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A comparative study of avifaunal diversity in wetland between Newtown and Barrackpore.

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Abstract:

Wetlands play a crucial role in supporting diverse avian communities worldwide, yet their populations face numerous threats due to habitat loss and degradation. This study investigates the abundance, distribution, and habitat preferences of wetland birds. Field surveys were conducted monthly, utilizing standardized point count methods across various wetland habitats. Results reveal a rich assemblage of avian species. Significant variations in species composition and abundance were found between different wetland types, emphasizing the importance of habitat heterogeneity in supporting avian diversity. Moreover, the study identifies key environmental variables influencing bird presence, vegetation cover, and anthropogenic disturbance. These findings underscore the importance of targeted conservation efforts aimed at preserving and restoring wetland habitats to safeguard the rich avian biodiversity.

Key words: Habitat degradation, species distribution, standardized point count, habitat heterogeneity, anthropogenic disturbance.

1. INTRODUCTION:

Wetlands are critical ecosystems that support a myriad of flora and fauna, playing a vital role in maintaining ecological balance and providing numerous ecosystem services. In the bustling city of Kolkata, situated on the eastern bank of the Hooghly River in West Bengal, India, wetlands represent invaluable natural assets, serving as havens for a diverse array of bird species. The city's wetlands, including the iconic East Kolkata Wetlands (EKW), comprise a mosaic of marshes, ponds, and water bodies that host a rich avian community year-round.

The avifauna of Kolkata's wetlands is exceptionally diverse, encompassing resident, migratory, and wintering bird species. These wetlands serve as crucial stopover points for migratory birds traveling along the East Asian-Australasian Flyway, providing essential resting and foraging grounds during their arduous journeys. Additionally, Kolkata's wetlands support a significant population of resident waterbirds, adapted to the unique hydrological and ecological conditions of the region.

Despite their ecological significance, Kolkata's wetlands face myriad threats, including urbanization, pollution, encroachment, and unsustainable resource extraction. These anthropogenic pressures have led to habitat degradation and loss, jeopardizing the integrity of these vital ecosystems and the species that depend on them for survival. Consequently, understanding the distribution, abundance, and habitat requirements of wetland birds in Kolkata is paramount for their effective conservation and management.

This study aims to fill gaps in our knowledge regarding the wetland avifauna of Kolkata, providing insights into the species composition, abundance patterns, and habitat preferences of birds inhabiting these vital ecosystems. By elucidating the ecological dynamics of wetland birds in Kolkata, we can inform evidence-based conservation strategies to safeguard these invaluable habitats and ensure the persistence of their avian inhabitants for generations to come.

2. ***Objective:***

- To find out the diversity of wetland birds and their interaction with associated species
- To find out the anthropogenic pressure on avifaunal diversity

3. **Methodology:**

1. **Site Selection**: Select study sites within the wetland area that represent different habitat types, such as open water, marshes, reed beds, and mudflats. New town and Rahara are the focal point of our project.

2. **Timing and Seasonality**: Conduct bird surveys during appropriate times of the year such as January to March. Early morning hours (6 to 10 am) are often optimal when birds are most active and the evening time (3 to 6 pm) is most important.

3. **Survey Techniques**:

• **Point Counts**: Establish fixed observation points within each habitat type. Record all bird species seen or heard within a predetermined radius (e.g., 50 meters) of the observation point during a set time interval (e.g., 5-10 minutes). Repeat counts multiple times at each point to account for variation.

• **Transect Surveys**: Walk along predetermined transects through different habitats, recording all bird species observed within a specified distance on either side of the transect line.

4. **Data Collection**: • Record the following information for each observation: • Species identification

• Number of individuals (or estimated counts for large flocks)

• Behaviour (e.g., feeding, roosting, nesting)

• Habitat type

• Environmental conditions (e.g., weather, water level)

• We use binoculars, spotting scopes, and field guides for accurate species identification.

• Utilize data sheets for systematic data recording.

5. **Repeat Surveys**: Conduct surveys repeatedly throughout the study period to capture seasonal variations in bird abundance and distribution. Aim for consistency in survey frequency and duration.

6. **Data Analysis**: • Analyses bird count data to determine species richness, abundance, and diversity metrics.

• Use statistical tools (e.g., species accumulation curves, rarefaction) to assess sampling effort and estimate total species richness.

• Compare bird communities across different habitat types and seasons to identify patterns and trends.

7. **Quality Assurance**: • Implement quality control measures, such as double-checking species identifications and validating outlier observations.

