

Observation on habitat utilization of some Waterbird species from Taungthaman Inn (lake)

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Abstract

A total of 32 species of waterbirds confined to 28 genera and distributed three subfamilies, 14 families under seven orders were recorded from Taungthaman Inn (Lake) during June, 2017 to June, 2018. Among them, 14 species found as migrant and the remaining 18 species are recorded as resident. Regarding species composition, the order Charadriiformes was the highest (37.50 %), followed by Ciconiiformes (34.37 %), Anseriformes (9.37 %), and Podicipediformes, and Suliformes were the lowest (3.13 %) respectively. Species belonging to the family Ardeidae and Scolopacidae were most dominant (28.13 % and 18.74 %) and followed by Anatidae (9.37 %). Phalacrocoracidae, Rallidae and Recurvirostridae (6.24 % each) respectively. The maximum number of species and individual were recorded in December and minimum number in October. According to IUCN (2016), 31 species were the least concern and *Anhinga melanogaster* and *Limosa limosa* were recorded as nearly threatened. Variation in individual numbers may depend on factors such as food availability, habitat conditions, environmental factors and weather conditions, there is a need to protect the natural habitats of birds.

Keywords: migrant, resident.

Introduction

Myanmar has one of the richest avifauna for its size of any country in the world (Smythies, 2001). Myanmar supports at least 1114 species of birds (Aye Aye Win, 2015). Birds occupy a very significant position in human society. They provide humans with food, medicines, fertilizers, beautiful decorative parts, haunting songs, and bring about plant pollination. In addition, birds are important dispersers of many plant seeds. Birds are good indicators of the quality of our environment and also key species for environmental education for public awareness (Gill, 1990).

Birds need habitat to survive. Exactly what type and how much depends on a species food preferences, foraging strategies, and nest site requirements. In Myanmar, there are many diverse habitats for birds, such as forests, wetlands, ponds and shrub and urban areas (Zuo Wei and Mundkur, 2004). Many bird species require mixed habitat types.

Habitat destruction vastly increases an area's vulnerability to natural disaster like flood and drought crop failure, spread of disease, and water contamination. Human activities that can lead to the human destruction the purpose of harvesting natural resources for industry production, urbanization and conversion of land to agriculture.

Taungthaman Inn (Lake) comprises many habitat types for birds such as marshy swamps, flooded plain, cultivated area, bushes, woody tree, scrubs patches, and emergent and submerged aquatic vegetations. After rainy season, the water falls down and agricultural crops are cultivated during the dry season on the exposed soil. This condition annually attract many winterbirds because of their foods such as the aquatic vertebrates and insects.

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As the habitat utilization of winterbirds from Taungthaman Inn (Lake) has not been investigated by any local workers, therefore, this inn was chosen at the site for study. The objectives of the present study were:

- to identify and record the waterbird species at Taungthaman Inn (Lake)
- to determine the composition of waterbirds species in Taungthaman Inn(Lake)
- to investigate the habitat types utilized by the bird species.

Materials and Methods

Study area

The study area was undertaken at Taungthaman Inn (Lake), Amarapura Township. It lies at 21° 53' 33.42" N and 96 ° 03' 49.03"E. The area of the lake is about 6.07 Km². Taungthaman Inn (Lake) is natural flood- plain Lake. Two study sites were allocated in Taungthaman Inn. The northern part of the lake is designated as Site (A) and the southern part of the lake is taken as Site (B) (Fig 1, Plate 1).

Study period

The Study period was from June, 2017 to June, 2018.

Bird watching and data collection

Birds were observed with the aid of binoculars and photographed by digital camera. Bird watching was undertaken four days per month during the period from 6:30 to 10:30 am. Data collection was made monthly during study period.

Point count method

The collection of data was made using point count method. Point count involved a standing in one spot and recording all birds seen or heard point count within 10 minutes. The minimum distances between point count was 200 m away. For each species, the number of individual were recorded separately.

Identification of specimens

Species were identified according to King and Dickinson (1975), Smythies (2001) and Robson (2016).

Status

The global population of the bird species were made according to IUCN (Birdlife International, 2016) and the residential status was assigned based on Robson (2016).

