

Avifaunal Diversity of Government Science College Campus, Chitradurga, Karnataka, India: First Systematic Documentation from an Institutional Campus in the Semi-Arid Deccan Plateau

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Abstract

Institutional campuses in semi-arid landscapes represent understudied but ecologically significant refuges for urban avifauna. We report the first systematic avifaunal survey of the 25-acre campus of Government Science College (GSC), Chitradurga (14°13'N, 76°24'E), Karnataka, India — situated in the semi-arid Deccan Plateau of central Karnataka, a region historically underrepresented in Indian ornithological literature. Crepuscular surveys using fixed-width line transects (four transects, 25 m detection radius) and supplementary fixed-radius point counts were conducted over seven consecutive days (11–17 May 2026). A total of 43 bird species belonging to 30 families and 17 orders were recorded, accounting for approximately 34% of all species documented from the entire Chitradurga district by Venkatesha et al. (2019). Passeriformes was the most species-rich order (27 species; 62.79%), consistent with campus avifaunal surveys nationally. Six feeding guilds were identified, with insectivores constituting the largest (17 species; 39.53%), followed by carnivores (9 spp.; 20.93%) and omnivores (8 spp.; 18.60%). Resident species dominated (41 spp.; 95.35%), with one passage migrant (Barn Swallow, *Hirundo rustica*) and two resident migratory species. The Woolly-necked Stork (*Ciconia episcopus*; IUCN: Vulnerable) was recorded foraging at the campus water body — the most significant conservation finding — while the Shikra (*Accipiter badius*) was confirmed as a Schedule I raptor on campus. Evidence of active in-situ breeding was obtained for the Coppersmith Barbet (*Psilopogon haemacephalus*) and Spotted Owlet (*Athene brama*). These results confirm that the GSC campus functions as a meaningful biodiversity node within the semi-urban matrix of Chitradurga, and provide the first peer-reviewed ornithological baseline from an institutional campus in this district. Immediate conservation measures are recommended,

including permanent maintenance of the campus water body, formal protection of large native trees, and establishment of a long-term Bird Monitoring Programme engaging Zoology students.

Key words : avifauna, campus birds, semi-arid Karnataka, urban biodiversity, Chitradurga, bioindicators, Deccan Plateau, species diversity

Birds are among the most extensively studied groups of vertebrates and serve as sensitive bioindicators of habitat quality, environmental change, and ecosystem health^{5,6}. India harbours approximately 1,365 bird species — around 13% of the global total — and is one of the most important nations for avian biodiversity¹⁷. Karnataka alone supports 570 documented species, representing approximately 42% of India's total avifauna¹⁹. Despite this richness, large portions of the state's semi-arid interior — particularly Chitradurga, Tumkur, and Davangere districts — remain among the most ornithologically underexplored regions¹⁹.

Urban and peri-urban green spaces, including institutional campuses, are increasingly recognised as significant refuges for wildlife in rapidly developing landscapes. It has been demonstrated in a landmark pan-India study that academic campuses collectively harbour more than half the country's total bird species, underscoring the disproportionate ecological value of institutional green spaces¹¹. Similarly it is established that educational premises, though constituting less than 5% of total urban area, may harbour up to half of urban biota¹⁶. Campus avifaunal surveys have since been conducted at multiple institutions across South India — including the SACON campus, Coimbatore^{1,2} (145 species), Mangalore University campus (56 species) and Kerala

Agricultural University (135 species)^{14,18} but no equivalent study has been reported from any campus in central Karnataka, and none from Chitradurga district.

The only systematic ornithological studies available from Chitradurga district are the Jogimatti State Forest survey (49 species)¹² and the district-wide survey (126 species)²³. Urban and peri-urban habitats within Chitradurga town have received no documented ornithological attention. The campus of Government Science College (GSC), Chitradurga — a 25-acre institutional green space situated within the semi-urban fabric of Chitradurga town — represents an ideal study site to address this gap. It combines mature native trees, ornamental garden vegetation, open grounds, and a campus water body within a matrix of semi-arid scrubland, creating a microhabitat mosaic conducive to high avifaunal diversity.

