



The Checklist of Bird Species around the “Tillari Conservation Reserve” in Maharashtra, India

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Abstract

In the intricate tapestry of nature, birds play a vital role, acting as key indicators of ecosystem health and contributing significantly to ecological processes. This study delves into the avifaunal diversity of the Tillari Conservation Reserve, located in the Western Ghats—a global biodiversity hotspot facing increasing threats to its unique ecosystems. The diverse landscape, ranging from reserved forests on slopes to privately owned lowlands, provides a rich backdrop for avian exploration. Our study, conducted from November 2021 to April 2022, the findings reveal a rich tapestry of avian life, with 103 distinct bird species identified across 19 orders and 51 families. Passeriformes dominate, constituting 42.72% of the recorded species, followed by significant orders such as Accipitriformes, Pelecaniformes, and Coraciiformes. Families like Accipitridae, Ardeidae, and Muscicapidae stand out, showcasing the diversity within the avian community. Noteworthy is the revelation that a majority (91%) of observed species are categorized as 'least concerned' according to IUCN. However, a few species, including the while Great Hornbill, Malabar Grey Hornbill, and River Tern are classified as 'vulnerable' (3%) based on IUCN. The study sheds light on the unique avian inhabitants of this conservation reserve, providing baseline information crucial for future conservation initiatives in the Western Ghats. This research serves as a testament to the interconnectedness of diverse species in this critical ecological corridor, urging further exploration and preservation efforts in this globally significant region.

Keywords: Avifaunal Diversity, Tillari Conservation Reserve, Western Ghats, Bird Checklist

Introduction

Birds are a crucial part of the ecosystem as they are responsible for various biological activities in nature and they are good environmental indicators by revealing the state of the ecosystem. They also play an important role in linking the food chain as potential pollinators or dispersal agents in transferring nutrients and spores from one place to another during their migration and local movements. Birds are essential in controlling pest populations through predation and scavenging (Amat & Green, 2010; Bensizerara et al., 2013; Gregory et al., 2003). However, the avifaunal diversity has been decreasing in recent times due to the destruction of their natural habitats, cutting down trees and foraging habitats, and other human disturbances (Edison et al., 2016). The Western Ghats is a 1600 km long chain of mountain ranges and is one of the top global biodiversity hotspots. These ecologically significant ranges are recognized as a unique biogeographic province, a global biodiversity hotspot (Myers et al., 2000) and as one of the 200 most important eco-regions in the world (Olson & Dinerstein, 1998). The strategic location and the combination of its geographic and climatic features are the main reasons for the presence of many varieties of flora and fauna in this region (Hladik, 1993). 26 different endemic bird species are found in the Western Ghats which are recognized by the IUCN Red List of Threatened Species. (Daniels et al., 1990; Hariharan & Raman, 2022) Black-and-rufous flycatcher (*Ficedula nigrorufa*), Malabar wood shrike (*Tephrodornis sylvicola*), Malabar grey hornbill (*Ocyrceros griseus*), Nilgiri wood pigeon (*Columba elphinstonii*), Kerala laughing thrush (*Trochalopteron fairbanki*), Grey-headed bulbul (*Pycnonotus priocephalus*) are a few among them (Raman, 2006). Limited studies on the avifaunal diversity of Tillari Conservation Reserve Area have been done so far and thus, developing baseline information on the birds of this region would be an ideal step. In one study, 66 bird species belonging to 41 families were recorded from Sindhudurg district. Another study around the Tillari Conservation Reserve Area, Documented 99 bird species and 41 families, with the highest richness observed in forests (76), followed by cashew plantation (62) and rubber plantation (58) (Munje & Kumar, 2022). Another study documented 174 bird species representing 20 orders, 59 families, and 133 genera in Chandgad Taluka of Tillari (Hiragond & Lokhande, 2016). This landscape was notified as a conservation reserve in 2020 considering its importance as a wildlife corridor in the Western Ghats thus, a study on the bird diversity of this region would help in further conservation implications in the area.