Analysis of data

The collected data was analyzed by following formula.

$$\text{Relative abundance} = \frac{\text{No .of individuals of a species}}{\text{Total no of individuals of all species}}$$

(Bisht *et al*, 2004)

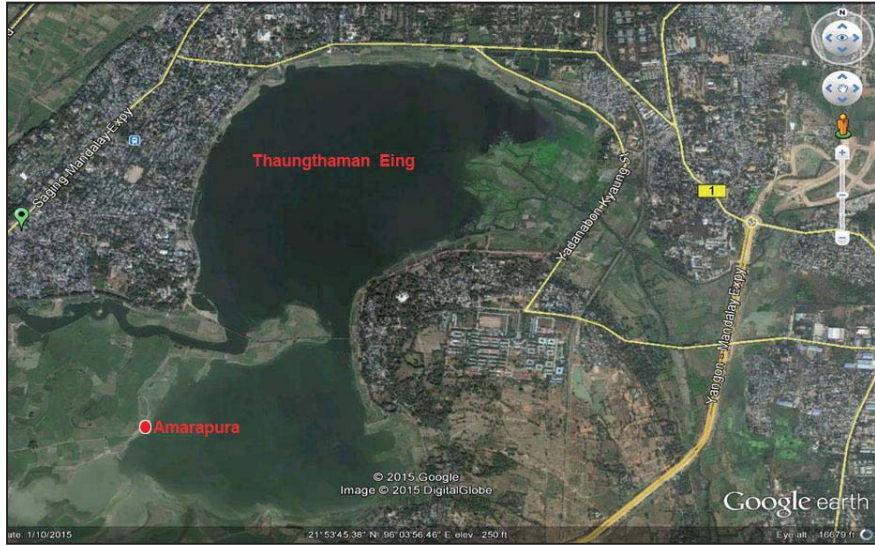


Figure 1 Map of Taungthaman Inn (Lake) (Source from Goolge Earth, 2018)



Plate 1 Study area of Taungthaman Inn (Lake)



(A) Freshwater pond



(B). Vegetative swamp



(C). Flooded plain



(D). Cultivated field



(E). Bushy area



(F). Woody tree

Plate 2 Habitat of Taungthaman Inn (Lake)

Results

A total of 32 species of winterbirds comprising under 28 genera, 14 families and seven orders were recorded during from June, 2017 to June, 2018 in Taungthaman Inn (Lake).

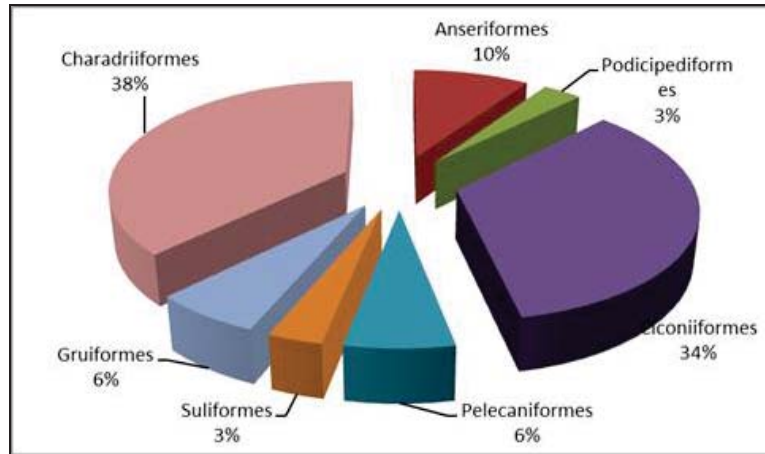


Figure 2 Composition of Water bird species in different orders Taungthaman Inn (Lake)

