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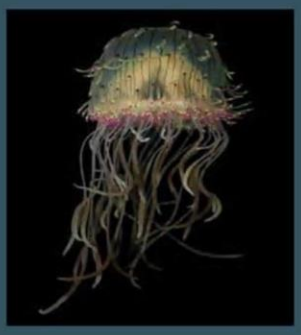

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Study of Avian Diversity and Nesting Patterns of Some Terrestrial Birds in Aundha Forest Area, District Hingoli, Maharashtra, India

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Abstract: The Aundha forest area is rich in bird diversity. This study was conducted to explore the bird diversity and nesting patterns of some terrestrial birds in the Aundha forest area of Hingoli district of Maharashtra, India. Observations were made in the Aundha forest and its surrounding areas from January 2024 to January 2025 for 2 h after sunrise and 2 h before sunset at each location in the Aundha forest and its surrounding areas. During the study period, 57 species of birds belonging to 33 different families were recorded and a total of 58 nests were recorded. The highest number of nests was made by the House Sparrow, followed by Common Myna 9, Rose Ringed Parakeet 5 and Jungle Crow 5, etc. Apart from this, it was observed that the birds used the trees and shrubs adjacent to the forest area for nesting. Maximum birds species were sighted during the winter season some were found to be migratory and most being resident. The species recorded include 30 Residential common, 8 Residential Uncommon, 5 Residential, 4 Winter Migrant Common, 3 Winter Migrant, 2 Migratory, 2 Residential Migrant Common, 1 Migrant Uncommon, 1 Resident Common Rare and 1 Residential Rare.

Keywords: Nesting patterns, Bird diversity, Terrestrial birds, House sparrow, Common Myna, Rose Ringed Parakeet,, Jungle Crow

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Introduction

Hingoli district in Maharashtra (India) has a forest area of approximately 2.32 % of its total geographical area (approximately 275 sq km of forest area). The major forest area in the district is in Aundha taluka that is about 10432 hectares. Aundha Nagnath is one of the taluka of Hingoli district which is 25 km away from Hingoli. Aundha Nagnath village is surrounded by hills and forest and area consist of *Azadirachita indica* (Neem), *Citrus qurastifolia* (Limbe), *Butea monosperma*, *Calotrupis procera*, *Ziziphus maunritiaea* (Ber) and seasonal crop cultivated by farmers are present. There is no reported attempts to study their nesting patterns in Aundha forest so we present in

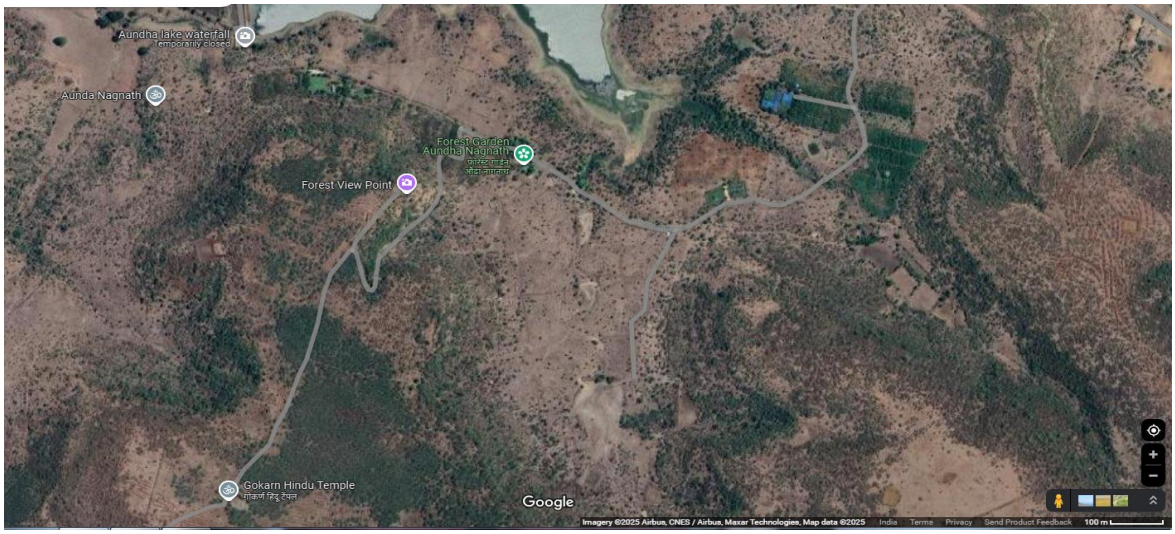

Fig. 1: GPS Map of Study area Aundha Forest, Aundha Taluka, Hingoli District.