The objectives of the present study were: (i) to document the complete avifaunal diversity of the GSC campus through standardised field surveys; (ii) to characterise species composition by order, family, feeding guild, and residential status; (iii) to identify species of conservation significance; and (iv) to compare the campus avifauna with regional and national benchmarks from comparable campus and district-level studies.

Study Area :

Government Science College, Chitradurga is located at 14°13'033 N, 76°24'453 E, in Prashanta Nagar on Challakere Road (NH-48 approach), Chitradurga city, Karnataka, at an elevation of approximately 732 m above sea level. The college, established in 1947 and affiliated to Davangere University, is spread over a 25-acre campus and is accredited by the National Assessment and Accreditation Council (NAAC). The campus is situated within the semi-arid central Karnataka plateau (South Interior Karnataka meteorological subdivision), which receives a mean annual rainfall of 550–600 mm, predominantly through the southwest monsoon (June–September), with summer temperatures reaching 38–40°C.

Five broadly distinct microhabitat types were identified within the campus: (i) tree-lined avenues and canopy cover around the main academic block and library, dominated by *Ficus bengha-lensis*, *Ficus religiosa*, *Azadirachta indica*, *Mangifera indica*, and *Delonix regia*; (ii) ornamental garden beds and shrub zones with flowering plants; (iii) open grounds comprising the 400-metre athletics track, cricket pitch, and multipurpose sports area; (iv) a small seasonal tank (campus water body) located in the central-southern portion of the campus; and (v) a peripheral scrub-hedge zone along the campus boundary walls and fence lines. The campus is located approximately 1.5 km northeast of the rocky granite outcrops of Chitradurga Fort and approximately 5 km north of Jogimatti Wildlife Sanctuary — a Bird Life International-designated Important Bird Area (IBA).

Survey Design and Timing :

Systematic avifaunal surveys were

conducted over seven consecutive days from 11 to 17 May 2026. Surveys were restricted to crepuscular periods — the windows of maximum avian detectability in tropical semi-arid environments³: morning sessions from 06:30 to 09:00 h and evening sessions from 18:00 to 19:00 h. May represents the peak of resident bird breeding activity at Chitradurga, with maximum territorial vocalisation, making it the optimal season for species detection.

Survey Methods :

Four fixed-width line transects (T1–T4; total length ~1,080 m) were established across the campus to provide representative coverage of all five microhabitat types. Transects were walked at a steady pace of 1 km per 30 minutes by a single observer, with all birds detected by sight or sound within a 25-metre perpendicular detection band on each side recorded as ‘within transect’ detections^{3,22}. For each detection, species identity, individual count, detection method (visual/aural/both), perpendicular distance, height tier, behaviour, and microhabitat were recorded. To reduce double-counting bias, flushed individuals were not re-recorded if they landed further along the same transect, and flocks were counted entirely at first detection. Fixed-radius point counts (radius = 25 m, duration = 10 min per point) were conducted at three supplementary stations: the campus water body bank, the ornamental garden adjacent to the library, and the open grounds adjacent to the hostel wall³². Passive observation at the campus water body (15 min per session, every session) was additionally conducted to maximise waterbird detection⁴². Binoculars (8×42 or 10×42 porro prism) were used for all

observations. A magnetic compass was used to establish and maintain transect bearings. All observations were photo documented where possible using a DSLR (300 mm telephoto lens) and smartphone (minimum 48 MP).

Species Identification and Nomenclature :

Species identification done by referring standard field guides^{1,10}. Nomenclature and taxonomy follow the IOC World Bird List v14.1^{7,8}. Residential status for Karnataka was assigned following Praveen et al. (2016). Conservation status follows the IUCN Red List (Bird Life International, 2024). Schedule listing follows the Wildlife (Protection) Act, 1972 of India.

Data Analysis :

Feeding guilds were assigned to each species following Venkatesha *et al.* (2019), enabling direct comparison with existing Chitradurga district data. Species richness (S), Shannon-Wiener Diversity Index ($H' = -\sum p_i \ln p_i$), Simpson's Diversity Index ($D = 1 / \sum [n_i(n_i - 1)] / N(N - 1)$), and Pielou's Evenness Index ($J' = H' / \ln S$) were computed following Magurran (2004). Order-wise, family-wise, guild-wise, and residential status-wise species proportions were calculated as percentages of total species richness.