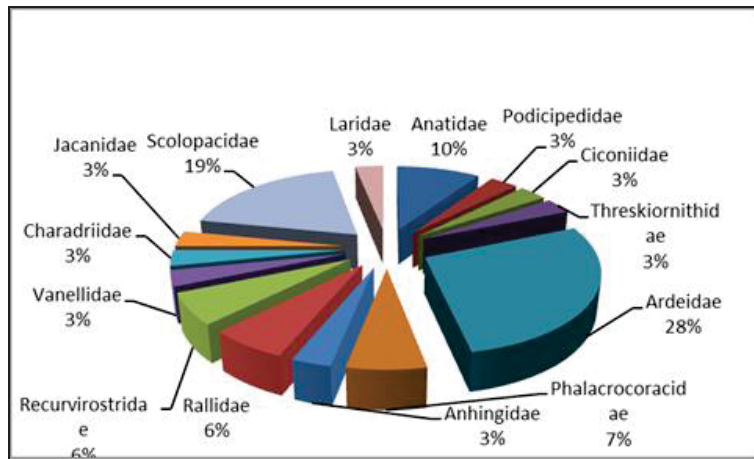


Figure 3 Composition of Water bird species in different families at Taungthaman Inn (Lake)

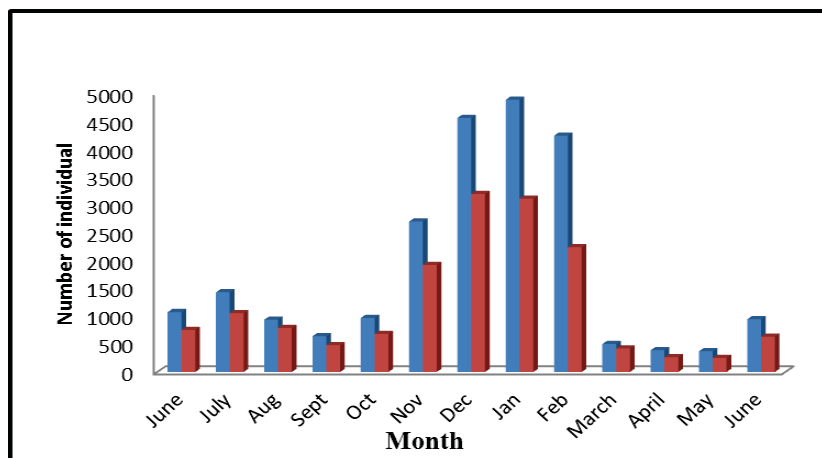


Figure 4 Monthly occurrence of waterbirds species recorded in two study Sites of Taungthaman In (Lake)

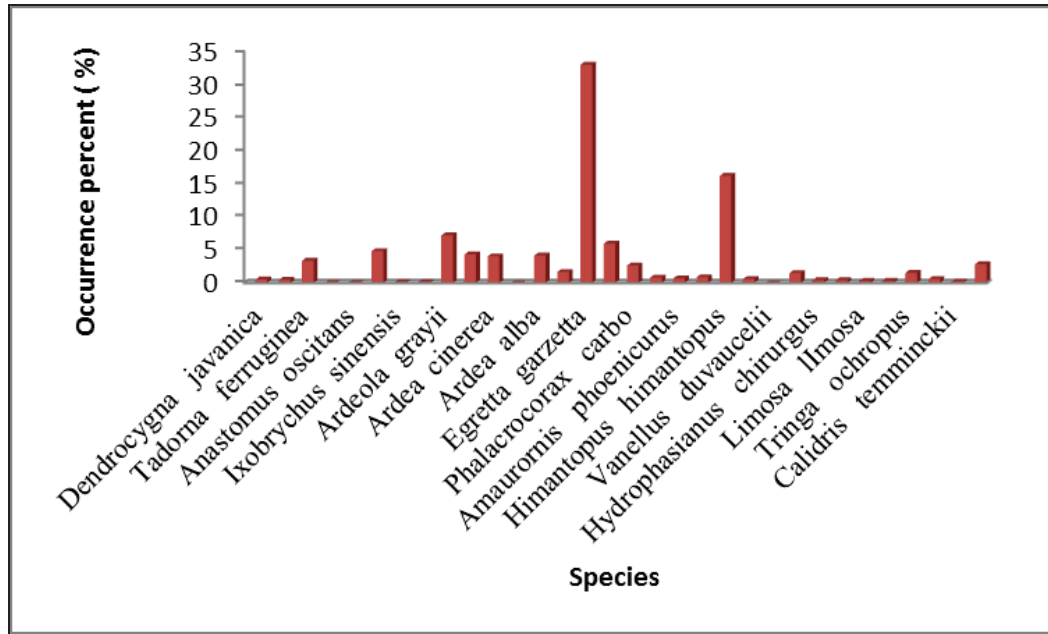


Figure 5 Occurrence of individual percentage waterbirds species from the two study sites.