8. **Ethical Considerations**: Adhere to ethical guidelines for wildlife research, including minimizing disturbance to birds. **1. BARACKPOORE WETLANDS 2. NEW TOWN RAJARHAT WETLANDS**

The latitude and longitude of our sites: -

LAT: - 22* 46’ N LONG: - 88*22’ E

LAT: - 22* 61’ N LONG: -88*47’ E

The Equipment used in our study: -

1. CANON 200D MARK II DSLR CAMERA TO TAKE PICTURES.

2.CANON EF LENS TELEPHPOTO 75mm-300mm.

3.NIKON ACULON 16X50 BINOCULARS.

Figure 1:Study area of Newtown

Figure-2:Study area of Barrackpore

COMMON NAME	SCIENTIFIC NAME
Asian Koel	Eudynamys scolopaceus
Asian open bill stock	Anastomus oscitans
Asian palm swift	Cypsiurus balasiensis
Black drongo	*Dicrurus macrocercus*
Black hooded oriole	*Oriolus xanthornus*
Black kite	*Milvus migrans*
Black Rummped flameback	*Dinopium benghalense*
Common cookoo	*Cuculus ccannorus*
Common myana	*Acridotheres tritis*
House crow	*Corvus splendes*
House sparrow	*Passer domisticus*
Jungle myna	*Acridotheres fuscus*
Large billed crow	*Corvus maxrorhynhos culmintus*
Little cormorant	*Microcarbo niger*
Little egret	*Egretta garzetta*
Medium egret	*Ardea intermedia*
Oriental magpie robin	*Copsychus saularis*
Red vented bulbul	Pycnonotus cafer
Rufous treepie	Dendrocitta vagabunda
Rose ringed parakeet	Psittacula krameri
Spotted dove	Spilopelia chinensis
Storck billed kingfisher	Pelargopsis capensis
White breasted water hen	Amaurornis phoenicurus
White throated kingfisher	*H. smyrnensis*
Bronzed winged jacana	*Metopidius indicus*
Wood sandpiper	*T. glareola*
Green sandpiper	*T. ochropus*
Bar-headed Gosse	*A.indicus*
Large Whistling -Duck	*Dendrocygna biolor*
Lesser Whistling -Duck	*D.javanica*
Cattle Egret	*Bubulcus ibis*

Indian pond -Heron	*Ardeola grayii*
Pintail snipe	*Gallinago stenura*
Red-wattled lapwing	*Venellus indicus*
Grey-headed lapwing	*V.cinereus*
Greater spotted eagle	*Auila claga*
Storck billed kingfisher	*Halcon capensis*
Yellow Wagtail	*M.flava*

Fig: list of wet land birds in New town region.

Common Name	**Scientific Name**
Asian koel	*Eudynamys scolopaceus*
Asian palm swift	*Cypiurus banasiensis*
Black drongo	*Dicrurus macrocerus*
Black hooded oriole	*Oriolus xanthornus*
Black kite	*Milvus migrans*
Black Rummped Flameback	*Dinopium benghalense*
Chinereous tit	*Parus cinereus*
Common cookoo	*Cuculus ccannorus*
Common myana	*Acridotheres tritis*
Eurasian collared dove	*Steptopelia decaocto*
Greater caucal	*Centropus sinensis*
Greater flameback	*Chruosocolaptes guttacristatus*
House crow	*Corvus splendes*
House sparrow	*Passer domisticus*
Indian pond heron	*Ardeola gyrayii*
Jungle myna	*Acridotheres fuscus*
Large billed crow	*Corvus macrorhynchos*
Little cormorant	*Microcarbo niger*
Little swift	*Apus affinis*
Oriental magpie robin	*Copsychus saularis*
Pale billed flower pecker	*Dicaeum erythrorhynchos*

Red vented bulbul	*Pycnonotus cafer*
Red wishkered bulbul	*Pycnonotus jocosus*
Rock pigeon	*Culumba libia*
Rofous treepie	*Dentrocitta vagabunda*
Spotted dove	*Spilopelia chinensis*
Stork billed kingfisher	*Pelargopsis capensis*
Taiga flycatcher	*Ficedula albicilla*
White breasted water hen	*Amaurornis phoenicurus*
White throated kingfisher	*Halcyon smyrnnensis*

Fig: List of wet land birds in Barrackpore region.