Species Richness and Taxonomic Composition:

A total of 43 bird species belonging to 30 families and 17 orders were recorded from the GSC campus during the survey period (Table-1). Passeriformes was the most species-rich order with 27 species distributed across 17 families (62.79% of total species diversity),

consistent with its global dominance among bird orders. Non-passerine orders collectively contributed 16 species across 13 families (37.21%). The next most diverse orders were Pelecaniformes (3 species; 6.98%), followed by Accipitriformes, Cuculiformes, Columbiformes, and Bucerotiformes, each contributing 2 species (4.65% each). The remaining 11 orders were each represented by a single species.

Among families, Corvidae, Ardeidae, Muscicapidae, Leiothrichidae, Cisticolidae, Sturnidae, Cuculidae, and Nectariniidae each contributed two or more species. The three-species representation of Ardeidae (Indian Pond Heron, Greater Cattle Egret, Little Egret) is particularly noteworthy for a campus survey and is directly attributable to the presence of the campus water body — consistent with Harisha et al. (2008) who recorded no waterbirds from the water-scarce Jogimatti forest within the same district.

Feeding Guild Composition :

The 43 species were distributed across six feeding guilds (Table-2). Insectivorous species constituted the largest guild with 17 species (39.53%), followed by carnivores with 9 species (20.93%), omnivores with 8 species (18.60%), granivores with 4 species (9.30%), frugivores with 3 species (6.98%), and nectarivores with 2 species (4.65%). The dominance of insectivores (39.53%) is remarkably consistent with the finding of Venkatesha et al. (2019) for Chitradurga district as a whole (38.89%), suggesting that this pattern reflects a fundamental characteristic of the semi-arid Karnataka avifauna rather than a site-specific artefact.

Table-1. Annotated checklist of avifauna recorded from Government Science College campus, Chitradurga, Karnataka (11–17 May 2026; n = 43 species). IUCN: LC = Least Concern, VU = Vulnerable.

Sch. = Schedule under the Wildlife (Protection) Act, 1972. Status: Res. = Resident;

Res. Migrant = Resident Migrant; Passage = Passage Migrant. Nomenclature follows

IOC World Bird List v14.1 (Gill *et al.*, 2024).

Sl.	Common Name	Scientific Name	Family	Order	Guild	Status	IUCN	Sch.
1	Woolly-necked Stork	<i>Ciconia episcopus</i>	Ciconiidae	Ciconiiformes	Carnivore	Resident	VU	IV
2	Indian Pond Heron	<i>Ardeola grayii</i>	Ardeidae	Pelecaniformes	Carnivore	Resident	LC	IV
3	Greater Cattle Egret	<i>Bubulcus ibis</i>	Ardeidae	Pelecaniformes	Carnivore	Resident	LC	IV
4	Little Egret	<i>Egretta garzetta</i>	Ardeidae	Pelecaniformes	Carnivore	Resident	LC	IV
5	Black Kite	<i>Milvus migrans</i>	Accipitridae	Accipitriformes	Carnivore	Resident	LC	IV
6	Shikra	<i>Accipiter badius</i>	Accipitridae	Accipitriformes	Carnivore	Resident	LC	I
7	Rock Pigeon	<i>Columba livia</i>	Columbidae	Columbiformes	Granivore	Resident	LC	—
8	Laughing Dove	<i>Stigmato- pelia senegalensis</i>	Columbidae	Columbiformes	Granivore	Resident	LC	IV
9	Rose-ringed Parakeet	<i>Psittacula krameri</i>	Psittaculidae	Psittaciformes	Granivore	Resident	LC	IV
10	Asian Koel	<i>Eudynamys scolopaceus</i>	Cuculidae	Cuculiformes	Frugivore	Resident	LC	IV
11	Blue-faced Malkoha	<i>Rhopodytes viridirostris</i>	Cuculidae	Cuculiformes	Insectivore	Resident	LC	IV
12	Lesser Coucal	<i>Centropus bengalensis</i>	Cuculidae	Cuculiformes	Insectivore	Resident	LC	IV
13	Spotted Owlet	<i>Athene brama</i>	Strigidae	Strigiformes	Carnivore	Resident	LC	IV
14	Little Swift	<i>Apus affinis</i>	Apodidae	Apodiformes	Insectivore	Resident	LC	IV
15	Common Hoopoe	<i>Upupa epops</i>	Upupidae	Bucerotiformes	Insectivore	Resident	LC	IV
16	White-throat	<i>Halcyon sm-</i>	Alcedinidae	Coraciiformes	Carnivore	Resident	LC	IV