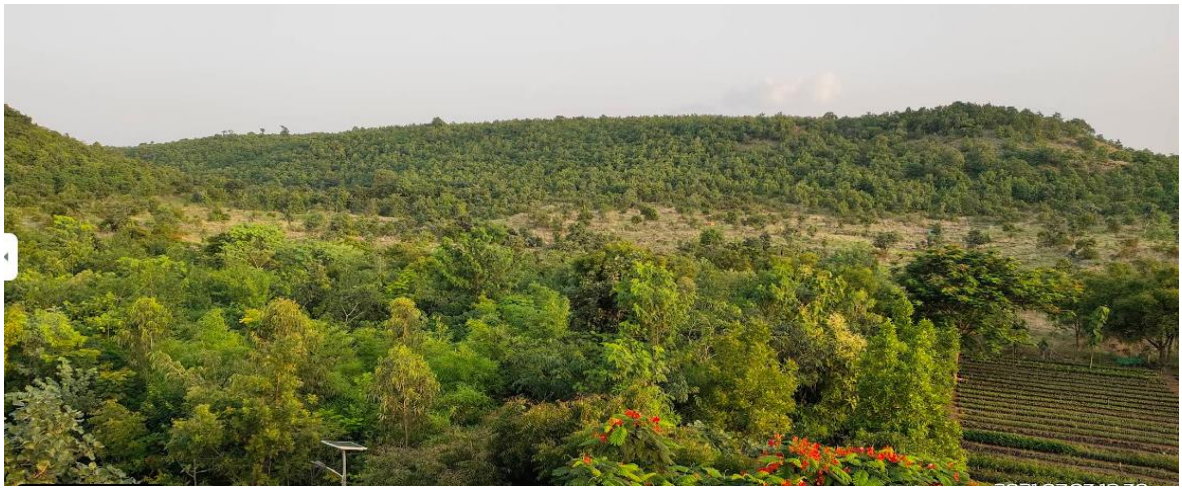

Fig. 2: Study area Aundha Forest, Aundha Taluka, Hingoli District.

this paper a concise account of our observations on distribution and nesting of the terrestrial birds in Aundha forest area of Hingoli district.

Materials and Methods

Study Area

Aundh forest in Aundha taluka located near the town of Aundha Nagnath in the Hingoli district. The coordinates of Aundhan Nagnath, which is representative of the Aundha forest area, are approximately 19.534554 N and 77.039566 E in Aundha taluka of Hingoli district, Maharashtra. The distance between Aundha Nagnath and Hingoli is 25 km. The forest produce includes Beedi leaves, gum, honey etc.

The observation was carried out by using a field binocular and digital photo camera. Bird species were identified with the help of standard literature (Ali and Ripley, 1987, 1995; Grimmet *et al.*, 1999) and direct count method was used to record the avian diversity and nesting patterns monitored by using a pair of 10x50 binocular. Fieldwork was carried out during the time period January 2024 to January 2025. Also direct observation and species noting was made by walking on grassland, tracking on road sides in