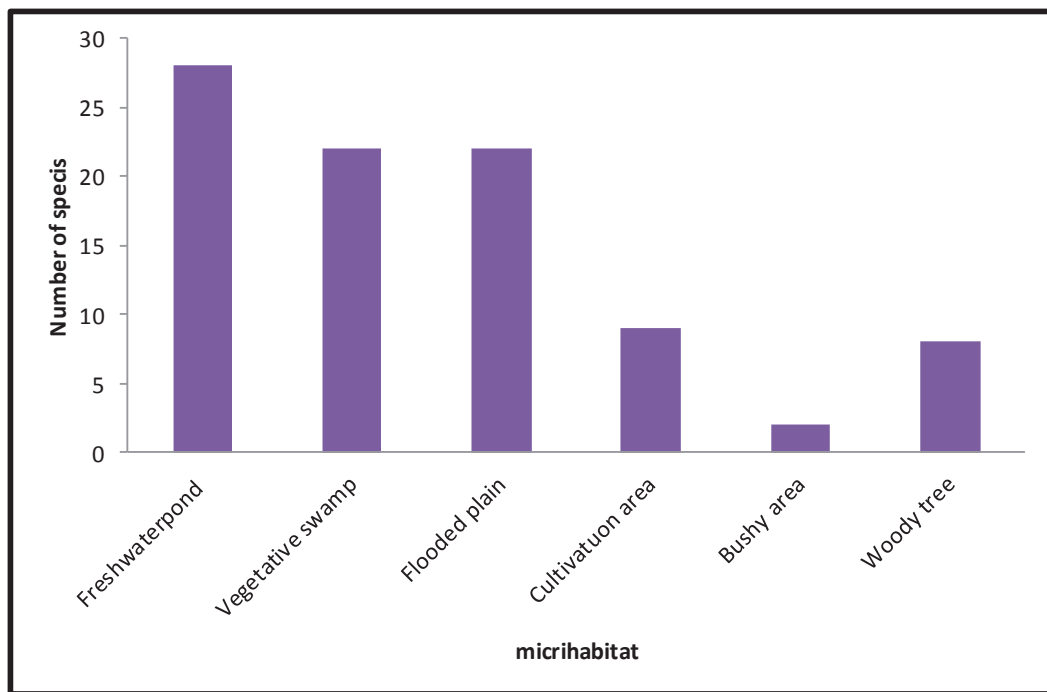


Figure 6 Occurrence of bird species at different microhabitat types of two study sites



Plate 3 Waterbirds species recorded in fresh water pond, vegetative swamp and flooded plain

		
<p>(A) <i>Ardea cinerea</i></p>	<p>(B) <i>Ardeola grayii</i></p>	<p>(C) <i>Egretta garzetta</i></p>
		
<p>(D) <i>Amaurornis phoenicurus</i></p>	<p>(E) <i>Gallinula chloropus</i></p>	<p>(F) <i>Dendrocygna javanica</i></p>
		
<p>(G) <i>Plegadis falcinellus</i></p>	<p>(H) <i>Bubulcus ibis</i></p>	<p>(I) <i>Anhinga melanogaster</i></p>

Plate 4 Waterbirds species recorded in Cultivation area, Bushy area and Woody tree

(A) *Tadorna tadorna*(B) *Recurviro straaivosetta*(C) *Limosa limosa*(D) *Chroicocephalus brunnicephalus*

Plate 5 Newly recorded waterbird species in Taungthaman Inn (Lake)

(A) *Egretta garzetta* (B) *Himantopus himantopus* (C) *Phalacrocorax niger*

Plate 6 The highest number of Species in Taungthaman Inn (Lake)

Discussion

A total of 32 species of water birds belonging to 28 genera, 14 families under seven orders were recorded in Taungthaman Inn (Lake) during June 2017 to June 2018. Among 32 species, 15 species of water birds were found to be resident and 17 species were winter visitor birds. It may be assumed that this study site from Taungthaman Inn (Lake) has habitats and richness of food sources available and all provide appropriate safe roosting sites.