Material and methods

Study area

Our study took place within the scenic landscape of the Tillari Conservation Reserve, which spans across Dodamarg and Sawantwadi tehsils in the Sindhudurg District of Maharashtra, India. Situated in the Northern Western Ghats, the Tillari Conservation Reserve serves as a vital corridor facilitating the movement of tigers and elephants across the states of Maharashtra, Goa, and Karnataka. (Pawar & Sadekar, 2023) The Tillari corridor comprises reserved forests situated on slopes with elevations ranging from 600 to 1,050 meters above sea level. In contrast, the foothills and lowland areas consist of privately owned forests and commercial plantations. The elevation gradient spans from 50 to 1,030 meters above sea level. This region experiences a mean annual rainfall of 3,000 mm and exhibits varying mean annual temperatures between 16°C and 35°C.

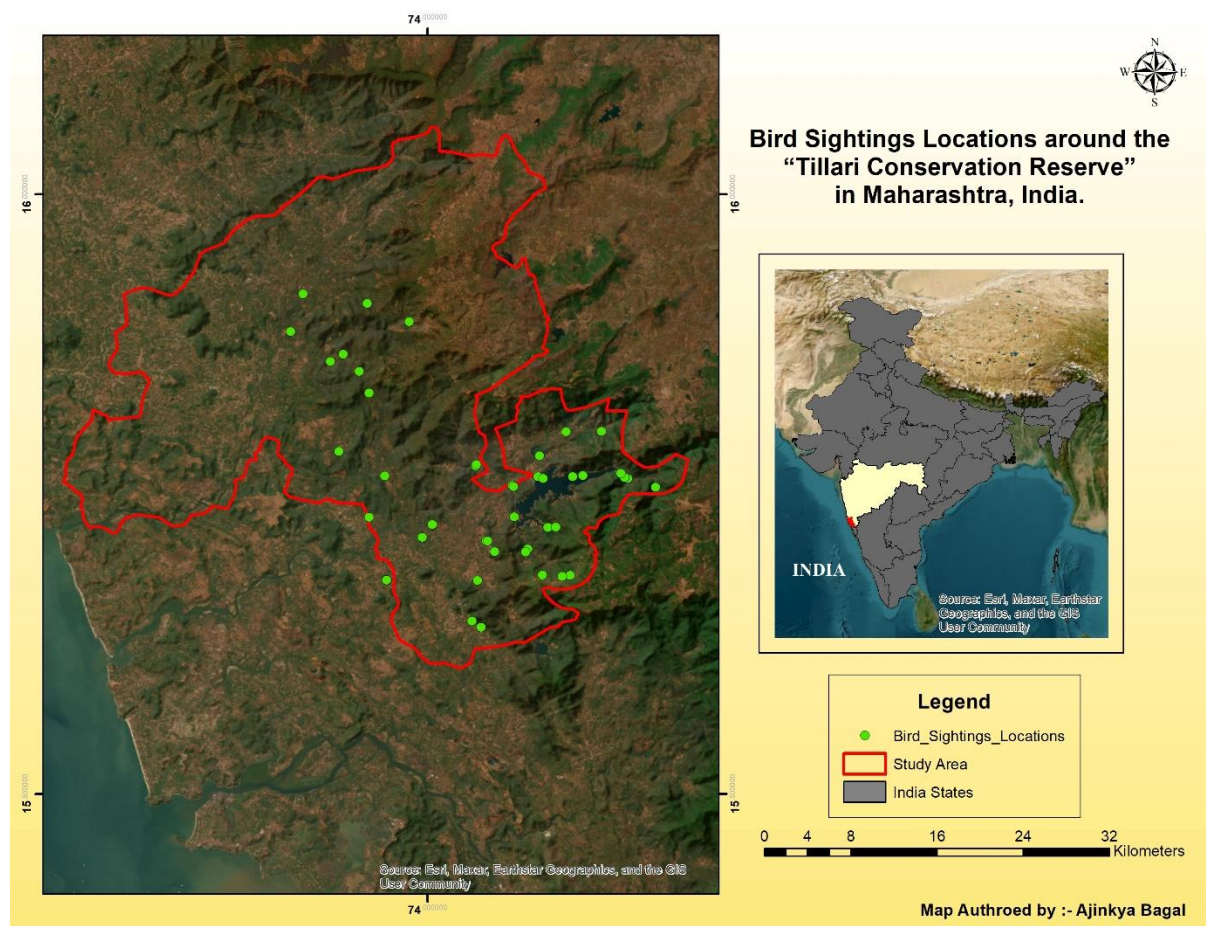


Fig 1. Map of the Study area

The landscape is characterized by a semi-evergreen forest along riparian patches and tropical moist deciduous forests. (Punjabi & Rao, 2017) Notably, this area is home to a diverse range of wildlife species, including Indian gaur, barking deer, sambar, wild pig, wild dog, leopard, and

