



Comparative analysis of passerine and non- passerine birds of wetlands of Bannigola, Anka Samudra and Magadi of North Karnataka, India

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Abstract

In the current study passerine and non-passerine birds of three wetlands has been selected because of all three study areas are located away from each other and their habitat composition is dissimilar. Ankasamudra lake recorded 59.43% passerine and 40.56% non-passerine birds. Whereas another wetland Bannigola area shows 32.78% passerine and 67.22% non-passerine birds and Magadi lake comprises 87.86% non-passerine birds and 12.13% passerine birds. Ankasamudra study area accommodating highest passerine birds followed by Bannigola and Magadi lake. It clearly shows that Ankasamudra lake attracts more number of passerine birds rather than other lakes. Because of the availability of food grains(cereals) due to surrounding agricultural lands and T.B Dam backwaters and Acasia trees for roosting and breeding (nesting).

Keywords: passerine, non-passerine, study area, wetland

Introduction

India is rich in vivid type of lentic aqua-system located in different geographical regions, ranging from the cold arid zone of Ladakh to wet Impala, the warm arid zone of Rajasthan and the tropical monsoonal central India to the wet and humid zone of the southern peninsula. Such vivid diversity in climatic zones and various types of wetlands supported to rich diversity of flora and fauna in this country.

The lentic aquatic systems occur in places where precipitation exceeds the rate of evapo-transpiration, leaving behind an accumulated water surplus. About one third of India's land mass falls under this category, and lentic aquatic system are thus common throughout India. Especially Kerala, West Bengal, Orissa, Assam, Eastern Madya Pradesh, Uttar Pradesh, Bihar, North Eastern Andhra Pradesh, North and Central Karnataka, Jammu and Kashmir and all along the east and west coast of India, lentic water bodies also occur in areas where local physiography enables certain areas/low lying lands to accumulate and retain water. Broadly, these can be classified into two categories (Hosetti 2002; Hosetti and Bharathi, 2018) ^[12, 18] those include;

- a. Natural water logging areas like lakes, flooded plains and brackish water pond areas along the coast.
- b. The manmade wetlands such as ponds, small lakes, shallow depressions and reservoirs

Indiscriminate conversion of wetlands for agriculture, human habitation and industrial purpose would destroy their characteristics and this would be detrimental to the general biotic component of the ecosystem. Conversion of wetlands into dry land through drainage and filling would undoubtedly increase their market value. But this apparent short term benefit would ultimately lead to a series of undesirable changes affecting natural processes, such as inhibition of the absorption of flood water, sealing the very sources of ground water discharge, loss of natural assimilative capacity and increasing the population levels of adjacent waters. This would therefore, lead to increased costs of flood protection measures, increased costs for pollution abatement measures, loss of fisheries and other aquatic resources and loss of natural habitats of a variety of plants and animals (Hosetti 2002; Hosetti and Bharathi, 2018) ^[12, 18].

Materials and methods

Observation and photography of the wetland birds at the study area was done by using Olympus binoculars (Olympus 10X15 DPSI, Field 6.50) and (Cannon EoS 6001), DSLR camera. Birds were classified into orders and families by referring to "Birds Of Indian Subcontinent" by R.Grimmett, Carol Inskipp and Tim Inskipp(2011). In the present study survey of birds conducted from April 2015 to March 2016, April 2016 to March 2017 and April 2017 to March 2018 for three consecutive years (weekly one visit to one study area and from 6AM to 11AM and 4PM to 6PM

Study Area

Three areas were selected for the present studies and those are shown below (Fig.1).