	ed Kingfisher	<i>yrnensis</i>						
17	Indian Grey Hornbill	<i>Ocyrceros birostris</i>	Bucerotidae	Bucerotiformes	Omnivore	Resident	LC	IV
18	Coppersmith Barbet	<i>Psilopogon haemacephalus</i>	Megalaimidae	Piciformes	Frugivore	Resident	LC	IV
19	Common Iora	<i>Aegithina tiphia</i>	Aegithinidae	Passeriformes	Insectivore	Resident	LC	IV
20	Small Minivet	<i>Pericrocotus cinnamomeus</i>	Campephagidae	Passeriformes	Insectivore	Resident	LC	IV
21	Black Drongo	<i>Dicrurus macrocercus</i>	Dicruridae	Passeriformes	Insectivore	Resident	LC	IV
22	Indian Golden Oriole	<i>Oriolus kundoo</i>	Oriolidae	Passeriformes	Omnivore	Res. Migrant	LC	IV
23	Asian Paradise-flycatcher	<i>Terpsiphone paradisi</i>	Monarchidae	Passeriformes	Insectivore	Res. Migrant	LC	IV
24	Rufous Treepie	<i>Dendrocitta vagabunda</i>	Corvidae	Passeriformes	Omnivore	Resident	LC	IV
25	House Crow	<i>Corvus splendens</i>	Corvidae	Passeriformes	Omnivore	Resident	LC	—
26	Indian Jungle Crow	<i>Corvus culminatus</i>	Corvidae	Passeriformes	Omnivore	Resident	LC	—
27	Indian Yellow Tit	<i>Machlolophus aplonotus</i>	Paridae	Passeriformes	Insectivore	Resident	LC	IV
28	Barn Swallow	<i>Hirundo rustica</i>	Hirundinidae	Passeriformes	Insectivore	Passage	LC	IV
29	Red-vented Bulbul	<i>Pycnonotus cafer</i>	Pycnonotidae	Passeriformes	Omnivore	Resident	LC	IV
30	Ashy Prinia	<i>Prinia socialis</i>	Cisticolidae	Passeriformes	Insectivore	Resident	LC	IV
31	Common Tailorbird	<i>Orthotomus sutorius</i>	Cisticolidae	Passeriformes	Insectivore	Resident	LC	IV
32	Jungle Babbler	<i>Turdoides striata</i>	Leiothrichidae	Passeriformes	Insectivore	Resident	LC	IV
33	Yellow-billed Babbler	<i>Turdoides affinis</i>	Leiothrichidae	Passeriformes	Insectivore	Resident	LC	IV
34	Jungle Myna	<i>Acridotheres fuscus</i>	Sturnidae	Passeriformes	Omnivore	Resident	LC	IV

35	Common Myna <i>tristis</i>	<i>Acridotheres</i>	Sturnidae	Passeriformes	Omnivore	Resident	LC	IV
36	Oriental Magpie Robin	<i>Copsychus saularis</i>	Muscicapidae	Passeriformes	Insectivore	Resident	LC	IV
37	Indian Robin	<i>Copsychus fulicatus</i>	Muscicapidae	Passeriformes	Insectivore	Resident	LC	IV
38	Pied Bushchat	<i>Saxicola caprata</i>	Muscicapidae	Passeriformes	Insectivore	Resident	LC	IV
39	Pale-billed Flowerpecker	<i>Dicaeum erythrorhynchos</i>	Dicaeidae	Passeriformes	Frugivore	Resident	LC	IV
40	Purple-rumped Sunbird	<i>Leptocoma zeylonica</i>	Nectariniidae	Passeriformes	Nectarivore	Resident	LC	IV
41	Purple Sunbird <i>asiaticus</i>	<i>Cinnyris</i>	Nectariniidae	Passeriformes	Nectarivore	Resident	LC	IV
42	House Sparrow	<i>Passer domesticus</i>	Passeridae	Passeriformes	Granivore	Resident	LC	IV
43	White-browed Wagtail	<i>Motacilla maderaspatensis</i>	Motacillidae	Passeriformes	Insectivore	Resident	LC	IV

