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# A review on Ornithology of Kolkata metropolitan area

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**Abstract**

Birds are considered excellent bio-indicators and ideal models for predicting environmental changes due to the effects of urbanization on ecosystems since they are highly diverse and conspicuous biota of the ecosystem. Bird species respond rapidly to changes in landscape alteration, composition and function and to the availability of habitat structures. Birds were classified into categories based on behavioral and physiological response guilds and a Bird Community Index Score (BCI) was calculated based on the types of birds present. As habitats shift from undisturbed to degraded, there will be a corresponding shift from specialist to generalist species because disturbed habitats could not support very specialized species. So, urban and industrial areas may be a very good area for observing such kind shift among the bird species. The paper is a review is of this kind of study.

**Keywords:** Bio-indicators, bird community index Score (BCI), ornithology.

## Introduction

Birds are considered excellent bioindicators and ideal models for predicting environmental changes due to the effects of urbanization on ecosystems since they are highly diverse and conspicuous biota of the ecosystem (Padoa-Schioppa et al*.,* 2006). One of the most useful things that birds can indicate is overall habitat quality. When birds are dependent on the habitat functioning in specific ways, the population trends of birds can tell us about how well the ecosystem functions. Bird species respond rapidly to changes in landscape alteration, composition and function and to the availability of habitat structures (Clergeauetal et al*.,* 1998; Tanveer et al*.,* 2002). In some cases, it is not just the numbers of birds present, but the assemblage of bird species in an area that can indicate habitat quality. A study in the Central Appalachian Mountains showed that when forest habitats became

degraded, the types of birds present changed in a predictable fashion (O'Connell et al., 2000). Birds were classified into categories based on behavioral and physiological response guilds and a Bird Community Index Score (BCI) was calculated based on the types of birds present. As habitats shift from undisturbed to degraded, there will be a corresponding shift from specialist to generalist species because disturbed habitats could not support very specialized species. So, urban and industrial areas may be a very good area for observing such kind shift among the bird species.

In the recent past, avian diversity has been studied by some researchers in different part of West Bengal (Roy, 2011; Patra and Chakrabarti, 2014; Hossain and Aditya, 2014; Mistry, 2015). But study of urban biodiversity has been received very little attention from conservation biologists as compared to natural and protected areas (Jules, 1997 ; Vandermeer, 1997). The city of Kolkata may be a very good choice for studying such kind urban biodiversity study. It spread roughly north–south along the east bank of the Hooghly River, Kolkata, has an area of 185 $km^2$ (71 sq mi) and may be divided into distinct zone and subzone on the basis of presence of green urban spaces.

The East–West part of the city is comparatively narrow whereas the north–south distance is greater, and its axis is used to section the city into North, Central, and South Kolkata. North Kolkata is the oldest part of the city. It is characterized by 19th-century architecture, dilapidated buildings, overpopulated slums, crowded bazaars and narrow alleyways. Central Kolkata contains several government and private offices along with the Maidan area which is a large open field in the heart of the city that has been called the "lungs of Kolkata"(Yardley and Jim, 2011*).* East Kolkata is largely composed of newly developed areas with a undeveloped areas, known as the East Kolkata Wetlands, were designated a "wetland of international importance" by the Ramsar Convention (1975) (Roy Chadhuri and Thakur, 2006). South Kolkata developed after India gained independence in 1947.

**Development on Ornithology in Kolkata**

The issue of urban biodiversity was rather neglected before but it is now gaining increasing focus, especially during the last decade and was included in the United Nations Environment Programme (UNEP) document on global biodiversity assessment. In Kolkata, however, urban biodiversity has generally not been systematically studied except for the following works. A bird lists were published by Blyth (1863) that he recorded during his stay in Calcutta from 1841-1863. In recent times there has been biodiversity study of Narendrapur Wildlife Sanctuary in the south-eastern fringe of Calcutta by Kushal Mookherjee of Prakriti Samsad of Calcutta (1985). On birds and Trees of Tollygunge Club by Kushal Mookherjee (1995); Mookherjee (2004) of Prakriti Samsad has also published a compiled list of birds of Kolkata as recorded by Samsad members during the last twenty five years of study which included 260 species. (Ghosh and Ghose, 2007) have made new records of birds from the Calcutta Metropolitan areas. On Bird biodiversity study in Salt Lake,

Calcutta, by Prakriti Samsad (Mookherjee and Chatterjee, 1999), on avian diversity in East Calcutta Wetlands by Ghosh (2004), on birds and butterflies of Raj Bhavan, Kolkata (Calcutta) by Ghosh (2008). But most of these works were focused only on the listing of bird species. There is no available data on zone wise distribution of bird species and whether there is any gradual change in bird population pattern with respect to landscape changes, urbanization, vegetation changes of habitat.

**Conclusion**

Studies may be taken up to estimate the zone wise avian diversity of Kolkata Metropolitan Area along with vegetation composition of habitat as bio-indicator of industrial and automobile air pollution exposure, landscape changes and human interactions. It will be of utmost importance to prepare a comparative data on availability of various bird species of different zones and subzones. The study areas may be selected as heavily-populated neighborhoods, nearby office buildings, nearby roads with continuous vehicular movements, spaces with high human interactions etc. These data may help us to identify the reason of shift in bird species, from specialist to generalist species. Subsequently such studies may throw light on how to restore the original habitat by improving tree design. Identification of bioindicator bird species for urban pollution may result from such study. All the data together may help in improving the design of the Kolkata Metropolitan in a sustainable way without losing avian biodiversity.

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