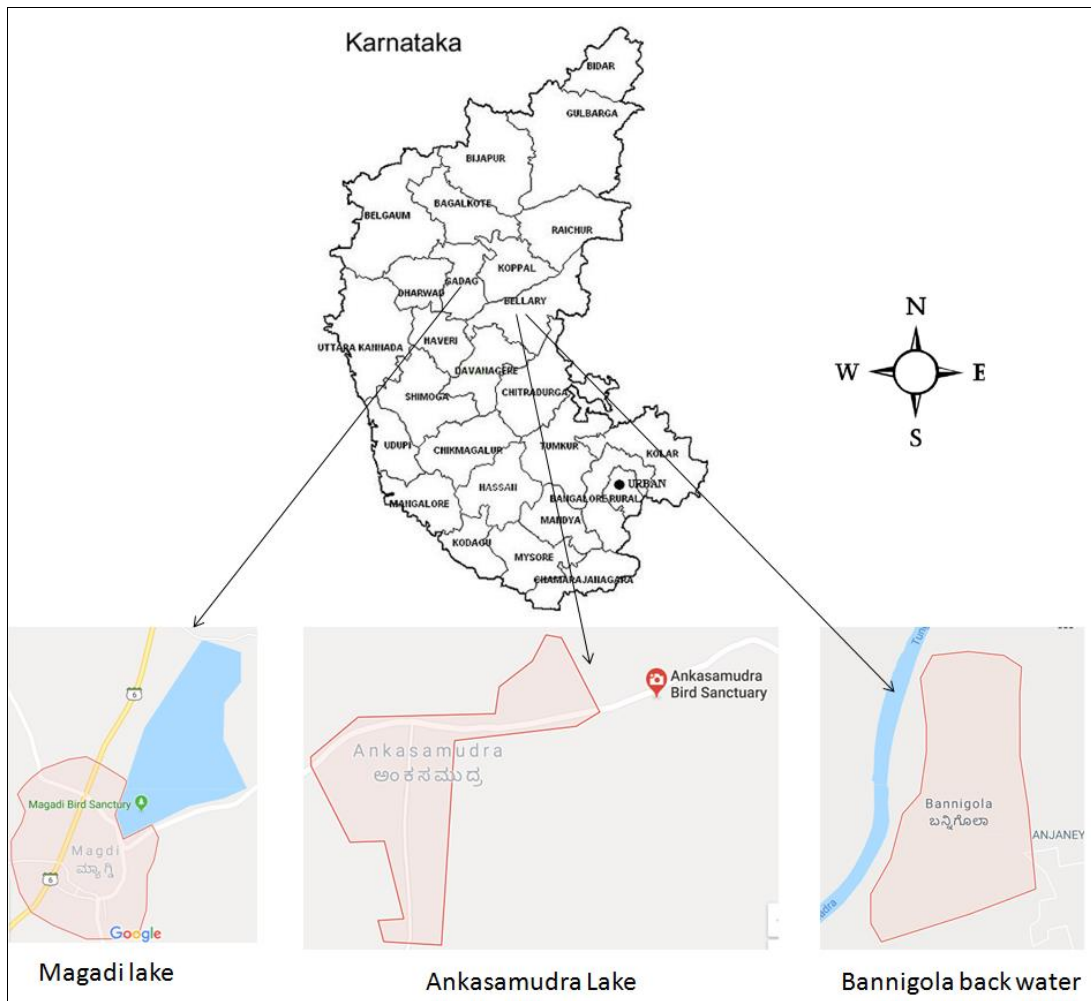


Fig 1: The three study areas viz, Magadi lake, Ankasamudra lake and Bannigola backwater.

Bannigola backwater of T.B. Dam

Bannigola is a Village in Hagaribommanahalli Taluk in Bellary District of Karnataka State, India. It is located 101 km towards west from District head quarters Bellary, 17 km from Hagaribammanahalli. 342 km from State capital Bangalore. It is located between 15° 10' 43.02 N latitude and 076 06' 23.3 E longitudes. Tunga Bhadra dam has been constructed across the river of Tungabhadra near Hosapete, Bellary district and its water is spread in an area of 378 sq.km. during monsoon (T.B. Board, 2012). This impounded water formed number of wetlands in different parts. Among them Bannigola backwater region (where river is running) is the one has been selected for the study. This backwater wetland also provides water for fishing activities and irrigation to surrounding agricultural lands of Bannigola village.