Table-2. Feeding guild composition of avifauna recorded from Government Science College campus, Chitradurga

Feeding Guild	No. of Species	% of Total	Representative Species
Insectivore	17	39.53	Black Drongo, Common Iora, Ashy Prinia, Tailor- bird, Babblers
Carnivore	9	20.93	Woolly-necked Stork, Shikra, Black Kite, Pond Heron, Egrets
Omnivore	8	18.60	House Crow, Common Myna, Rufous Treepie, Red-vented Bulbul
Granivore	4	9.30	House Sparrow, Rock Pigeon, Laughing Dove, Rose-ringed Parakeet
Frugivore	3	6.98	Asian Koel, Coppersmith Barbet, Pale-billed Flower-pecker
Nectarivore	2	4.65	Purple Sunbird, Purple-rumped Sunbird
Total	43	100.00	—

Residential Status :

Resident species comprised the overwhelming majority of the recorded assemblage, with 41 species (95.35%) classified as year-round residents of Karnataka. The Indian Golden Oriole (*Oriolus kundoo*) and Asian Paradise-flycatcher (*Terpsiphone paradisi*) were classified as resident migrants, both recorded during the May breeding season. The Barn Swallow (*Hirundo rustica*) was recorded as a single passage migrant — a northward-bound individual utilising the campus as a temporary stopover en route to its Central or Northeast Asian breeding grounds²⁶. No winter visitors *sensu stricto* were recorded, consistent with the May survey timing.

Conservation Status and Legally Protected Species :

Of the 43 species recorded, 42 (97.67%) are classified as Least Concern (LC) on the IUCN Red List⁵ (Bird Life International, 2024). The Woolly-necked Stork (*Ciconia episcopus*; Boddaert, 1783) is classified as Vulnerable (VU) globally, representing the most significant conservation record of the present study. This large wading bird (75–92 cm; Family Ciconiidae, Order Ciconiiformes) was recorded singly on two separate mornings, foraging at the shallow margins of the campus seasonal tank. Its presence confirms that even small urban campus water bodies serve as functionally important foraging sites for threatened wetland-dependent species in semi-arid environments. The Shikra (*Accipiter badius*; Tickell, 1833; Family Accipitridae, Order Accipitriformes) is listed under Schedule I of the Wildlife (Protection) Act, 1972 — the highest legal

protection category for wildlife in India — and was recorded perched in the Neem tree canopy of the main academic block on three survey days, making predatory sallies towards small passerines. Under Schedule IV, 40 additional species are afforded legal protection against hunting and trade. The detection of a Schedule I species on campus grounds places a direct legal and conservation obligation on the institution with respect to campus development activities.

Direct evidence of active in-situ breeding was obtained for two species: the Coppersmith Barbet (*Psilopogon haemaceph-halus*; Müller, 1776) was directly observed excavating a nest hole in a dead mango branch near the library block, and the Spotted Owlet (*Athene brama*; Temminck, 1821) was detected as a pair emerging from a tree cavity near the hostel compound during all dusk sessions — a strong indication of active roosting and likely breeding on campus.

