



**CAMPUS BIRD DIVERSITY AND ABUNDANCE DURING CAMPUS BIRD COUNT 2026:
A FOUR-DAY ASSESSMENT AT SIR C.R. REDDY WOMEN'S COLLEGE, ELURU,
ANDHRA PRADESH, INDIA**

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ABSTRACT

Urbanization is a major driver of biodiversity alteration, leading to habitat fragmentation, vegetation modification, and shifts in species composition. However, urban green spaces such as educational campuses, parks, and institutional landscapes can function as semi-natural refuges that support considerable avian diversity. Birds are ecologically significant vertebrates and serve as reliable bioindicators of environmental quality due to their sensitivity to habitat changes and trophic interactions. The present study documents avian diversity recorded during the Campus Bird Count (CBC) 2026, conducted from 13th to 16th February 2026 as part of the global Great Backyard Bird Count (GBBC) held annually during the second week of February. The survey was carried out at Sir C.R. Reddy Women's College, Eluru, Andhra Pradesh, India. The survey involved active participation of second- and third-year undergraduate students as part of academic field engagement, covering approximately 10 acres consisting of academic buildings, open grounds, ornamental gardens, avenue plantations, shrub vegetation, and limited water-associated habitats. Standard Visual Encounter Survey (VES) methods were employed during morning and evening sessions over four consecutive days. A total of 929 individual birds belonging to 34 species were recorded. The avian community comprised multiple feeding guilds including insectivores, granivores, omnivores, nectarivores, carnivores, piscivores, and scavengers. Dominant species included Rock Pigeon, Rosy Starling, House Crow, Asian Palm Swift, and Rose-ringed Parakeet, indicating strong adaptability to semi-urban environments. Water-associated birds such as Little Cormorant and Intermediate Egret were observed, reflecting habitat heterogeneity. The presence of raptors including Black Kite and Shikra indicated functional trophic dynamics within the campus ecosystem. The findings confirm that institutional campuses act as biodiversity reservoirs within urban landscapes. The study establishes baseline avifaunal data for long-term ecological monitoring and highlights the importance of citizen science initiatives in strengthening biodiversity conservation and environmental awareness.

KEYWORDS: Avian diversity, Campus Bird Count, Urban ecology, Species richness, Feeding guild, Biodiversity monitoring.

1. INTRODUCTION

1.1 Global Context of Bird Monitoring

Bird monitoring programs play a crucial role in understanding biodiversity trends, ecological health, and conservation priorities at local, regional, and global scales. Long-term avian data help scientists detect population fluctuations, migration shifts, habitat changes, and potential environmental threats such as climate

change, urban expansion, and pollution. Because birds respond quickly to alterations in habitat structure and food availability, they are widely recognized as effective ecological indicators.

Among global citizen science initiatives, the Great Backyard Bird Count (GBBC) is one of the most prominent and widely participated events. It is an annual

worldwide bird monitoring program conducted every year during the second week of February. The event encourages bird watchers, students, researchers, and nature enthusiasts across the globe to observe, identify, count, and submit bird sightings over a designated four-day period. Data collected during GBBC are compiled into global databases, contributing to large-scale biodiversity assessments and scientific research.

The Campus Bird Count (CBC) is conducted simultaneously as a part of the GBBC framework, focusing specifically on educational institutions and campuses. The objective is to promote ecological awareness among students while generating scientifically valuable data regarding local avifauna. Educational campuses often contain green spaces that serve as microhabitats within urban environments, making them ideal sites for biodiversity documentation. Participation from colleges and universities worldwide not only contributes to global biodiversity databases but also strengthens citizen science engagement, environmental education, and long-term monitoring of bird population trends across diverse geographical regions.

1.2 Importance of Birds in Ecosystems

Birds constitute an essential component of both terrestrial and aquatic ecosystems, contributing significantly to ecological stability and productivity. Owing to their mobility, diverse feeding strategies, and wide habitat range, birds influence ecological processes across multiple trophic levels. They occupy ecological niches extending from primary consumers to apex predators, thereby maintaining structural organization and functional balance within ecosystems.

One of the key ecological services provided by birds is pollination. Nectar-feeding species, including sunbirds and hummingbirds, facilitate pollen transfer while foraging, promoting cross-pollination and enhancing genetic diversity in flowering plants. This interaction supports plant reproduction and sustains floral diversity within natural and managed landscapes.