two species of otters. Additionally, tigers and elephants have been reported in this remarkable landscape. Our study was conducted through intermittent and opportunistic bird sightings spanning from November 23, 2021, to April 11, 2022. We comprehensively documented all observed bird species during this period, covering a range of environments including backwater areas, forests, and diverse potential bird habitats. To identify and record bird species, we employed field binoculars (Olympus 8x40 magnification) and captured photographs using a Nikon Coolpix P900 camera with an impressive 83X zoom capability. To aid in species identification, we consulted several authoritative field guides (Ali, 1949; Ali & Ripley, 1995; Grimmett et al., 2011).

Table 1. Checklist of bird species recorded during the study. (LC-'least concerned', NT-'near threatened', VU - 'vulnerable')

Sr. No	Common Name	Scientific Name	Order	Family	IUC N
1	Orange Minivet	<i>Pericrocotus flammeus</i>	Passeriformes	Campephagidae	LC
2	Small Minivet	<i>Pericrocotus cinnamomeus</i>	Passeriformes	Campephagidae	LC
3	Asian Openbill	<i>Anastomus oscitans</i>	Ciconiiformes	Ciconiidae	LC
4	Woolly-necked Stork	<i>Ciconia episcopus</i>	Ciconiiformes	Ciconiidae	NT
5	Indian Pond Heron	<i>Ardeola grayii</i>	Pelecaniformes	Ardeidae	LC
6	Cattle Egret	<i>Bubulcus ibis</i>	Pelecaniformes	Ardeidae	LC
7	Little Egret	<i>Egretta garzetta</i>	Pelecaniformes	Ardeidae	LC
8	Little Cormorant	<i>Phalacrocorax niger</i>	Suliformes	Phalacrocoracidae	LC
9	Darter	<i>Anhinga melanogaster</i>	Suliformes	Anhingidae	NT
10	Black-shouldered kite	<i>Elanus caeruleus</i>	Accipitriformes	Accipitridae	LC
11	Brahminy Kite	<i>Haliastur indus</i>	Accipitriformes	Accipitridae	LC
12	Osprey	<i>Pandion haliaetus</i>	Accipitriformes	Pandionidae	LC
13	White-bellied Sea Eagle	<i>Haliaeetus leucogaster</i>	Accipitriformes	Accipitridae	LC
14	Grey-headed Fish Eagle	<i>Ichthyophaga ichthyaetus</i>	Accipitriformes	Accipitridae	NT
15	Crested Serpent Eagle	<i>Spilornis cheela</i>	Accipitriformes	Accipitridae	LC
16	Shikra	<i>Accipiter badius</i>	Accipitriformes	Accipitridae	LC
17	Red-wattled Lapwing	<i>Vanellus indicus</i>	Charadriiformes	Charadriidae	LC