In this study, a total of 39590 individual and 32 species of water birds were recorded from the two study sites. Concerning two study sites, 23790 individual confined to 32 species at site (A) and 15800 individual confined to 31 species of birds at site (B). The different numbers of species and individual between site (A) and site

(B) may be different due to the source of food availability and the presence of disturbance and different topography.

Regarding previous local works in central dry zone area, by Khin Maung Oo (2009) studied on 62 species of waterbirds species at Pleik - Inn. Nu Nu Tun (2011) conducted distribution and seasonal occurrence of 98 species of birds in Mandalay environs. Tin Ko Ko (2012) described 27 waterbirds species in Ta-Ohn Inn (Lake), Sintkaing. Hla Toe (2013) described 33 species in Sunye Inn (Lake), Sintkaing. Thin Thin Mar (2014) stated 26 species of waterbirds in Minhla Inn (Lake), Sintkaing.

Nu Nu Tun (2011) recorded 2557 individuals and confined to 98 species in Mandalay environs, 77 terrestrial and 21 aquatic birds including 18 winter birds, two endemic species were recorded. In the study, 32 species were recorded as waterbirds. In the present study more species were found than those of Nu Nu Tun (2011). The disparity in the result between these two research works might be due to the different location and habitat and duration of study periods.

In this study, four species of *Tadorna tadorna* (Common Shelduck), *Recurvirostra avosetta* (Pied Avocet), *Limosa limosa* (Black-tailed Godwit) and *Chroicocephalus brunnicephalus* (Brown-headed Gull), recorded in this Taungthaman Inn(Lake) are not reported by above mentioned previous local workers in their wetland area.

Among seven orders, the highest species number (12) and highest species composition (37.5%) were recorded in order Charadriiformes and followed by order Ciconiiformes with (11) species and species composition was (34.37%). The lowest number of species (only one) species and species composition (3.13%) were recorded in order Podicipediformes and Suliformes, respectively.

The present study of seasonal variation in the number of species was recorded during the study period. The highest number of bird individuals (20.19%) was recorded in January and followed by December (19.65%) and February (16.37%). It may be assumed that winter birds migrate to this study area. The lowest number of bird individual (1.58%) was observed in May and April (1.65%) respectively.

In this study, *Egretta garzetta* is shown as the highest individual number (13040) and (32.94%) and followed by winter visitor, *Himantopus himantopus* (6410) individuals and (16.19%), *Phalacrocorax niger* (2350) individuals and (5.94%). The lowest number of individual (4) and (0.01%) was observed in *Tadorna tadorna* and followed by *Vanellus duvaucelii* (9) individual number and (0.042%) respectively.

Single species of bird cannot be found anywhere in Myanmar. Many species of birds use different habitats at different time of the year (Davies, 2004). A total of six types habitats were observed in the study area. *Egretta garzetta* was found in five microhabitats types and *Dendrocygna javanica*, *Ardeola grayii*, *Bubulcus ibis*, *Phalacrocorax niger* and *P. carbo* were observed in four microhabitats types (freshwater pond, vegetative swamp, flooded plain, cultivated area, bushy and woody tree) respectively. It is clearly indicated that the bird species utilized mix habitats, and highest species and individual number of birds was found in many habitat types.

Nowadays, the activities of people such as urbanization, deforestation, pollution and over fishing have resulted in loss of habitats for bird. Habitat loss was the major cause of endangerment for the birds in Asian region. Pesticite use in farming is also a threat to birds.

In addition, change in weather (climate change) conditions also plays significant role in avian population affecting their breeding and wintering grounds,

availability of food resources directly and indirectly (Visser, 2001). Regard with conservational status according to IUCN (2016), 30 species of waterbirds were least concerned and two species, *Anhinga melanogaster* (Oriental Darter) and *Limosa limosa* (Black-tailed Godwit) were recorded as nearly threatened species.

It is concluded, that this area is very important for bird conservation. Because a great number of bird species individuals and abundance of winter bird species still exist in the region. It is also highly endowed with diverse bird species because of the presence of different microhabitats and food resources. A positive correlation between habitat diversity and bird species diversity was monthly found throughout the study. Therefore Taungthaman Inn (Lake) environs need ecological surveys of the avian fauna to generate essential data for conservation of the fauna and habitats in the area.

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