

Migratory Birds' Profiling in North Campus, University of Delhi

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Abstract

Avian biodiversity in Delhi is an important factor in its everyday ecosystem functioning. With multiple species scattered all over the state, Delhi becomes an important spot for local and foreign birdwatchers and researchers. The avian biodiversity also especially comprises migratory birds which flock into the country from near and far during the winter and summer seasons. Migratory birds are important indicators of the overall state of an environment. They give us an idea about the climatic changes and patterns while also adding to the aesthetic value of the places they migrate to. Delhi, particularly, houses a wide range of migrant bird species. In this research, we have profiled the different migrant bird species that can be found in the Northern region of Delhi and its associated regions.

Keywords: Migration, North Campus, Migratory birds, bird profiling, avian biodiversity, University of Delhi

Introduction:

Birds, in general, are an important part of any ecosystem. They are indicators of a sustainable environment and provide various ecosystem services. Birds not only increase the aesthetic value of a piece of land, but they also make up for a large chunk of a country's economy through activities like birdwatching (Ansari et al.). With the advent of civilization, the green cover has been compromised for the construction of buildings, flyovers, national highways etc., and this is true in the case of the National Capital, Delhi. Delhi lies between 28° 22' N to 28° 54' N and 76° 48' E to 77° 23' E. With

staggering forest cover trends in the past, Delhi has shown sustained growth in green cover in recent years. Despite various large-scale projects, Delhi is one of the greenest capital cities in the world and the greenest city in the country. The forest cover has steadily increased from 151 sq. Km. In 2001 to 342 sq. Km. In 2021, a total increase of 12.86%. With all this greenery around, Delhi becomes a vital area for avian biodiversity conservation.

Among the countless other regions that Delhi has been divided into, this research was conducted especially in the Northern part, more specifically, the North Campus of Delhi

University. The North Campus of Delhi University is a vastly green area with trees planted along the roadside, thriving green campuses and parks all around. This makes it a haven for different types of local and migrant bird species. One of the main attractions of the area is the vast Kamla Nehru Ridge. This biodiversity park sprawls across an area of 122.00 hectares (*DELHI BIODIVERSITY FOUNDATION D.D.A*) and boasts seclusion, wilderness, and a wide variety of bird species. The ridge has a varied topography which makes it an ideal spot for different types of bird species like the jungle babbler, the great Indian hornbill, and many types of small birds like the bee-eaters and sunbirds.

Even though resident and local bird species are important, what really makes Delhi and its surrounding areas a true bird paradise is the huge number of migrant birds' species that can be seen in the winter and the summer season (*How Important Are Migratory Birds in an Era of Climate Change*). These birds flock in huge numbers from near and far. Some migrate particularly to Delhi while others make Delhi their resting spot. These migratory birds form an important part of the ecosystem (*Guest Article: What Migratory Birds Tell Us About Sustainability | SDG Knowledge Hub | IISD*). Migration is an important life phenomenon of various birds which depend on it to evade unfavourable temperatures and more often, to breed.

In this research, we have performed groundwork to profile the different types of migrant bird species that are found in Delhi, particularly during the winter season. We collected data from and around the North

Campus of Delhi University, the Kamla Nehru Ridge, the Zoological Park of Delhi and Okhla Bird Sanctuary.

Objectives:

Through this research, we aim to fulfil the following objectives:

1. Perform extensive groundwork to profile as many migrant bird species as possible.
2. Classify, describe and record the bird species observed.
3. Keep a record of all the species observed as still photographs to have a better understanding and for easier re-observation.
4. Educate and inform students and teachers about the different migrant species and their importance on the local and global ecosystem.

Methodology:

Our research work constituted a proper plan for profiling birds which migrate into the north campus of the University of Delhi, Delhi and its surrounding regions. Observations were carried out from May 2022- December 2022. An extensive array of the groundwork was done to observe migratory birds and their information was collected in detail. Different colleges on the campus were visited every weekend by all the students involved along with the principal investigator. Footwork started from Hansraj college, followed by Kirori mal college, the Arts Faculty, the Department of Zoology and the remaining areas of the campus. The Kamla Nehru Ridge situated in the north campus is a hub for avian biodiversity where a maximum number of migratory birds were seen. The site was visited particularly

regularly during September–November but less intensively during May–August for migratory birds. During the cold and winter season most of the migratory birds' flock to the north campus from different regions of the world. We tried to capture still images of these migratory birds. Profiling of various birds was done using Merlin and E-bird apps by Cornell based on the size and colour of the bird including their location as well. Three out of six students involved in the project visited the Okhla Bird Sanctuary and National Zoological Park to have a proper

understanding and knowledge about migratory birds in the month of December.