Seed dispersal is another critical ecological function performed by birds, particularly frugivorous species such as parakeets, bulbuls, and koels. By ingesting fruits and dispersing seeds across varying habitats, birds aid in forest regeneration, vegetation succession, and landscape connectivity. This process is especially significant in fragmented urban environments where natural regeneration is often constrained.

Insectivorous birds contribute to biological pest regulation by feeding on insects and other arthropods. Species such as drongos, swallows, bee-eaters, and prinias help control pest populations in agricultural fields and urban gardens, thereby reducing reliance on chemical pesticides. Scavenging species, including crows and kites, support waste removal and nutrient recycling

by consuming carrion and organic refuse, enhancing ecosystem sanitation.

Birds also facilitate nutrient cycling through guano deposition and cross-ecosystem nutrient transfer, particularly in the case of piscivorous and aquatic species. As regulators of prey populations, raptors and other predatory birds maintain trophic balance within food webs. Due to their sensitivity to habitat alteration and environmental stress, shifts in bird diversity and abundance serve as reliable indicators of ecosystem health and resilience.

1.3 Urbanization and Avian Diversity

Urbanization represents a major force driving ecological transformation worldwide. Expansion of built-up areas alters natural habitats, modifies vegetation structure, and disrupts ecological processes, frequently resulting in reduced species richness and biotic homogenization. Avian communities are particularly responsive to such changes because of their dependence on vegetation complexity, nesting substrates, food availability, and disturbance levels.

Urban development influences bird populations through several interconnected mechanisms

- Removal of native vegetation and replacement with built infrastructure, reducing nesting and foraging habitats.
- Habitat fragmentation, isolating populations and limiting dispersal and gene flow.
- Increased air, water, and soil pollution, affecting food webs and potentially causing bioaccumulation of toxins.
- Artificial illumination and noise, which interfere with communication, circadian rhythms, and migratory behavior.
- Decline in insect diversity due to pesticide application and ornamental landscaping practices.
- Introduction of invasive species that compete with or displace native birds.
- Elevated human disturbance from traffic, construction, and routine urban activities.
- Glass buildings and reflective surfaces causing collision-related mortality.
- Urban heat island effects influencing breeding cycles and seasonal movements.

Despite these challenges, urban green spaces such as institutional campuses, parks, and gardens can function as microhabitats that support avian assemblages. The presence of mature trees, flowering plants, shrub layers, and relatively undisturbed zones enhances habitat heterogeneity, allowing coexistence of urban-adapted species alongside certain habitat-sensitive taxa.

1.4 Objectives of the Study

1. To document bird species richness during CBC 2026.
2. To assess total abundance within the campus.

3. To classify birds into feeding guilds.
4. To evaluate ecological significance of campus habitats.
5. To establish baseline data for long-term biodiversity monitoring.

2. REVIEW OF LITERATURE

Urban bird diversity has been widely studied in India and globally, reflecting growing interest in understanding the ecological consequences of rapid urban expansion. Research indicates that species richness in urban areas largely depends on vegetation complexity, canopy cover, availability of water bodies, habitat heterogeneity, and levels of anthropogenic disturbance. Urban landscapes that retain native tree species, multilayered vegetation structure, and minimal fragmentation tend to support higher avian diversity compared to highly built-up zones with limited green cover.

Studies conducted in university campuses across India have reported between 25 and 70 bird species depending on campus size, habitat quality, and surrounding landscape connectivity. Urban-adapted species such as pigeons, crows, mynas, and parakeets frequently dominate in terms of abundance due to their behavioral flexibility and tolerance to human presence. In contrast, raptors, insectivores, and some habitat specialists persist primarily in areas with sufficient tree cover, shrub layers, and reduced disturbance, indicating the importance of structural vegetation diversity.

Citizen science initiatives such as eBird and the Great Backyard Bird Count (GBBC) have significantly contributed to large-scale biodiversity databases, enabling real-time data collection and long-term population trend analysis. These platforms facilitate collaborative research and strengthen conservation planning at regional and global levels. Institutional-level studies are particularly valuable for regional comparisons, urban ecological assessments, and the establishment of long-term biodiversity monitoring frameworks within educational landscapes.