Figure: Asian openbill stork

Figure : Data collection during survey

Figure 2:Study area

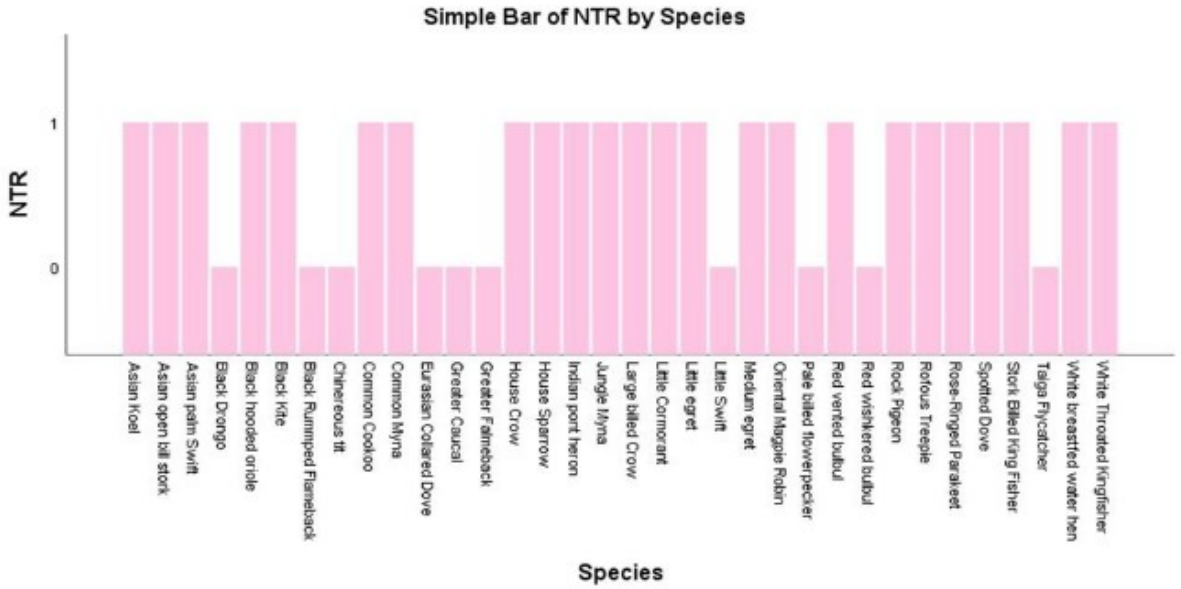

Fig: Graphical representation of wetlands birds in Newtown

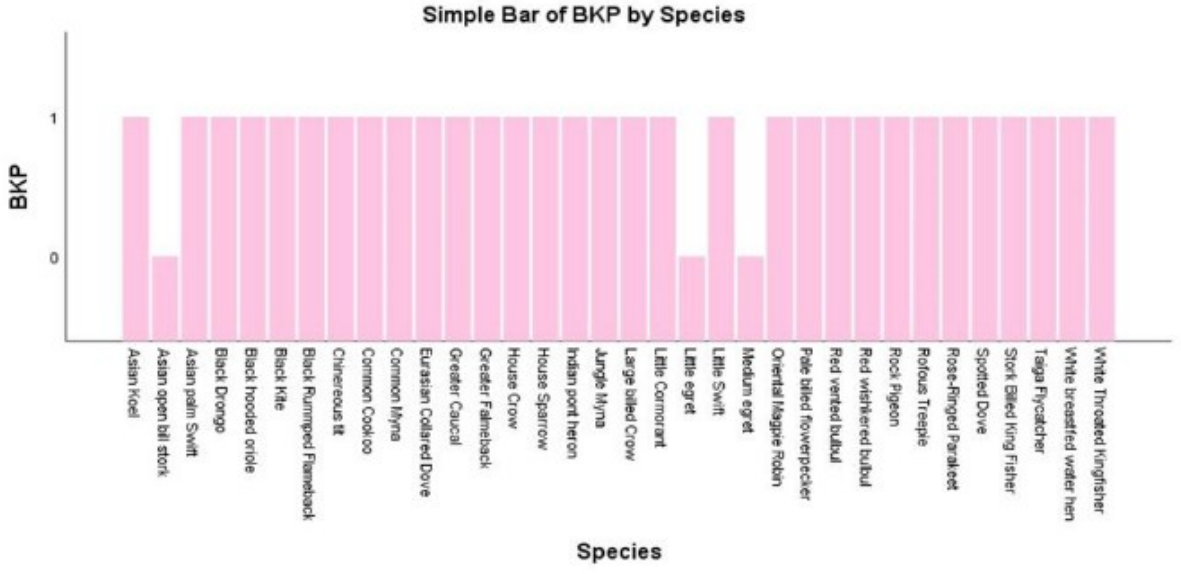

Fig: graphical representation of wetland birds in Barrackpore.