18	River Tern	<i>Sterna aurantia</i>	Charadriiformes	Laridae	VU
19	Spotted Dove	<i>Stigmatopelia chinensis</i>	Columbiformes	Columbidae	LC
20	Grey-fronted Green Pigeon	<i>Treron affinis</i>	Columbiformes	Columbidae	LC
21	Plum-headed Parakeet	<i>Psittacula cyanocephala</i>	Psittaciformes	Psittaculidae	LC
22	Malabar Parakeet	<i>Psittacula roseata</i>	Psittaciformes	Psittaculidae	LC
23	Common Hawk Cuckoo	<i>Hierococyx varius</i>	Cuculiformes	Cuculidae	LC
24	Asian Koel	<i>Eudynamis scolopaceus</i>	Cuculiformes	Cuculidae	LC
25	Jungle Owlet	<i>Glaucidium radiatum</i>	Strigiformes	Strigidae	LC
26	Brown Fish Owl	<i>Ketupa zeylonensis</i>	Strigiformes	Strigidae	LC
27	Malabar Trogon	<i>Harpactes Fasciatus</i>	Trogoniformes	Trogonidae	LC
28	Stork-billed Kingfisher	<i>Pelargopsis capensis</i>	Coraciiformes	Alcedinidae	LC
29	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	Coraciiformes	Alcedinidae	LC
30	Common Kingfisher	<i>Alcedo atthis</i>	Coraciiformes	Alcedinidae	LC
31	Green Bee-eater	<i>Merops orientalis</i>	Coraciiformes	Meropidae	LC
32	Chestnut-headed Bee-eater	<i>Merops leschenaulti</i>	Coraciiformes	Meropidae	LC
33	Malabar Grey Hornbill	<i>Ocyrceros griseus</i>	Bucerotiformes	Bucerotidae	VU
34	Malabar Pied Hornbill	<i>Anthracoceros coronatus</i>	Bucerotiformes	Bucerotidae	NT
35	Great Hornbill	<i>Buceros bicornis</i>	Bucerotiformes	Bucerotidae	VU
36	White-cheeked Barbet	<i>Megalaima viridis</i>	Piciformes	Megalaimidae	LC
37	Black-rumped flameback	<i>Dinopium benghalense</i>	Piciformes	Picidae	LC
38	Common Woodshrike	<i>Tephrodornis pondicerianus</i>	Passeriformes	Vangidae	LC
39	Common iora	<i>Aegithina tiphia</i>	Passeriformes	Aegithinidae	LC
40	Bay-backed Shrike	<i>Lanius vittatus</i>	Passeriformes	Laniidae	LC
41	Greater Racket-tailed Drongo	<i>Dicrurus paradiseus</i>	Passeriformes	Dicruridae	LC
42	Black Drongo	<i>Dicrurus macrocercus</i>	Passeriformes	Dicruridae	LC
43	White-bellied Drongo	<i>Dicrurus caeruleus</i>	Passeriformes	Dicruridae	LC
44	Black-hooded Oriole	<i>Oriolus xanthornus</i>	Passeriformes	Oriolidae	LC
45	Indian Golden Oriole	<i>Oriolus kundoo</i>	Passeriformes	Oriolidae	LC
46	Asian Paradise-flycatcher	<i>Terpsiphone paradisi</i>	Passeriformes	Monarchidae	LC
47	Black-naped Monarch	<i>Hypothymis azurea</i>	Passeriformes	Monarchidae	LC
48	Rufous Treepie	<i>Dendrocitta vagabunda</i>	Passeriformes	Corvidae	LC
49	House Crow	<i>Corvus splendens</i>	Passeriformes	Corvidae	LC
50	Red-rumped Swallow	<i>Cecropis daurica</i>	Passeriformes	Hirundinidae	LC
51	Verditer Flycatcher	<i>Eumyias thalassinus</i>	Passeriformes	Muscicapidae	LC
52	Blue-capped Rock Thrush	<i>Monticola cinclorhynchus</i>	Passeriformes	Muscicapidae	LC
53	Tickell's Blue Flycatcher	<i>Cyornis tickelliae</i>	Passeriformes	Muscicapidae	LC
54	Purple Sunbird	<i>Cinnyris asiaticus</i>	Passeriformes	Nectariniidae	LC