Table 1: Biodiversity of Birds recording in and around Aundha Forest area

S. No.	Common Name/Family	Scientific Name	Habitat Status	Count	Abundance
1	**Pelecaniformes Ardeidae**				
1	Indian pond heron	*Ardeola grayii* (*Skyes, 1832*)	RC	12	r
2	Purple heron	*Ardea purpurea* (*Linnaeus, 1766*)	RC	4	S
3	Grey heron	*Ardea cinerea* (*Linnaeus, 1758*)	RC	10	r
4	Cattle egret	*Bubulcus ibis* (*Linnaeus, 1758*)	RC	14	r
5	Little egret	*Egretta garletta* (*Linnaeus, 1766*)	RC	30	Uc
2	**Suliformes Phalacrocoracidae**				
6	Little cormorant	*Phalacrocorax niger* (*Vieillot, 1817*)	RMc	56	O
7	Indian Shag	*Phalacrocoraxniger fuscicollis* (*Stephens, 1826*)	RMc	3	S
3	**Threskiornithidae**				
8	Black headed ibis	*Threskiornis melanocephalus* (*Latham, 1790*)	RU	6	r
9	Red naped ibis	*Pseudibis papillosa* (*Temminck, 1824*)	RU	3	S
4	**Anseritormes Anatidae**				
10	Indian spot billed duck	*Anas poecilorhyncha* (Forster JR,1781)	RC	52	O
11	Common teal	*Anas crecca* (Linnaeus, 1758)	RC	20	Uc
12	Brahminy Shelduck	*Tadorna ferruginea* (Pallas, 1764)	WM	25	Uc
13	Red crested Pochard	*Neeta rufina* (Pallas, 1773)	M	2	S
14	Common Pochard	*Aythya ferina* (Linnaeus, 1758)	M	3	S
5	**Gruiformes Rallidae**				
15	Euracian coot	*fulica atra* (Linnaeus, 1758)	RC	51	O
16	Purple Moorhen	*Porphyrio porphyrio* (Linnaeus, 1758)	RC	7	r
17	White breasted waterhen	*Amaurornis phoenicurus* (Pennant, T 1769)	RC	4	S
6	**Coraciiformes Alcedinida**				
18	White throated kingfisher	*Halcyon smyrnesis* (Linnaeus, 1758)	RC	35	Uc
19	Blue eared kingfisher	*Alcedo meninting* (Horsfield, 1821)	RU	8	r
20	Lesser pied kingfisher	*Ceryle rudis* (Linnaeus, 1758)	RC	2	S
7	**Meropidae**				
21	Green bee eater	*Merops orientalis* (Latham, 1801)	RC	37	Uc

8	**Coraciidae**				
22	Indian Roller	*Coracias benghalensis* (Linnaeus, 1758)	Rr	3	S
9	**Characlriiformes charadriidae**				
23	Red wattled lapwing	*Vanellus indicus* (Boddaert, 1783)	RCr	58	O
24	Little ringed plover	*Charadrius dubius* (Scopoli, 1786)	WMc	10	r
25	Green sand ploven	*Charadrius mongolus* (Lesson, 1826)	WM	20	Uc
10	**Recurlirostridae**				
26	Black winged stilt	*Himantopus himantopus* (Linnaeus, 1758)	WMc	18	Uc
11	**Scolopacidae**				
27	Broad billed sandpiper	*Calidris falcinellus* (Pontoppidan, 1763)	WM	6	r
28	Common Sandpiper	*Actitis hypoleucos* (Linnaeus, 1758)	WMc	9	r
12	**Laridae**				
29	River tern	*Sterna aurantia* (Gray, JE, 1831)	RU	2	S
13	**Glareolidae**				
30	Small pratincole	*Glareola lactea* (Temminck, 1820)	RC	2	S
14	**Podicipediformes Podicipedidae**				
31	Black necked grabe	*podiceps nigricollisr* (Brehm, 1831)	RC	13	r
32	Little grabe	*Tachybaptus ruficollis* (Pallas, 1764)	RC	7	r
15	**Ciconiiformes ciconidae**				
33	White necked stork	*Ciconia episcopus* (Boddaert, 1783)	RC	8	r
16	**Columbiformes Columbidae**				
34	Little brown dove	*Spilopelia senegalensis* (Linnaeus, 1766)	RC	2	S
35	Eurasian collared dove	*Streptopellia decaocto* (Frivaldszky, 1838)	RC	9	r
36	Spotted dove	*Spilopelia chinensis* (Scopoli, 1768)	RC	10	r
37	Blue Rock pigeon	*Columba livia* (Gmelin, JF, 1789)	RC	21	r
17	**Passeriformes Nectariniidae**				
38	Purple sunbird	*Cinnyris asiaticus* (Latham, 1790)	R	3	S
18	**Pycnonotidae**				
39	Red vented bulbul	*Pycnontus cafer* (Linnaeus, 1766)	RC	52	O

