



International Journal of Research in Academic World



Received: 28/November/2024

IJRAW: 2025; 4(1):100-102

Accepted: 05/January/2025

Study on Effect of Urbanization on Biodiversity of Major Avian Fauna of Moradabad, Uttar Pradesh, India

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Abstract

Urbanisation has transformed natural habitats affecting avian populations worldwide. Present studies focus on the ecological consequences of urbanisation on bird communities which include changes in diversity, abundance, behaviour. Developmental programmes which include various projects of urban architectural reform hamper avian population by cutting of trees and plants where birds feed and breed, and water bodies which were converted to either amusement parks or sites for the construction of buildings. Technological-driven hoardings, mobile towers, skyscraper buildings, transport medium by road or rail, small and large scale industries and others also cause negative impacts on residential and migratory birds. Pollution which is a secondary result of the above also harms avian fauna. Conservation strategies which impact urbanisation's impacts on avian fauna were also studied.

Keywords: Urbanisation, avian fauna, birds-common name & family, pollution.

Introduction

Urbanization is a global developmental result of fast paced changing human society. To fulfil the need of bread and butter mass movement from villages to cities and towns was witnessed for a very long time. With growing facilities and glam, the attraction of cities becomes the primary concern of every individual. This led to urbanisation which started with the construction of new sites for residence, governmental organisation setup, commercial activities amusement sites etc. UN projections indicate that by 2030, developing world regions will have more urban residents than rural ones, with two-thirds of their population expected to reside in urban areas by 2050 ^[1]. The UN reported that the urban population of developing countries was estimated as 1.97 billion in 2000, and by 2023 to 2025, it is projected to increase from 3.90 billion to 5.26 billion respectively. Birds are an important member of ecosystems. Birds contribute in the form of ecological services, namely provisioning, regulating, cultural, and supporting ^[2]. The ecosystem Services offer humans both direct and indirect benefits through various resources and processes.

Avian fauna also serves as bioindicators, pollinators, seeds, predators, scavengers and ecosystem engineers ^[3, 4]

Birds are also bioindicators, which can be employed as models for studying a variety of eco problems ^[5]. Approximately 2000 (almost 20%) of the more than 10,000 recognized bird species worldwide are found in urban areas ^[6]. The majority of urban species are representatives of the regional biogeographical species pool, even though some bird

species are cosmopolitan and thus found in cities worldwide (e.g., Barn Swallow *Hirundo rustica*, House Sparrow (*Passer domesticus*), Feral Pigeon *Columba livia*, and Common Starling *Sturnus vulgaris* ^[5]).

The categorization of Urban birds is mainly in Urban avoiders, Urban (suburban) adapters, & Urban exploiters ^[7].

Urban avoiders are bird species that tend to avoid urban areas: Urban avoiders tend to have narrower altitudinal ranges and a higher proportion of frugivorous and frugivorous-insectivorous species. Urban adapters are birds that adapt to a changed urban environment.

An urban exploiter is a species that can thrive in urban environments and is often abundant in areas with heavy development. Urban exploiters have several traits that help them adapt to urban environments.

Other traits that may help species adapt to urban environments include: body size, development mode, and phylogeny. Urbanization is a major threat to biodiversity worldwide, but understanding the traits that help species adapt to urban environments can help with conservation and biogeographical studies.

The landscapes are different in urban and nonurban natural habitats due to man-made construction of buildings, commercial spaces, factories, roads and railways. Urban Architecture transforms land from green areas to urban landscapes, which affects the flora and fauna of that area. Technological-driven hoardings, mobile towers, skyscraper buildings, transport medium by road or rail, small and large scale industries and others also cause negative impacts on

residential and migratory birds. Pollution, which is a secondary result of the above also causes negative impact on avian fauna.

Migratory birds which visit regularly in an area get confused when visits in the next year with the developmental process of urbanisation. Slowly migratory patterns are either lost or go unseen in subsequent years, Present study focuses on urban birds of the Moradabad area which is transforming to a smart city at a fast pace.

Material and Method

The study was performed in selected habitats of Moradabad, Uttar Pradesh with point count method. The survey during 2023-24 was carried out at a suitable time 6.00-8.00 A.M. The path covered is approximately 500mt. It was chosen with less hustle bustle of morning walkers, and automobiles and showed maximum activities of birds

The study period of different seasons, locations, and strata was done with specific studies of the particular area round the year. Birds were observed with binoculars and a DSLR camera was used for photography. The point count method was used for specific studies of a particular area. Different technological and handy apps are employed to study the species of a bird. E bird data was of great help to compare our observations round the year. Birds were categorised to families and the status of their conservation was also well studied.