Ankasamudra lake

Ankasamudra is a small village located in Hagaribommanahalli taluk, Bellary district, Karnataka, India, between 15° 7' 50.44" N and 76° 13' 52.83" E. Ankasamudra Lake is located outskirts of the village Ankasamudra and spreaded in 244 acres. This lake is located near to backwaters of T.B. dam and filled with both either natural rain water or by lifting backwater of T.B. dam. Since it is filled with water almost throughout the year and Acacia trees grown in the area attracted bird species during winter season. Hence, it is chosen for the study.

Magadi lake

It is a manmade lake that is built on the outskirts of Magadi village in Shirahatti taluk (8 kms from Shirahatti) of Gadag district (26 kms from Gadag), Karnataka, India between N 15.22 4378, E 75.51 3941. The tank spans about 134 acres of land area with a catchment of 900 hectares. The main water source is rain and surrounded by agricultural crop lands which are the food source for birds. It attracts many migratory birds from Asia and other foreign countries and from within country also. Hence, it is chosen for the study of diversity and abundance of avifauna in this region.

Results and discussion

Comparitive analysis of passerine and non- passerine birds of Bannigola back waters, Ankasamudra and Magadi lakes is given in the Table.1 and illustrated in the Fig. 1. Of the total of 17,848 birds, 5850 (32.78%) were

passerine and 11,998 (67.22 %) were non passerine recorded in the Bannigola. Akin to the hitherto trend it was also continued in Magadi Lake where Non-Passerine birds were found to be more (3835) (87.86 %) than passerine birds (529.67) (12.13 %). Whereas, in the Ankasamudra Lake out of the total of 33976.6 birds, 20180.34 (59.431 %) birds were found to be passerine and 13796.26 (40.569 %) were non-passerine respectively.

Passerines preferred cereal grains, oil seeds such as Brassicas and sun flower etc., and it is the key component which envisaged the birds to over winter farmlands (Allan *et al.*, 2007) ^[2]. The open agricultural landscape provided attractive habitats for wintering granivorous birds which consumed stubble and grains on fallow lands. These birds also use the manure heaps that are a feature of traditional low intensity farm land (Zbigniew Kasprzykowski and Artur Golawski, 2012) ^[21]. Birds preferences may be linked with the greater relative densities of weed seeds on stubble and fallow land than on agricultural fields (Robinson and Sutherland, 1999 and Moorcraft *et al.*, 2002). Particular habitats have different importance for different species. Besides typical attractive habitats like stubble to wintering birds, may help in forage in the habitats that occur in a traditional farming landscape (small gravel pit, weedy margins and dirty road). Agri-environmental program should strive to preserve traditional agricultural areas which support a high variety of habitats (Zbigniew Kasprzykowski and Artur Golawski, 2012) ^[21]. Similar type of ecology can be seen in and around the study areas, thus they attract more number of passerines. This supports the hitherto research as well.

Seasonal variations in selectivity of habitats among non-passerines birds were researched for river, estuary, ditch and pasture habitats. Such seasonal variations may be related to the seasonal changes in prey availability and hydrology associated with the habitat types (Mann, 1989; Wood *et al.*, 2013a) ^[17]. The wintering period is a critical period in the yearly cycle of water birds or non-passerine birds. Since sufficient energy supplement are the critical to their migration, reproduction and survival (Both *et al.*, 2010). High congregations coupled with food, extremely limited space and other resources may lead to interspecific competition among bird community. Collecting data on habitat utilization pattern for water birds inhabiting the lake wetland may be a vital issue for successful conservation activity and design action plans (Ali Elafri *et al.*, 2017) ^[11].

Perez- Crespo *et al.* (2013) ^[20] suggested that shallow waters can accommodate more species than deep waters. Increased meadows and muddy areas that are the second important habitat categories of the wetlands, when a large number of waders occur during the migratory pass (Battisti *et al.*, 2015) ^[3].

The habitat preferences of waders like Ringed plovers, Sanderlings and Bar-tailed godwits Lapwings, Snipe and Red shank all these preferred mud based areas. Whereas Purple sand pipers preferred bedrock, however some of the associations or relative strengths of associations were not so predictable (Summers *et al.*, 2002). Habitat type was less important than the proximity to adjacent fields which are used for feeding (Heppleston 1982) ^[11]. Ultimately, habitat selection emerges only because organisms are better adapted to live and reproduce in some places than they were in other places (Morris *et al.*, 2008).