Resources used:

For the successful completion of this project, we made use of a variety of resources. They are as follows:

1. A digital, high-magnification camera
2. 2 pairs of high-resolution binoculars
3. Notebooks and pencils
4. Bird identification apps (Merlin and E-bird app)

Observations and Results:

Observed birds and their migratory patterns are being tabulated below:

	Bird Name	Scientific Name	Order	Habit and Habitat	Migratory Pattern	Physical Characteristics
1	Black Kite	Milvusmilvans	Accipitriformes	Commonly found along river edges in tropical eastern south America.	• Migrates from Europe and Northern Asia to Sub-Saharan Africa and Southern Asia. • Birds leave their breeding grounds between July and October, arriving back between February and May.	• Medium sized raptor. • Plumage is dark brown with scattered light brown markings on head and neck. • Tail is forked and barred with darker brown.
2	Cuckoo	Cuculidae	Cuculiformes	Found in both tropical and temperate places across the world. Resides on	• Some species are sedentary while some undertake seasonal migration. • Species breeding at higher	• Medium sized bird. • Have small wings and long tails.

				every continent except Antartica.	latitudes move to warmer places during winters. • At the end of September, depart to Africa.	• Bird's beak is small and slants downward slightly.
3	Humes Warbler	Phylloscopus	Passeriformes	Breeds near the treeline and is found in Gangetic plains, Odisha, Parts of Andhra Pradesh and upper Karnataka.	• Winter migratory bird. • Comes at the end of September in Northern India and stays till March and April.	• White coloured wings, greenish-grey upperparts and conspicuous white tips to the inner most flight feathers. • Bills and legs are usually dark.
4	Common chiffchaff	Phylloscopus	Passeriformes	Habitat includes open woodland with some taller trees and ground cover for nesting purposes.	• Most of the UK's chiffchaff are summer migrants, breeding here before flying to warmer climates in autumn.	• Brownish green body. • Have weak pale eyebrows, dark legs and tends to habitually dip its tail.
5	Siberian stonechat	Saxicola	Passeriformes	Found in stony barren ground and alpine meadows with scattered rhododendron and juniper bushes.	• Wintering range of Siberian stonechat migratory bird is from southern Japan south to Thailand and India and west to northeast Africa.	• Male has a black head, broad white half-collar and rusty red chest. • Patchier males with a paler head and chest are considered as non-breeding males.

						• Females are steaky brown with a weaker less contrasting face and chest pattern.
6	Black Drongo	Dicrurus macrocercus	Passeriformes	Generally found in open areas, savannas and countries. Lives in open forests, habitation, farmlands and near water.	• Black Drongo species are partially migrated birds. • The migratory breeding populations occur in northern parts of their breeding range. • These populations migrate southwards in September and October for migrating.	• Medium sized bird where both males and females look alike. • Plumage is overall blackish in colour. • The tail feathers are long and forked.
7	Asian green bee-eater	Meropis orientalis	Coraciiformes	Found in open lightly wooded countries such as Iran, Pakistan, Thailand and Vietnam	• Exact movement pattern is not clear. • The northmost populations move from their breeding grounds and migrate southwards for wintering.	• Asian green bee-eater are large headed, short necked, brightly plumage and short legged birds. • Wings may be rounded or pointed. • Males have red coloured iris whereas females have

						brownish red iris.
8	Little swift	Apus affinis	Apodiformes	Found both in urban areas and at rocky cliffs. Present throughout temperate regions of the old world and some in South America.	• Little swift population migrates from western Palearctic region and southern Africa to tropical and subtropical regions.	• Small sized bird. • Overall plumage of little swift is glossy black or dark blackish brown. • There is white throat patch. • Wing is relatively short and blunt ended.
9	European starling	Sturnus vulgaris	Passeriformes	Found near open grasslands or habitats with low tree and shrub cover. Native to Europe, Asia and North Africa.	• Migrate towards the equator and can be found along the coast of the Mediterranean and the middle east during winter months of the Northern Hemisphere.	• Medium sized bird. • Short, triangular wings spotted plumage and a short tail.
10	Temminck's Stint	Calidris temminckii	Charadriiformes	Found on small open pools in marshland or flooded fields in UK.	• Species is a full migrant, migrating on a broad front overland across the full width of Europe, North Africa and the Middle East. • Adults leave their young in July before they are fully fledged and migrate south to the wintering grounds.	• Birds are very small waders. • They are shorter legged and longer winged. • Legs are yellow and outer tail feathers are white.