Result and Discussion

Observations of different birds were studied extensively with the help of textbooks, field guide, birds apps and internet access. Near about 31 birds were observed in urban locations of the city of Moradabad, U.P. during 2023-24.

Table 1: List of Urban Birds of Moradabad City during the study period of 2023-24.

No	Common Name	Scientific Name	Order	Family	Conservation Status
1.	Ashy Prinia	<i>Prinia socialis</i>	Passeriformes	Cisticolidae	Least concern
2.	Asian Koel	<i>Eudynamys scolopacea</i>	Cuculiformes	Cuculidae	Least concern
3.	Asian Pied Starling	<i>Gracupica contra</i>	Passeriformes	Sturnidae	Least concern
4.	Black Kite	<i>Milvus migrans</i>	Ciconiiformes	Accipitridae	Least concern
5.	Black Drongo	<i>Dicrurus macrocercus</i>	Passeriformes	Dicruridae	Least concern
6..	Black-hooded Oriole	<i>Oriolus xanthornus</i>	Passeriformes	Oriolidae	Least concern
7.	Blyth Reed Warbler	<i>Acrocephalus dumetorum</i>	Passeriformes	Sylviidae	Least concern
8.	Brown Rock Chat	<i>Cercomela fusca</i>	Passeriformes	Muscicapidae	Least concern
9.	Common Shikra	<i>Accipiter badius</i>	Ciconiiformes	Accipitridae	Least concern
10.	Cattle Egret	<i>Bubulcus ibis</i>	Ciconiiformes	Ardeidae	Least concern
11.	Coppersmith Barbet	<i>Megalaima haemacephala</i>	Piciformes	Megalaimidae	Least concern
12.	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	Columbiformes	Columbidae	Least concern
13.	Green Bee-eater	<i>Merops orientalis</i>	Coraciiformes	Meropidae	Least concern
14.	Grey Hornbill	<i>Ocyrceros birostris</i>	Bucerotiformes	Bucerotidae	Least concern
15.	Greater Coucal	<i>Centropus sinensis</i>	Cuculiformes	Centropodidae	Least concern
16.	Great Tit	<i>Parus major</i>	Passeriformes	Aegithalidae	Least concern
17.	Indian Robin	<i>Saxicoloides fulicatus</i>	Passeriformes	Muscicapidae	Least concern
18.	Indian Silverbill	<i>Euodice malabarica</i>	Passeriformes	Estrildidae	Least concern
19.	Jacobin Cuckoo	<i>Clamator jacobinus</i>	Cuculiformes	Cuculidae	Least concern
20.	Laughing Dove	<i>Stigmatopelia senegalensis</i>	Columbiformes	Columbidae	Least concern
21.	Oriental Magpie Robin	<i>Copsychus saularis</i>	Passeriformes	Muscicapidae	Least concern
22.	Pond Heron	<i>Ardeola grayii</i>	Ciconiiformes	Ardeidae	Least concern
23.	Purple Sunbird	<i>Nectarinia asiatica</i>	Passeriformes	Nectarinidae	Least concern
24.	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	Passeriformes	Pycnonotidae	Least concern
25.	Red-vented Bulbul	<i>Pycnonotus cafer</i>	Passeriformes	Pycnonotidae	Least concern
26.	Rock Pigeon	<i>Columba livia</i>	Columbiformes	Columbidae	Least concern
27.	Rufous Treepie	<i>Dendrocitta vagabunda</i>	Passeriformes	Corvidae	Least concern
28.	Sykes Warbler	<i>Iduna rama</i>	Passeriformes	Sylviidae	Least concern
29.	Spotted Owlet	<i>Athene brama</i>	Strigiformes	Strigidae	Least concern
30.	White-throated Kingfisher	<i>Halcyon pileata</i>	Coraciiformes	Alcedinidae	Least concern
31.	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	Gruiformes	Rallidae	Least concern

