy pressure on the wetlands of Shwe

Tantit and the concerned stakeholders should think about it and manage the long-term conservation of these wetlands and water birds.

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(A) *Dendrocygna javanica*

(B) *Tadorna ferruginea*

(C) *Anas zonorhyncha*

(D) *Tachybaptus ruficollis*

(E) *Anastomus oscitans*

(F) *Threskiornis melanocephalus*

(G) *Plegadis falcinellus*

(H) *Ixobrychus sinensis*

(I) *Ixobrychus cinnamomeus*

(J) *Nycticorax nycticorax*

(K) *Ardeola grayii*

(L) *Ardela bacchus*

(M) *Bubulcus coromandus*

(N) *Ardea cinerea*

(O) *Ardea purpurea*

Plate 1 Bird species recorded in the study area

(P) *Ardea alba*

(Q) *Mesophoyx intermedia*

(R) *Egretta garzetta*

(S) *Phalacrocorax niger*

(T) *Phalacrocorax carbo*

(U) *Gallirallus striatus*

(V) *Amaurornis phoenicurus*

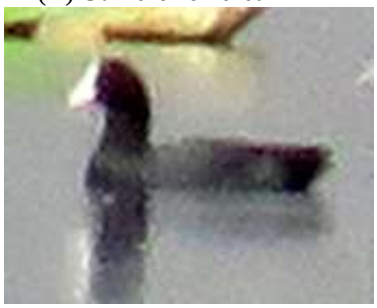
(W) *Porzana pusilla*

(X) *Porzana fusca*

(Y) *Gallicrex cinerea*

(Z) *Porphyrio poliocephalus*

(AA) *Gallinula chloropus*



(BB) *Fulica atra*

(CC) *Himantopus himantopus*

(DD) *Vanellus cinereus*

Plate 1 Continued

(EE) *Vanellus indicus*

(FF) *Charadrius hiaticula*

(GG) *Caharadrius dubius*

(HH) *Rostratula benghalensis*

(II) *Gallinago gallinago*

(JJ) *Tringa ochropus*

(KK) *Tringa stagnatilis*

(LL) Assemblages of water bird communities mixing *Ardeola bacchus* with other water birds

(MM) Assemblages of *Tadorna ferruginea* and *Plegadis falcinellus*

Plate 1 Continued