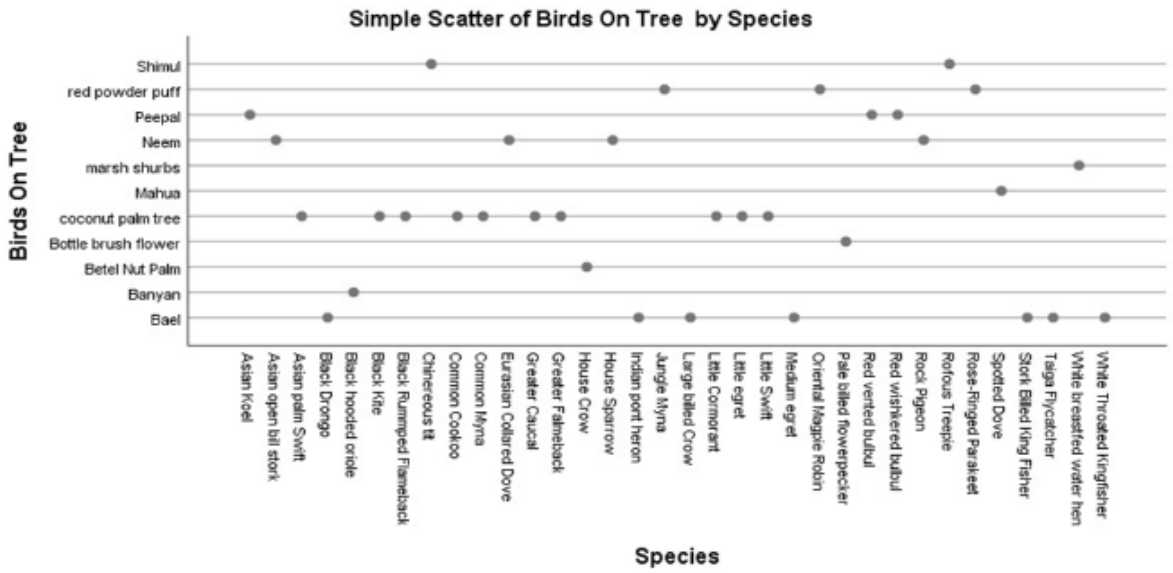

Fig: Graphical representation of tree abundance related to the avifaunal diversity associated to wetland.

4. ***Conclusion****:*

The conclusion regarding wetland birds and their interactions depends on the specific research or study being referenced. However, generally speaking, wetland birds play crucial roles in wetland ecosystems through various interactions such as feeding, nesting, and breeding.

Here are some potential conclusions based on common findings in wetland bird research:

1. **Biodiversity Support:** Wetland birds contribute significantly to the biodiversity of wetland ecosystems. Their presence indicates the health of these environments and their ability to support diverse life forms.

2. **Ecosystem Services:** Wetland birds provide important ecosystem services such as seed dispersal, nutrient cycling, and pest control. Their interactions with other organisms, including plants and invertebrates, contribute to the overall functioning of wetland ecosystems.

3. **Habitat Dependence:** Many wetland bird species are highly dependent on specific wetland habitats for feeding, nesting, and breeding. Loss or degradation of these habitats can have detrimental effects on bird populations and overall ecosystem health.

4. **Migration Patterns:** Wetland birds often exhibit complex migration patterns, relying on interconnected wetland habitats across different geographic regions. Understanding these migration patterns is crucial for conservation efforts and maintaining healthy bird populations.

5. **Human Impact:** Human activities such as habitat destruction, pollution, and climate change pose significant threats to wetland birds and their interactions within ecosystems. Conservation efforts must address these threats to ensure the survival of wetland bird populations and the integrity of wetland habitats.

In conclusion, wetland birds play vital roles in wetland ecosystems through their interactions with other organisms and the environment. Protecting and conserving wetland habitats is essential for maintaining healthy bird populations and the overall functioning of wetland ecosystems.

5. Acknowledgement:

We would like to express our sincere gratitude to all those who contributed to the success of this project on wetland birds and their interactions. Their dedication and expertise were instrumental in advancing our understanding of these vital ecosystems.

First and foremost, we extend our thanks to Principal Maharaj ji, SV Maharaj ji and Co-ordinator Sir of PG for their guidance, vision, and unwavering support throughout the project. Their leadership ensured the project's smooth execution and its meaningful outcomes.

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