3. STUDY AREA

3.1 Location

The study was conducted at Sir C.R. Reddy Women's College, Eluru, Andhra Pradesh. The campus spans approximately 10 acres within an urban setting.

3.2 Climate

Eluru experiences a tropical climate. During February:

- Temperature: 20°C–30°C
- Moderate humidity
- Low rainfall

These conditions favor high bird activity.

3.3 Vegetation and Habitat Structure

The campus includes

- Academic buildings

- Open grounds
- Avenue plantations
- Shrub patches
- Ornamental flowering plants
- Coconut and mango trees
- Neem and banyan trees
- Limited water-associated areas

Habitat heterogeneity supports diverse avian niches.

4. MATERIALS AND METHODS

4.1 Study Period

13th to 16th February 2026.

4.2 Survey Method

Visual Encounter Survey (VES) was employed.

Observation timings

- Morning: 6:30–9:30 AM
- Evening: 4:00–6:00 PM

4.3 Data Recording

For each sighting

- Species name
- Number of individuals
- Habitat type
- Behavior

Identification tools

- Binoculars
- Field guides
- Vocalization recognition

4.4 Data Analysis

- Species richness = Total species recorded
- Abundance = Cumulative individual count
- Feeding guild classification
- Relative dominance assessment

5. RESULTS

5.1 Overall Diversity

- Total species: 34
- Total individuals: 929

5.2 Tabular Representation of Bird Species Recorded

Table 1: Complete List of Bird Species Recorded During CBC 2026.

S.No	Common Name	Scientific Name	Feeding Guild	Total Individuals
1	Rock Pigeon	<i>Columba livia</i>	Granivore	129
2	Asian Palm Swift	<i>Cypsiurus balasiensis</i>	Insectivore	53
3	Oriental Darter	<i>Anhinga melanogaster</i>	Piscivore	17
4	Little Cormorant	<i>Microcarbo niger</i>	Piscivore	29
5	Indian Pond Heron	<i>Ardeola grayii</i>	Carnivore	5
6	Great Egret	<i>Ardea alba</i>	Carnivore	38
7	Black Kite	<i>Milvus migrans</i>	Carnivore	4
8	Rose-ringed Parakeet	<i>Psittacula krameri</i>	Frugivore	108
9	Black Drongo	<i>Dicrurus macrocercus</i>	Insectivore	15
10	House Crow	<i>Corvus splendens</i>	Omnivore	123
11	Barn Swallow	<i>Hirundo rustica</i>	Insectivore	44
12	Common Myna	<i>Acridotheres tristis</i>	Omnivore	29
13	Little Egret	<i>Egretta garzetta</i>	Carnivore	16
14	Asian Green Bee-eater	<i>Merops orientalis</i>	Insectivore	43
15	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	Omnivore	4
16	Rosy Starling	<i>Pastor roseus</i>	Omnivore	145
17	Scaly-breasted Munia	<i>Lonchura punctulata</i>	Granivore	5
18	Asian Koel	<i>Eudynamis scolopaceus</i>	Frugivore	13
19	Spotted Owlet	<i>Athene brama</i>	Carnivore	6
20	Red-vented Bulbul	<i>Pycnonotus cafer</i>	Omnivore	25
21	Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	Piscivore	12
22	Common Kingfisher	<i>Alcedo atthis</i>	Carnivore	1
23	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Carnivore	2
24	Eurasian Kestrel	<i>Falco tinnunculus</i>	Carnivore	1
25	Plain Prinia	<i>Prinia inornata</i>	Insectivore	5
26	Purple Sunbird	<i>Cinnyris asiaticus</i>	Nectarivore	15
27	Shikra	<i>Accipiter badius</i>	Carnivore	6
28	Common Iora	<i>Aegithina tiphia</i>	Insectivore	2
29	Spotted Dove	<i>Spilopelia chinensis</i>	Granivore	1
30	Intermediate Egret	<i>Ardea intermedia</i>	Carnivore	24
31	Black-rumped Flameback	<i>Dinopium benghalense</i>	Insectivore	4
32	Indian Golden Oriole	<i>Oriolus kundoo</i>	Frugivore	1
33	Rufous Treepie	<i>Dendrocitta vagabunda</i>	Omnivore	2
34	Indian Pied Starling	<i>Gracupica contra</i>	Omnivore	2

Total Individuals: 929.

