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The study focused on investigating the diversity of bird species in the Paniyajob area of Dongargarh, located in the Rajnandgaon District of Chhattisgarh. India.

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ABSTRACT: In a comprehensive study spanning six months from August 5, 2022, to January 10, 2023, the assessment of bird species variety in Dongargarh, Rajnandgaon, unfolded across approximately 15 square kilometers within the study area, constituting 1% of the entire Dongargarh tahsil area (1044 km2). This meticulous research encompassed diverse sections, ranging from ponds and forests to crop fields and vegetable farms. Noteworthy is the observation that all seven identified bird species were migratory, including notable ones like the Common Koel, Greater Flamingo, and Common Pochard. Concurrently, resident species such as House Crows, Black Drongos, Blue Rock Pigeons, Spotted Owlet, Common Mynas, and Jungle Owlet were also documented. The significant presence of abundant trees within the research region is believed to exert a profound influence on the overall diversity of bird species.

Keywords: Bird species variety, Dongargarh, Rajnandgaon, Comprehensive study, Six months, Migratory bird species, Abundant trees.

INTRODUCTION

In contemporary discourse, there is a growing recognition of the pivotal role that biological diversity plays in shaping the sustainability of developmental initiatives and influencing local and global environmental dynamics. To ascertain the significance of a particular locale or region for avian conservation, a nuanced understanding of the composition and structure of the bird community is imperative (Kattan and Franco, 2004).

Belonging to the Aves class of chordates, birds are characterized by their warm-blooded nature, bipedal locomotion, feathers, and egg-laying reproduction. Thriving in diverse ecosystems worldwide, birds exhibit a remarkable range in size, from the diminutive bee hummingbirds measuring a mere 5 cm to the towering ostriches standing at an impressive 2.5 meters. Not only are birds among the most widely distributed organisms on Earth, but they are also exceptionally attuned to environmental changes. Serving as crucial indicators of ecosystem health, birds play

an integral role in the intricate web of the food chain. Their participation is vital in preserving the delicate balance of nature, encompassing functions such as pollinating flowers and dispersing seeds. In the realm of ecology, bird diversity, abundance, and community structure serve as invaluable tools for comprehending the intricate tapestry of species diversity in the wild.

Habitat destruction emerges as the primary factor exerting influence on the diversity of bird species. As natural habitats undergo degradation, many bird species, often unwittingly, migrate to urban areas in a bid to adapt and survive. Alterations in plant composition, driven by various factors, can impact the availability and quality of food, water, and habitat cover for birds, subsequently influencing the diversity, abundance, and dispersion patterns of avian populations. In essence, the intricate interplay between birds and their habitats underscores their indispensable role in the broader framework of biodiversity and ecological balance.

MATERIALS AND METHODS

Geographical Locations:

Situated within the ecologically diverse state of Chhattisgarh, Dongargarh occupies a strategic geographical position at 21.1870° N, 80.7619° E, nestled in the western hilly area of Rajnandgaon district. This locale, enriched by the scenic Maikal Range with its towering mountain peaks, dense forests, and meandering mountain rivers, encapsulates the state's wealth of natural resources and ecological variety. The study area in Dongargarh, boasting over 2,500 trees, emerges as a haven for avian habitats, offering a diverse range of environments for bird species. Furthermore, the tranquil nature of certain park areas contributes to an indirect enhancement of bird variety. To comprehensively document the avian diversity within this region, the research spanned eight distinct locations, strategically chosen and delineated on the Rajnandgaon map, facilitating a thorough investigation into the rich tapestry of bird species thriving in these varied habitats.

Sampling of Birds:

A modified version of the Transact approach was employed to meticulously document bird species at the designated research sites, with waterfowl and other aquatic birds quantified through direct observation and point counting methods. The wild birds were carefully observed using binoculars, and each sighting or audible identification was precisely categorized at the species level. Details such as size, coloration, and other distinctive features were diligently recorded, accompanying the enumeration of the observed bird quantities. The dense vegetation

occasionally hindered visual identification, leading to certain birds being identified solely by their distinct calls. Notably, the present study found that distinguishing between the Red-rumped Sunbird and Purple Sunbird proved challenging, especially when not in their reproductive phase, necessitating their joint classification as Sunbirds for the abundance investigation during transect walks.