55	Purple-rumped Sunbird	<i>Leptocoma zeylonica</i>	Passeriformes	Nectariniidae	LC
56	House Sparrow	<i>Passer domesticus</i>	Passeriformes	Passeridae	LC
57	Forest Wagtail	<i>Dendronanthus indicus</i>	Passeriformes	Motacillidae	LC
58	White-browed Wagtail	<i>Motacilla maderaspatensis</i>	Passeriformes	Motacillidae	LC
59	Flame-throated Bulbul	<i>Pycnonotus melanicterus gularis</i>	Passeriformes	Pycnonotidae	LC
60	Red-vented Bulbul	<i>Pycnonotus cafer</i>	Passeriformes	Pycnonotidae	LC
61	Ashy Prinia	<i>Prinia socialis</i>	Passeriformes	Cisticolidae	LC
62	Jungle Babbler	<i>Turdoides striata</i>	Passeriformes	Leiothrichidae	LC
63	Baya Weaver	<i>Ploceus Philippinus</i>	Passeriformes	Ploceidae	LC
64	Large Cuckooshrike	<i>Coracina macei</i>	Passeriformes	Campephagidae	LC
65	Oriental Magpie Robin	<i>Copsychus saularis</i>	Passeriformes	Muscicapidae	LC
66	Indian blackbird	<i>Turdus simillimus</i>	Passeriformes	Turdidae	LC
67	Orange-headed thrush	<i>Geokichala citrina</i>	Passeriformes	Turdidae	LC
68	Blue whistling thrush	<i>Myophonus caeruleus</i>	Passeriformes	Muscicapidae	LC
69	Yellow-browed Bulbul	<i>Acritillas indica</i>	Passeriformes	Pycnonotidae	LC
70	Oriental Honey-buzzard	<i>Pernis ptilorhynchus</i>	Accipitriformes	Accipitridae	LC
71	Thick-billed flowerpecker	<i>Dicaeum agile</i>	Passeriformes	Dicaeidae	LC
72	Indian Silverbill	<i>Euodice malabarica</i>	Passeriformes	Estrildidae	LC
73	Blue rock thrush	<i>Monticola solitarius</i>	Passeriformes	Muscicapidae	LC
74	Legge's hawk-eagle	<i>Nisaetus kelaarti</i>	Accipitriformes	Accipitridae	NT
75	Black Eagle	<i>Ictinaetus malaiensis</i>	Accipitriformes	Accipitridae	LC
76	Jerdon's Leafbird	<i>Chloropsis jerdoni</i>	Passeriformes	Chloropseidae	LC
77	White-eyed buzzard	<i>Butastur teesa</i>	Accipitriformes	Accipitridae	LC
78	Laughing Dove	<i>Stigmatopelia senegalensis</i>	Columbiformes	Columbidae	LC
79	Eurasian Collared Dove	<i>Streptopelia decaocto</i>	Columbiformes	Columbidae	LC
80	Emerald Dove	<i>Chalcophaps indica</i>	Columbiformes	Columbidae	LC
81	Indian Gray Hornbill	<i>Ocyrceros birostris</i>	Bucerotiformes	Bucerotidae	LC
82	Indian Roller	<i>Coracias benghalensis</i>	Coraciiformes	Coraciidae	LC
83	Common Hoopoe	<i>Upupa epops</i>	Bucerotiformes	Upupidae	LC
84	Little Swift	<i>Apus affinis</i>	Apodiformes	Apodidae	LC
85	Spotted Owlet	<i>Athene brama</i>	Strigiformes	Strigidae	LC
86	Barn Owl	<i>Tyto alba</i>	Strigiformes	Tytonidae	LC
87	Southern Coucal	<i>Centropus sinensis pattoti</i>	Cuculiformes	Cuculidae	LC
88	Great Egret	<i>Casmerodius albus</i>	Pelecaniformes	Ardeidae	LC
89	Grey Heron	<i>Ardea cinerea</i>	Pelecaniformes	Ardeidae	LC

90	Purple Heron	<i>Ardea purpurea</i>	Pelecaniformes	Ardeidae	LC
91	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	Pelecaniformes	Threskiornithidae	NT
92	Red-naped Ibis	<i>Pseudibis papillosa</i>	Pelecaniformes	Threskiornithidae	LC
93	Grey Junglefowl	<i>Gallus sonneratii</i>	Galliformes	Phasianidae	LC
94	White-breasted waterhen	<i>Amaurornis phoenicurus</i>	Galliformes	Rallidae	LC
95	Coppersmith Barbet	<i>Megalaima haemacephala</i>	Piciformes	Megalaimidae	LC
96	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	Passeriformes	Pycnonotidae	LC
97	Indian White-eye	<i>Zosterops palpebrosus</i>	Passeriformes	Zosteropidae	LC
98	Common Myna	<i>Acridotheres tristis</i>	Passeriformes	Sturnidae	LC
99	Brahminy Starling	<i>Sturnia pagodarum</i>	Passeriformes	Sturnidae	LC
100	Scaly-breasted Munia	<i>Lonchura punctulata</i>	Passeriformes	Estrildidae	LC
101	Malabar lark	<i>Galerida malabarica</i>	Passeriformes	Alaudidae	LC
102	Common Kestrel	<i>Falco Tinnunculus</i>	Falconiformes	Falconidae	LC
103	Blue-tailed bee-eater	<i>Merops philippinus</i>	Coraciiformes	Meropidae	LC