6. DISCUSSION

6.1 Species Richness

- The presence of 34 species within a 10-acre campus indicates moderate avian diversity when compared to similar-sized institutional landscapes in India.
- Species richness reflects habitat heterogeneity, including tree cover, open grounds, and water-associated microhabitats.
- The diversity observed suggests that even relatively small urban green spaces can support substantial bird communities.
- Seasonal timing during February, coinciding with late winter and migratory overlap, may have positively influenced species detection.
- The findings align with urban ecological studies reporting moderate diversity in semi-urban institutional environments.

6.2 Dominance Pattern

Urban-adapted species dominated due to

- Availability of anthropogenic food resources.
- Abundant nesting structures in buildings and trees.
- Behavioral adaptability to human presence.
- Reduced predation pressure in urban settings.
- Competitive advantage over habitat-sensitive species.
- Rosy Starling flocks indicate seasonal aggregation behavior and possible migratory or pre-migratory movement patterns.
- Dominance of generalist species suggests partial biotic homogenization typical of urban ecosystems.

6.3 Feeding Guild Structure

- Insectivores constituted a significant proportion, reflecting healthy insect populations supported by vegetation.
- Granivores were abundant in open ground and human-influenced areas.

- Carnivores and raptors were present in lower abundance but represent higher trophic regulation.
- Nectarivores indicate the presence of flowering plants and pollination interactions.
- Piscivores suggest connectivity with nearby aquatic ecosystems.

6.4 Ecological Stability

- Presence of multiple trophic levels indicates ecological functionality and prey–predator balance.
- Raptors such as Shikra and Black Kite reflect sufficient prey availability.
- Balanced guild distribution suggests minimal severe habitat disturbance.
- Coexistence of generalists and specialists indicates moderate ecological resilience.

6.5 Role of Vegetation

Tree diversity supports

- Nesting opportunities in canopy and cavities.
- Foraging grounds for insectivores and frugivores.
- Roosting sites for flocking species.
- Shelter from climatic stress and predators.
- Microhabitat creation through layered vegetation structure.
- Native vegetation enhances insect abundance, directly benefiting insectivorous bird populations.
- Flowering and fruiting trees contribute to nectarivore and frugivore presence.

7. ECOLOGICAL AND CONSERVATION IMPLICATIONS

1. Campus as biodiversity refuge.
2. Importance of native tree plantation.
3. Avoid pesticide overuse.
4. Installation of nest boxes.
5. Creation of small water bodies.
6. Annual biodiversity audits.
7. Integration into curriculum.

7.1 EDUCATIONAL SIGNIFICANCE

The program strengthened

- Field identification skills
- Ecological awareness
- Research participation
- Identify bird species based on plumage characteristics, coloration, size, and morphological features.
- Recognize species through behavioral traits such as feeding patterns, flight style, and perching habits.
- Distinguish birds using vocalizations and call patterns, especially in dense vegetation where visual detection is limited.
- Differentiate between closely related species such as Little Egret and Intermediate Egret or House Crow and Rufous Treepie.
- Understand sexual dimorphism and seasonal variation in plumage where applicable.

8. LIMITATIONS

- Short study duration.
 - Single season observation.
 - No statistical diversity indices calculated.
 - No breeding study conducted.
- Future studies should include seasonal comparisons and diversity index calculations.

9. FUTURE SCOPE

- Long-term monitoring
- Habitat enhancement programs
- Student citizen science engagement
- Collaboration with national bird databases
- Climate change impact studies

10. CONCLUSION

The Campus Bird Count 2026 documented 929 individual birds representing 34 species within the 10-acre campus of Sir C.R. Reddy Women's College, Eluru. The study highlights the ecological significance of institutional green spaces in sustaining avian diversity within urban environments. The presence of multiple feeding guilds, including insectivores, frugivores, piscivores, omnivores, and raptors, indicates a structurally functional and moderately stable ecosystem.

Urban-adapted species dominated numerically; however, the occurrence of water-associated birds and predatory species reflects habitat heterogeneity and trophic complexity. The findings reinforce the role of educational campuses as biodiversity microhabitats that contribute to regional conservation networks.

Continued participation in global initiatives such as the Great Backyard Bird Count, along with periodic ecological monitoring and habitat enhancement strategies, can strengthen biodiversity resilience and environmental stewardship within academic institutions.

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