19	**Estrildidae**				
40	Scaly-breasted munia	*Lonchura punctulata* (Linnaeus, 1758)	R	5	r
20	**Alaudidae**				
41	Ashy erowned finch lork	*Erenopterix griseus* (Scopoli, 1786)	RU	11	r
21	**Dicruridae**				
42	Black drongo	*Dicrurus macrocercus* (Vieillot, 1817)	RC	15	r
22	**Passeridae**				
43	House sparrow	*Passer donesticus* (Linnaeus, 1758)	RC	102	28
23	**Corvidae**				
44	House crow	*Corvus splenders* (Vieillot, 1817)	RC	50	O
45	Jungle crow	*Corvus macrorhynchos* (Wagler, 1827)	RC	15	r
24	**Sturnidae**				
46	Common myna	*Acridotheres tristis* (Linnaeus, 1766)	RC	27	r
47	Brahminy starling myna	*Sturnia pagodarum* (Gmelin, JF, 1789)	RC	10	r
25	**Aegithinidae**				
48	Common iora	*Aegithina tiphia* (Linnaeus, 1758)	RU	1	S
26	**Cisticolidae**				
49	Common tailorbird	*Orthotomus sutorius* (Pennant, 1769)	R	2	S
27	**Muscicapidae**				
50	Indian robin	*Copsychus fulicatus* (Linnaeus, 1766)	RU	9	r
28	**Motacillidae**				
51	Western yellow wagtail	*Motacilla flava* (Linnaeus, 1758)	WMC	10	r
52	White wagtail	*Motacilla alba* (Linnaeus, 1758)	MU	6	r
29	**Hirundinidae**				
53	Wire-tailed Swallow	*Hirundo smithii* (Leach, 1818)	RU	21	r
30	**Galliformes Phasianiadae**				
54	Indian peafowl	*Pavo cristatus* (Linnaeus, 1758)	R	9	r
31	**Accipitriformes Accipitridae**				
55	Black winged kite	*Elanus careuleus* (Desfontaines, 1789)	R	7	r
32	**Cuculiformes Cuculidae**				

56	Asian koel	*Eudynamys scolopaceus* (Linnaeus, 1758)	RC	16	r
33	**Psittaciformes Psittaculidae**				
57	Rose ringed parakeet	*Psittacula krameri* (Scopoli, 1769)	RC	51	O

R= Resident, RC= Resident Common, RMc = Residential Migrant Common, RU = Resident Uncommon, WMu = Winter Migrant Uncommon, WM = Winter Migrant, M = Migrant, MU = Migrant Uncommon, WMr = Winter Migrant Rare, RCr = Resident Common Rare, Rr = Resident Rare, WMc = Winter Migrant Common. Abbreviation in ACOR are A = Abundant, C = Common, O=Occasional, R = Rare

Table 2: List of Birds Species, Nest sites, Nest types and number of Nests

S. No.	Birds Species	Nest site	Nest type	No of Nests
1	White-breasted Waterhen	Bushes	Cup Nest	2
2	Red wattled lapwing	Ground	Ground Nest	3
3	Little brown dove	Bushes, Tree	Platform Nest	1
4	Spotted dove	Bushes, Small tree	Platform Nest	3
5	Blue Rock pigeon	Towers	Platform Nest	2
6	Red vented bulbul	Tree	Cup Nest	4
7	Black drongo	Tree	Cup Nest	3
8	House sparrow	Tree	Platform Nest	12
9	House crow	Tree	Platform nest	3
10	Jungle crow	Tree	Platform Nest	5
11	Common myna	Cavity, Tree Hole	Hole Nest	9
12	Brahminy starling myna	Tree Hole	Hole Nest	2
13	Common iora	Tree	Cup Nest	1
14	Common tailorbird	Tree	Cup Nest	1
15	Indian robin	Tree Hole, Wall	Hole Nest	2
16	Rose ringed parakeet	Tree Holes	Hole Nest	5

and around forest areas. The plant species were also identified and recorded.