Identification of Birds:

The procedure of identifying a bird might be difficult. Birds are lively, vivacious creatures. To obtain as much information as possible in a short amount of time, quick eye spotting is necessary. The following methods were employed during birdwatching. After the walk, the birds were identified using a field guide to the Birds of India by Krys Kazmierczak, Species of North India by Richard Grimmett and Tim Inskipp, and Handbook of Birds of India and Pakistan in 10 Volumes by Salim Ali and S. Dillon. Reply.

Studies on diversity: The species abundance at each research site was recorded, and the method below was used to calculate the relative species abundance. Relative Species Abundance = x 100 Where, n= Number of individuals of a species N=Total number of individuals in a given area.

Shannon Diversity Index (H): The Shannon diversity index (H) is an index that is commonly used to characterize species diversity in a community.

H = -Σpi in pi i=1

where, H = Shannon's diversity index
pi = Proportion of S made up of the 1 species
In = Natural Logarithm of pi
s =Total number of species in the community.

Table: 1 Total number of avian species found in study site

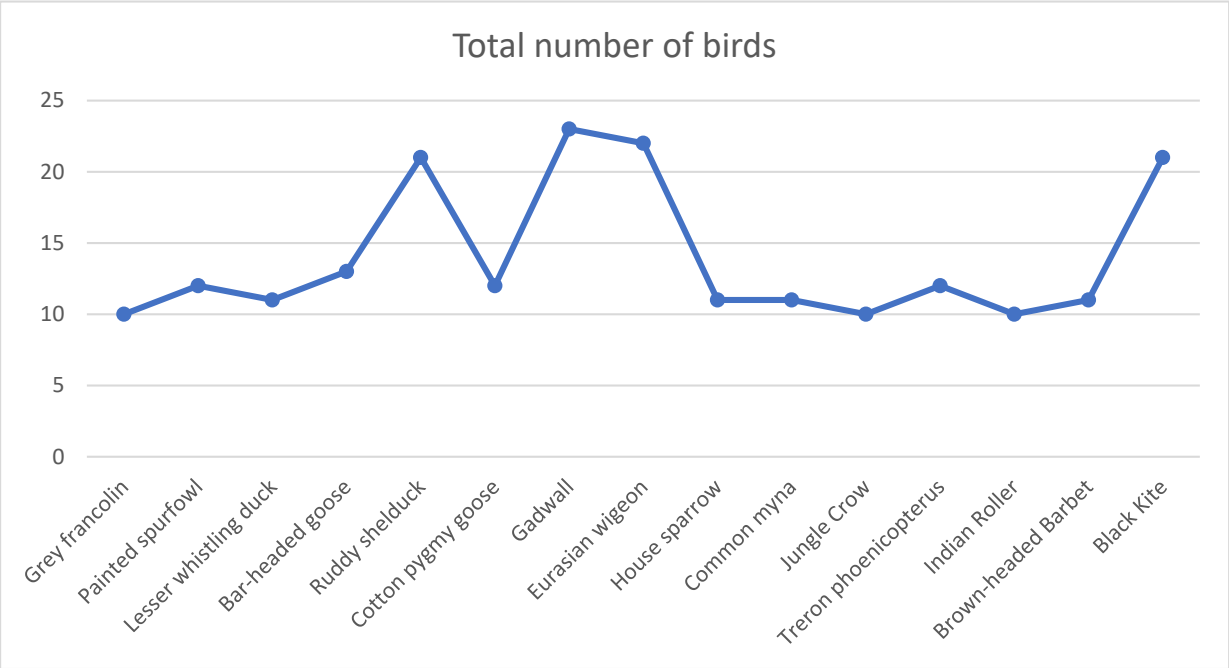
S.no	Name of Bird Species	Scientific Name	Family	Total no of species
1	Grey francolin	Ortygornis pondicerianus	Phasianidae	10
2	Painted spurfowl	Galloperdix lunulata	Pheasant	12
3	Lesser whistling duck	Dendrocygna javanica	Anatidae	11
4	Bar-headed goose	Anser indicus	Anatidae	13
5	Ruddy shelduck	Tadorna ferruginea	Anatidae	21
6	Cotton pygmy goose	Nettapus coromandelianus	Anatidae	12
7	Gadwall	Anas strepera	Anatidae	23
8	Eurasian wigeon	Anas penelope	Anatidae	22