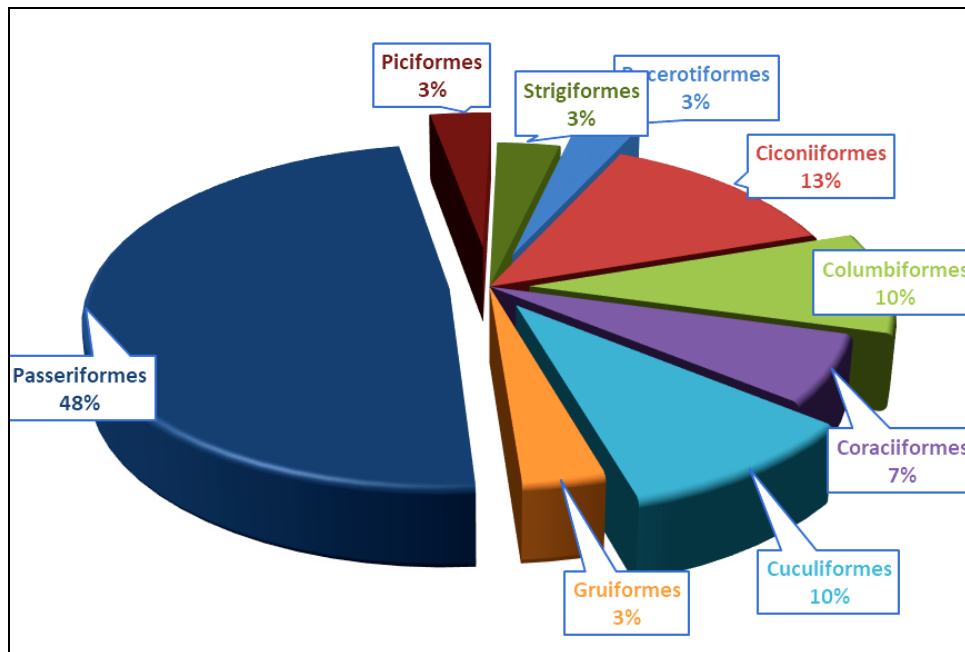


Fig 1: Pie Chart depicting Avian species of Different Orders

Conclusion

A variety of birds were seen in the urban localities of Moradabad (U.P). Due to food availability, many species are found round the year like Maina, Ferals, Kites, Pigeons, Crows and Sparrows. Some birds, which are seen in less numbers are hornbills, and barbets in congested and overpopulated areas than in greeneries of the city. Species of Order Passeriformes are abundantly found as compared to others (Fig-1).

Bird diversity and abundance are greatly impacted by environmental changes brought about by human activities like urbanization, habitat fragmentation, human disturbance, construction of new colonies and roads, deforestation, and industrialization^(7, 8).

As compared to data reported by e-birds in Moradabad 105 birds have been reported. The relative abundance of birds found in urban localities was less as compared to the outskirts and rural places of the city. Some ways to improve urban bird habitats include-Increasing green areas, improving landscape connectivity, and Increasing water sources and greenery in urban buildings.

More and more green areas should be planned in making any urban project. Wetland, where migratory and resident birds rely upon should also be taken in to consideration for their conservation. More and more eco conservation parks should be made for restoration of avian fauna. Research should also be promoted and awareness programmes in form of bird sighting and their conservation should be made part in the urban developmental programmes

Acknowledgement

I would like to extend my sincere gratitude to the Department of Higher Education, Government of Uttar Pradesh, for their generous funding support, to pursue this research project.

Additionally, I appreciate the cooperation in providing the research permission of the Forest Department, Government of Uttar Pradesh, Pollution Control Board, Moradabad and Government Degree College, Bhojpur, Moradabad. Their support has been instrumental in facilitating our research endeavours.

References

1. Montgomery MR, Stren R, Cohen B & Reed HE. Cities Transformed: Demographic Change and Its Implications in the Developing World (1st ed.), 2003. Routledge. <https://doi.org/10.4324/9781315065700>.
2. Whelan CJ, Wenny DG, Marquis RJ. Ecosystem services provided by birds. *Ann NY Acad Sci.* 2008; 1134:25–60.
3. Sekercioglu CH, Increasing awareness of avian ecological function. *Trends Ecol Evol.* 2006; 21(8):464-471.
4. Wenny DG, DeVault TL, Johnson MD, Cagan DK, Sekercioglu CH, Tomback D, Whelan CJ. On the need to quantify ecosystem services provided by birds. *Auk.* 2011; 128:1-14.19.
5. Urfi AJ, Sen M, Kalam A, Meganathan T. Counting Birds in India: Methodologies & Trends, *Current Science.* 2005; 89(12):1997-2003.
6. Aronson MFJ, 2014. A global analysis of the impacts of urbanization on bird and plant diversity reveals key anthropogenic drivers. *Proc. R. Soc. B* 281: 20133330. <http://dx.doi.org/10.1098/rspb.2013.333>.
7. Robert B. Blair. Land Use and Avian Species Diversity along an Urban Gradient01 May 1996, <https://doi.org/10.2307/2269387>. 1996; 6(2):506-519.
8. Sauvajot RM, Buechner M, Kamradt DA *et al.* Patterns of human disturbance and response by small mammals and birds in chaparral near urban development. *Urban Ecosystems.* 1998; 2:279–297. <https://doi.org/10.1023/A:1009588723665>.