Results and Discussion

In total 57 terrestrial birds species belonging to 33 families were recorded during the study period (Table 1), of these 16 species belonging to 12 families were observed nesting in the areas (Table 2). In total 58 nests were recorded, the number of nests recorded were-- House sparrow- 12, Common myna- 9, Rose ringed parakeet- 5, Jungle crow- 5, Red vented bulbul- 4, House crow- 3, Black drongo- 3, Spotted dove- 3, Red wattled lapwing- 3, Indian robin- 2, Brahminy starling myna- 2, Blue Rock pigeon- 2, White breasted Waterhen- 2, Common tailorbird- 1, Common iora- 1 and Little brown dove- 1. We also found varieties of nesting patterns such as 4 types of nests of different birds were observed, including these: Platform Nest 26, Hole Nest 18, Cup Nest 11 and Ground Nests 3. In general the nesting behaviour of the birds in Aundha forest area indicates that most of the terrestrial birds prefer either large canopy trees or thorny bushes for nesting, probably to avoid predation.

The Aundha forest is rich in bird diversity, however, no scientific data is available on nests.. Apart from this, the trees and shrubs adjacent to the forest area include Neem (*Azadirachta indica*), Mango (*Mangifera Indica*), Chinch (*Tamarindus Indica*), Palas (*Butea moncspema*), Jambhul (*Syzygium cumin*), Banyan (*Ficus benghalensis*), Ber (*Ziziphus mauritiana*), Kauth (*Limonia acidissima*), Bael (*Aegle marmelos*), Mahua (*Madhuca longifolia*), Guava (*Psiclum guajava*),

(*Psidium guajava*), Ashoka (*Saraca asoca*), Karanja (*Millettia pinnata*), Lemon (*Citrus limon*), Gulmohar (*Delonix regia*), Amla (*Phyllanthus emblica*), Almond (*Terminalia catappa*), Babul (*Vachellia nilotica*), Eucalypt (*Eucalyptus obliqua*) etc. Various bird nests were found on these trees. The present findings on avian diversity are in agreement with earlier ornithological records from different regions of India, which emphasize the ecological significance of wetlands and surrounding habitats for sustaining both resident and migratory bird populations. Seminal works by Ali and Ripley (1983) and Ali (1996) established comprehensive baselines on taxonomy and distribution patterns of Indian birds, while regional assessments such as Abdulali (1962, 1981) and Ali (1945) highlighted the richness of avifauna across Kutch and Maharashtra. Subsequent studies have reinforced the importance of freshwater reservoirs, rivers and industrial zones for maintaining bird assemblages, including the checklists and diversity analyses reported by Kulkarni *et al.* (2005), Balkhande *et al.* (2012), Pentewar (2018) and Pawar *et al*. (2019). Parallel findings from wetland and coastal ecosystems—such as observations on migratory species in Kutch by Himmatsinhji (1968), Palmes and Briggs (1986), and the marine habitat studies of Parasharya (1984) support the role of wetlands as vital niches for feeding, nesting, and seasonal congregation of avifauna. Grassland and terrestrial nesting patterns reported by Soni *et al.* (2004) and Gajera *et al*. (2009), along with diversity trends in industrial landscapes documented by Wagh and Tiwari (2020), indicate that anthropogenic landscapes can also harbour significant bird communities when supportive ecological conditions are present. The ecological framework for wetland conservation outlined by Jaikrishna (2008) and the habitat value of wetlands described by Stewart (2007) further support the need for long-term monitoring and landscape-specific conservation planning. Overall, the present study corroborates these previous findings and strengthens the understanding that habitat heterogeneity, water availability and minimal anthropogenic disturbance are key factors.

Ethical Statement

No animal or microbes have been sacrificed for this study, hence Ethical Approval not required.

Author Contributions

Each author has contributed equally to the study's planning, analysis, writing, and editing. All authors have read and agreed to the published version of the manuscript.

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Conflict of Interest

The authors declare no conflicts of interest.

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