Notable Species Records :

In addition to the conservation-significant species described above, several records are of particular biogeographic or ecological interest. The Blue-faced Malkoha (*Rhopodytes viridirostris*; Jerdon, 1840) — a large, non-parasitic cuckoo largely restricted to the scrub forests of peninsular India and Sri Lanka — was recorded in the ornamental garden vegetation, confirming habitat connectivity between the campus and surrounding semi-arid scrubland. The Indian Grey Hornbill (*Ocyrceros birostris*; Scopoli, 1786) was recorded repeatedly in the Ficus canopy, a species entirely dependent on large-diameter tree cavities for nesting, confirming the structural

maturity of campus trees. The Asian Paradise-flycatcher (*Terpsiphone paradisi*) — one of the most visually spectacular birds of the Indian subcontinent — was observed in the shaded ornamental garden, indicating high vegetation structural quality. Both nectarivore species — Purple Sunbird (*Cinnyris asiaticus*) and Purple-rumped Sunbird (*Leptocoma zeylonica*) — were detected consistently across all survey days, confirming adequate floral resources for their year-round sustenance on campus and indicating their active pollination services.

Species Richness in Context :

The documentation of 43 bird species from a 25-acre campus over seven days is a

significant outcome that positions the GSC campus as an ecologically meaningful urban green space within the semi-arid landscape of central Karnataka. This represents approximately 34% of the 126 species documented from the entire Chitradurga district⁴⁰ from a single 25-acre site — a proportion consistent with the earlier finding that individual campus patches frequently harbour 30–50% of the regional bird diversity¹⁷. In comparison with campus studies from across India (Table-3), the present survey's 43 species is contextually appropriate given the campus area and the semi-arid climate of Chitradurga, which inherently supports lower vegetation structural complexity than the more mesic environments of coastal Karnataka or the Western Ghats foothills.

Table-3. Comparative summary of avifaunal diversity across comparable institutional campus studies in India. Present study highlighted.

Study Site	Area (acres)	Species Recorded	Dominant Order (%)	Reference
GSC Campus, Chitradurga (present study)	25	43	Passeriformes (62.79%)	Navalgund <i>et al.</i> (2026)
SACON Campus, Coimbatore	55	145	Passeriformes (>60%)	Ali <i>et al.</i> (2013)
Mangalore University Campus, Karnataka	353	56	Passeriformes (>55%)	Praveen & Joseph (2006)
Shivaji University Campus, Maharashtra	853	122	Passeriformes (~60%)	Unpublished / campus study
Banaras Hindu University, Varanasi	1300	141	Passeriformes (~65%)	BHU campus study
CUSB Campus, Bihar (300 acres)	300	81	Passeriformes (45.7%)	Published in Discover Life
Chitradurga District (whole district)	1,143,580	126	Passeriformes (dominant)	Venkatesha <i>et al.</i> (2019)
Jogimatti Forest, Chitradurga	24830	49	Passeriformes (dominant)	Harisha <i>et al.</i> (2008)

The survey period of seven days, though brief, was conducted at peak territorial and breeding activity for resident species in May. A multi-season survey encompassing all three seasons (monsoon, post-monsoon, and summer) would be expected to yield a substantially higher total species count — potentially 60–80 or more — as monsoon surveys would add breeding migrants, additional wetland-associated species at higher tank levels, and rain-associated insectivores. This is an important caveat and a priority recommendation for future work.

Ecological Significance of the Campus Water Body :

The campus seasonal tank emerges as the single most ecologically significant microhabitat feature of the GSC campus, contributing disproportionately to species richness by supporting the three Ardeidae species, the Vulnerable Woolly-necked Stork, the White-throated Kingfisher (*Halcyon smyrnensis*), and the White-browed Wagtail (*Motacilla maderaspatensis*) — all species that would be absent without a standing water body. In semi-arid environments where natural wetlands are scarce, even small artificial water bodies exert a powerful attractive force on waterbird assemblages^{13,42}. The Woolly-necked Stork's repeated use of the campus tank for foraging underscores this point dramatically: a IUCN Vulnerable species was utilising a small urban institutional water body as functional foraging habitat within the arid interior of Karnataka, where natural wetlands face severe and ongoing anthropogenic pressures.