					• Juveniles then leave the breeding grounds in early-August.	
11	Tufted Duck	Aythya fuligula	Anseriformes	Breeding habitat is close to marshes and lakes with plenty of vegetation to conceal the nest. Distributed in Indian Subcontinent, Asia, Europe and occasionally United States and Canada.	• Migratory populations reach the breeding grounds from April onwards. • Autumn wintering movements start from September.	• The tufted duck is a diving bird. • Male duck is slightly larger than the female. • Male is all black except for its white flanks. • The eyes are pale yellow. • The female duck is brown with pale brown flanks.
12	Booted Eagle	Hieraaeyu pennatus	Accipitriformes	Booted eagle species inhabit forests with some open areas and hilly countryside. Distributed in Africa, Indian subcontinent, Europe, the Middle East and Asia.	• This medium sized raptor migrates to the tropics of Africa and other regions of Asia during the Winter months.	• Medium sized buzzard like raptor. • Eagle shaped with long fingered primary flight feathers, a long square-shaped tail and feathered legs.
13	Red crested pochard	Nettarufina	Anseriformes	These pochard species inhabit deep fresh or brackish water bodies.	• Partially migratory. • Northern birds migrate to the Indian	• A diving duck of larger lakes and reservoir.

				Distributed in Europe, Asia, Africa and Indian Subcontinent.	Subcontinent and Africa for wintering.	• Males are round and have rusty orange head, long red bill and black breast. • Females have dirty buff around them with pale cheeks, dark face and rounded brown cap.
14	Garganey Duck	Spatula querquedula	Anseriformes	Prefer wetland habitats. These ducks like to hang around shallow freshwater lakes as well as marshes. Distributed in temperate zones of Europe and Asia.	• This duck is strictly migratory. • Garganey travels from as far north as the United Kingdom to wintering grounds in the Northern tropics of Africa.	• Mid-sized duck • Recognized by the distinctive white strips around its eyes. • Wings are covered with blue and white patches.

(Indian birds. (n.d.). Retrieved December 23, 2022, from <https://indianbirds.co.in/>

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Discussion:

The current study focuses on the observation of avifauna on the University of Delhi's north campus in its natural habitat and nearby locations. We encountered a variety of bird species, including the tufted duck, booted eagle, Siberian stonechat, etc., while doing our research for the purpose of profiling the

species of migratory birds located at the University of Delhi, North Campus. Due to the multi-use status of the north campus, there are fewer bird species in this area, which is attributable to habitat disturbance. The Kamla Nehru Ridge served as a haven for the abundance of bird species, and numerous unusual species were spotted there.

Challenges faced:

Some major challenges were faced during the field trips.

- The biggest challenge was brought on by the cameras' and binoculars' mediocre performance.
- Traveling, going on field trips and asking for permission to enter specific locations were all significant obstacles to the completion of our research.
- Data collecting was a challenge in several locations where cameras were prohibited.

Conclusion:

Our team's observations of migratory birds while on field visits in Delhi were compiled and catalogued in this study article. A whopping 20% of bird species migrate, and this yearly dispersion of bird variety drastically alters the constitution of avian communities throughout the world. Nevertheless, studies on the variety of birds worldwide have mostly neglected bird migration. This research paper is our modest dataset for profiling migratory bird species across Delhi.

To take advantage of the increasing insect populations, blossoming plants, and an abundance of nesting sites, birds that breed in the Northern Hemisphere typically fly northward in the spring. The birds relocate southward once more when winter draws near and the supply of insects and other food sources declines. Even though avoiding the cold may be motivating, many species, including hummingbirds, can survive in subfreezing temperatures if they have access to enough food. Extended rainfall outside of

the monsoon has been seen to delay the arrival of birds, who find it difficult to fly in the rain.

Urban sprawl is still destroying natural areas. Fields, mountain ranges, waters, and woodlands receive acidic depositions from air pollution transported by winds that cross entire continents. Marshes are either filled or drained. The complexity of the terrain has deteriorated, which is a common trend of human impact on the ecosystem. In turn, this reduces the range of bird species we frequently see. In addition, because our species has profited from the diversity in our environment, it has a negative impact on the quality of our lives.

The protection of these birds will be aided by proper education programmes that are offered to the native population about the value of birds and their essential role in everyday life. Relevant legislation makes it possible to cooperate with other nations to fulfil migratory bird treaty responsibilities.

To protect migratory animals, refuges have been created. Environmental legislation passed in the latter half of the 20th century has helped to halt environmental degradation, if not completely prevent it. To conserve migrating birds, nongovernmental organisations and government institutions now play a bigger part (Author Frederick C. Lincoln and illustrated by Bob Hines. (n.d.). Circular 16. Migration of Birds. Retrieved December 23, 2022, from <https://spo.nmfs.noaa.gov/content/circular-16-migration-birds>).

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