Result

In our study conducted at the 'Tillari Conservation Reserve' in Maharashtra, India, we identified a diverse avian community comprising 103 distinct bird species. These species are distributed across 19 different orders and belong to 51 unique families within those orders. Notably, Passeriformes dominate the list, representing 42.72% (44) of the total recorded bird species. Other significant orders include Accipitriformes at 10.68% (11), Pelecaniformes at 7.77% (8), Coraciiformes at 6.80% (7), and Bucerotiformes at 4.85% (5), among others. Among the families observed, Accipitridae stands out with the highest number of recorded bird species (10), followed by Ardeidae and Muscicapidae (6 each). Additional families include Columbidae (5), Bucerotidae, Dicruridae, and Pycnonotidae (4 each), and several others with fewer species.

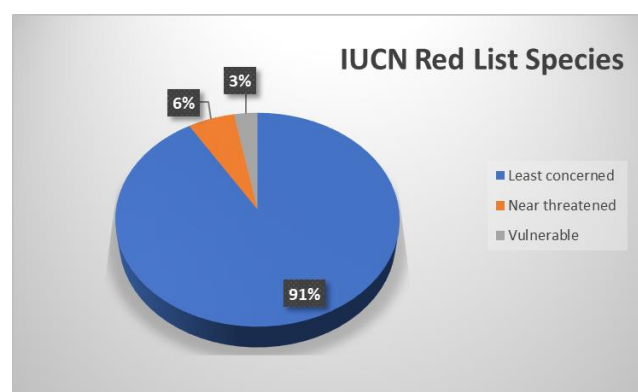


Fig 2. Percentage of IUCN red list species recorded

An important aspect of our findings is that the majority of the observed bird species, accounting for 91% of the total, fall into the 'least concerned' category according to IUCN assessments. However, a few species, including Black-headed Ibis, Malabar Pied Hornbill, Grey-headed Fish Eagle, Woolly-necked Stork, and Darter, are categorized as 'near threatened' (6%), while Great Hornbill, Malabar Grey Hornbill, and River Tern are classified as 'vulnerable' (3%) based on IUCN. Furthermore, our study revealed the presence of seven species endemic to the Western Ghats region, including Plum-headed Parakeet, Malabar Parakeet, Malabar Grey Hornbill, Malabar Pied Hornbill, Great Hornbill, Flame-throated Bulbul, and Malabar Trogon. In this checklist, we identified five bird species listed under Appendix I and II of the Convention on International Trade in Endangered Species (CITES), including the Malabar Pied Hornbill, Great Hornbill, Jungle Owlet, Brown Fish Owl, and Spotted Owlet.