Table1: Comparative Analysis of passerine and non-passerine bird species of the three study areas

Groups	Bannigola		Ankasamudra		Magadi	
	Avg. No. birds	%	Avg. No. birds	%	Avg. No. birds	%
Passerine	5850.005	32.78	20180.34	59.39	529.67	12.13
Non Passerine	11998	67.22	13796.26	40.60	3835.03	87.86
Total	17848.005		33976.6		4364.7	

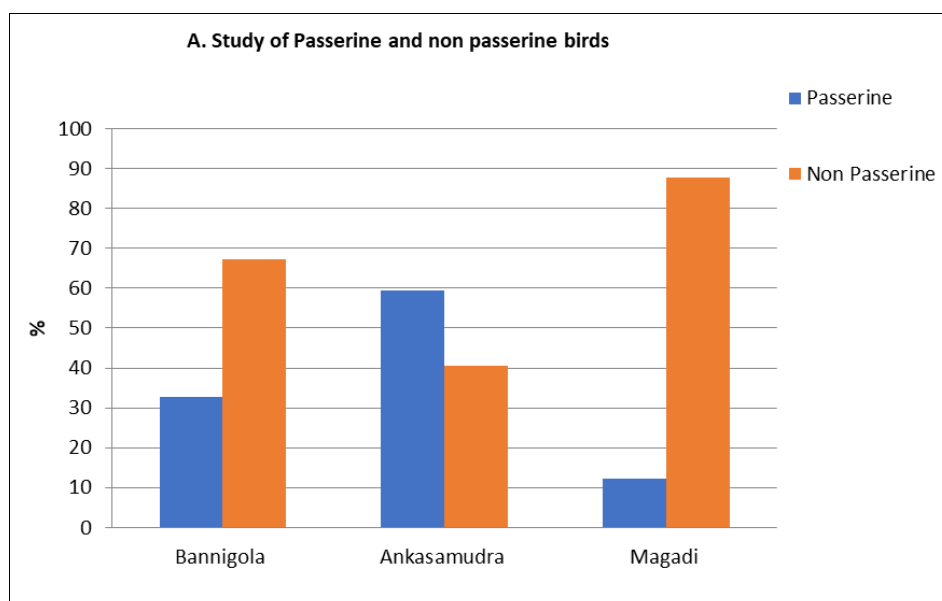


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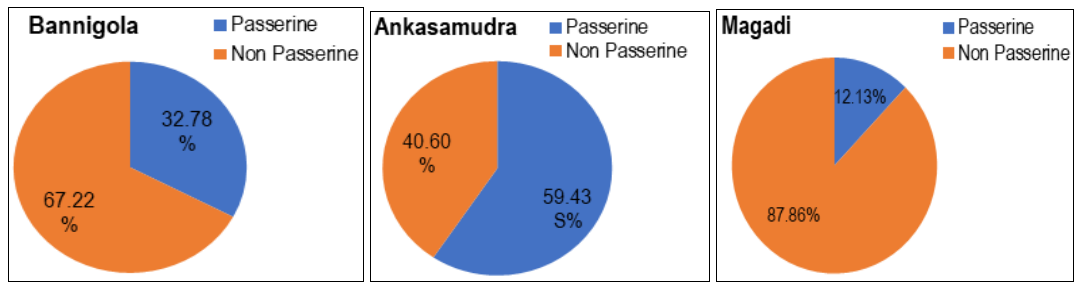


Fig 2: Analysis of passerine and non-passerine bird species in all three study areas

Conclusion

The present practice of using wetlands for collecting wood, retting of fibres such as jute and coconut, indiscriminate discharge of factory effluent and sewage and using as dumping place for all sorts of waste materials needs to be stopped immediately if we seriously want to conserve this precious natural heritage received by us through the farsightedness of our forefathers over millions of years. Similarly, reclamation of these area for commercial purposes should be checked.

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