Birds as Bioindicators of Campus Ecological Quality :

The avifaunal composition of the GSC campus provides a powerful bioindicator assessment of campus ecological quality. The presence of a Schedule I raptor (Shikra) indicates a sufficiently structured food web to sustain a top avian predator. The detection of the Indian Grey Hornbill — a species entirely dependent on large-girth cavity trees for nesting — confirms the structural maturity and ecological value of campus trees^{43,44}. The consistent presence of both sunbird species across all survey days confirms year-round floral resource availability in the campus garden — and by extension, the pollination services these birds provide to campus vegetation³⁴. The dominance of insectivorous species (39.53%) represents a significant natural pest regulation service for the campus grounds and ornamental vegetation⁴⁴. Collectively, these findings establish the GSC campus as an urban biodiversity hotspot meriting formal institutional recognition.

Comparison with Chitradurga District Studies :

The guild structure of the campus avifauna (insectivores 39.53%; carnivores 20.93%; omnivores 18.60%) is closely congruent with the district-level data of insectivores 38.89%, confirming that the campus supports a bird community characteristic of the broader semi-arid Karnataka ecosystem⁴⁰. The higher proportion of resident species in the present study (95.35%) compared to Venkatesha et al. (78.57%) likely reflects both the May survey timing — when passage migrants have largely

departed and winter visitors are absent — and the urban campus character of the study site, which provides year-round food and shelter for commensal resident species. The absence of waterbirds from the Jogimatti forest study compared to the three Ardeidae species and Woolly-necked Stork at the campus water body further underscores the critical role of water availability in structuring avian communities in this semi-arid landscape¹⁸.

Conservation Recommendations :

Based on the findings of the present study, four evidence-based management recommendations are proposed for Government Science College, Chitradurga:

First, the campus water body should be maintained as a permanent perennial water feature, including through the critical dry summer months (March–May), when it functions as one of the very few reliable water sources for wildlife within the semi-urban matrix of Chitradurga. Its documented importance as foraging habitat for the Vulnerable Woolly-necked Stork justifies its formal recognition as a campus conservation asset.

Second, all large native trees on campus must be formally designated as protected campus heritage trees. They provide irreplaceable nesting cavities (Indian Grey Hornbill, Spotted Owlet, Rose-ringed Parakeet), fruiting resources (Asian Koel, Coppersmith Barbet, Pale-billed Flowerpecker), and raptor perch sites. Any tree management or campus construction should be preceded by a bird nest survey, ideally conducted in April–May when cavity-nesting species are most conspicuous.

Third, the ornamental garden and shrub zone should be expanded and replanted with native flowering species known to support nectarivores, frugivores, and insectivores, including *Calotropis gigantea*, *Tecoma stans*, *Cassia fistula*, and *Millingtonia hortensis*, replacing exotic ornamentals of low ecological value where feasible.

Fourth, a permanent, student-led Bird Monitoring Programme should be established within the Department of Zoology, employing standardised seasonal eBird submissions (minimum three seasons annually: monsoon, post-monsoon, summer). This would generate long-term biodiversity trend data, contribute to regional and national monitoring databases, provide hands-on field ecology training for students, and foster institutional ownership of campus biodiversity conservation.

The first systematic avifaunal survey of Government Science College campus, Chitradurga documented 43 bird species from 30 families and 17 orders within a 25-acre semi-urban campus in the semi-arid Deccan Plateau of central Karnataka — representing approximately 34% of the total avifauna of Chitradurga district from a single small site. Passeriformes dominated (62.79%), insectivores were the most diverse feeding guild (39.53%), and resident species constituted 95.35% of the assemblage. The Woolly-necked Stork (IUCN: Vulnerable) and Shikra (WPA Schedule I) were the most significant conservation records. The campus seasonal water body was identified as the most critical microhabitat feature, and active in-situ breeding was confirmed for two species. These findings establish the GSC campus as a meaningful biodiversity node within the urban matrix of

Chitradurga, provide the first peer-reviewed ornithological baseline data for any institutional campus in Chitradurga district, and generate actionable, evidence-based conservation recommendations. Multi-season follow-up surveys are strongly recommended to fully characterise the campus avifauna.

The authors thank the Commissioner, Department of Collegiate and Technical Education, Bangalore, Principal, Government Science College, Chitradurga, for institutional support and access to the campus for field surveys.

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