9	House sparrow	Passer domesticus	Passeridae	11
10	Common myna	Acridotheres tristis	Sturnidae	11
11	Jungle Crow	Corvus culminatus	Corvidae	10
12	Treron phoenicopterus	Yellow-footed Green Pigeon	Columbidae	12
13	Indian Roller	Coracias benghalensis	Coraciidae	10
14	Brown-headed Barbet	Psilopogon zeylanicus	Megalaimidae	11
15	Black Kite	Milvus migrans	Accipitridae	21






Demographic presentation of bird species in Paniyajob area of Dongargad



RESULT AND DISCUSSION:

The six-month study conducted in Dongargarh, Rajnandgaon, focusing on bird species diversity, abundance, and community structure within a 15-square-kilometer area, revealed a dynamic avian community with all seven identified species being migratory, such as the Common Koel and Greater Flamingo, alongside resident species like House Crows and Common Mynas. Abundant trees, numbering over 2,500, played a crucial role in providing varied habitats, emphasizing the significance of vegetation in supporting diverse bird populations. Geographically, Dongargarh's strategic location within the western hilly area contributed to the richness of the study area's ecological variety. The modified Transact approach, though effective, faced challenges in distinguishing certain species. The study's findings offer valuable insights for conservation efforts, emphasizing the intricate interplay between vegetation, bird diversity, and overall ecosystem health.

In conclusion, the study provides valuable insights into the avian biodiversity of Dongargarh, emphasizing the importance of diverse habitats, particularly those enriched by abundant trees, in supporting migratory and resident bird species. The findings underscore the need for conservation measures that consider the intricate interplay between vegetation and bird diversity,

promoting the sustainability of ecosystems in the face of habitat destruction and environmental changes.

OBJECTIVES OF THE WORK

The primary objective of this comprehensive six-month study, conducted from August 5, 2022, to January 10, 2023, in Dongargarh, Rajnandgaon, was to assess bird species diversity, abundance, and community structure within a designated 15-square-kilometer study area, representing 1% of the entire Dongargarh tahsil area (1044 km2). The research aimed to provide a detailed understanding of the avian biodiversity in different habitats, including ponds, forests, crop fields, and vegetable farms, within the specified geographical location.

1.**Identification of Bird Species**: Documenting and identifying the various bird species present in the study area, with a focus on distinguishing migratory and resident species.

2.**Assessment of Abundance and Diversity**: Quantifying the abundance of bird species at each research site and employing the Shannon Diversity Index to characterize species diversity in the community.

3.**Impact of Vegetation on Bird Diversity**: Investigating the influence of abundant trees and varied vegetation on the overall diversity of bird species, emphasizing the intricate relationship between habitat and avian biodiversity.

4.**Geographical and Topographical Influence**: Understanding how the strategic geographical location, influenced by the Maikal Range's ecological features, contributes to the state's overall ecological variety and influences the suitability of the study area as a habitat for various bird species.

5.**Methodological Considerations**: Evaluating the effectiveness of the modified Transact approach for bird sampling, including direct observation, point counting, and visual identification aided by binoculars, while acknowledging challenges in distinguishing between certain bird species.

6.**Conservation Implications**: Drawing conclusions and recommendations for conservation efforts, highlighting the significance of preserving diverse habitats and the need for ecosystem-friendly practices in the face of habitat destruction and environmental changes.

CONCLUSION

The six-month study in Dongargarh, Rajnandgaon, from August 5, 2022, to January 10, 2023, revealed key insights into avian biodiversity within a 15-square-kilometer study area. Covering diverse habitats like ponds, forests, and crop fields, the research identified seven bird species, all migratory, emphasizing Dongargarh's ecological significance. The abundance of trees, exceeding 2,500 in the area, emerged as a critical factor influencing bird diversity. Tranquil Park areas indirectly contributed to increased bird variety, underscoring the importance of diverse ecosystems for sustaining avian populations.

Dongargarh's strategic location in the western hilly area of Rajnandgaon, influenced by the Maikal Range, enhances its suitability as a habitat for various bird species. The study employed effective methods like the modified Transact approach, though challenges were acknowledged in distinguishing certain species.

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