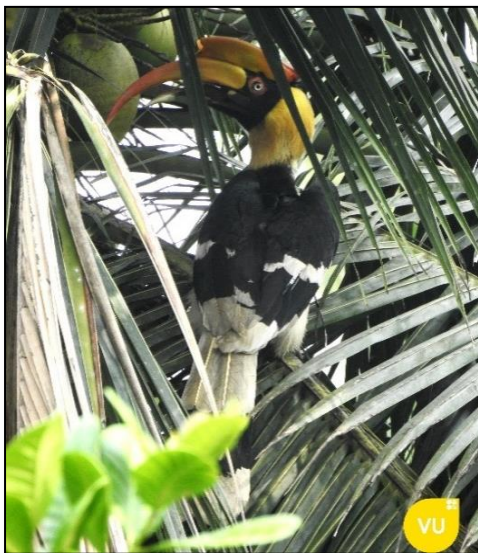


Image 01. Great Hornbill



Image 02. Malabar Grey Hornbill

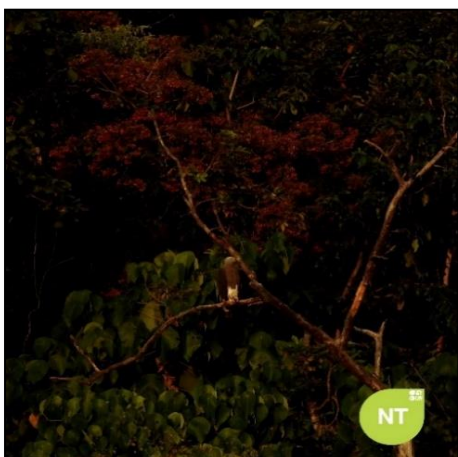


Image 03. Grey-headed Fish Eagle



Image 04. Woolly-necked Stork

6.45

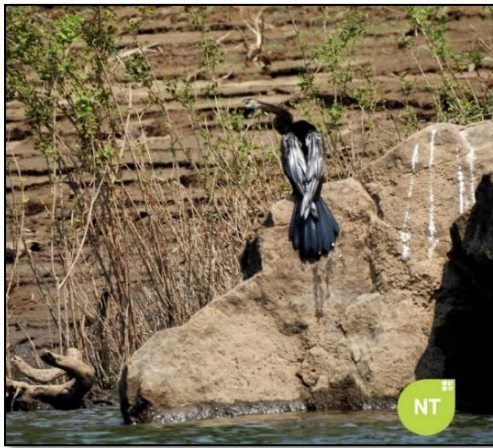


Image 05. Darter



Image 06. Malabar Pied Hornbill



Image 07. Black-shouldered kite

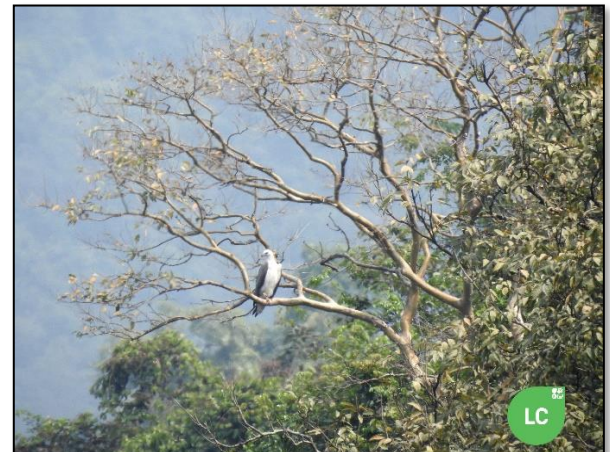


Image 08. White-bellied Sea Eagle

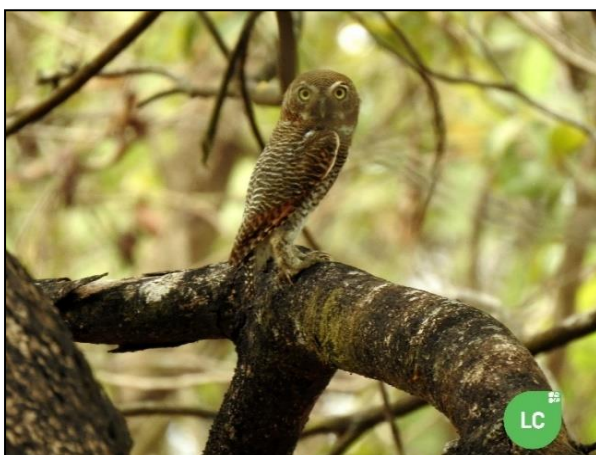


Image 09. Jungle Owlet

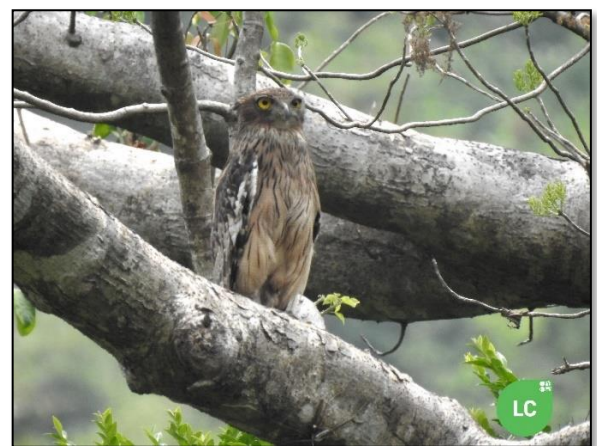


Image 10. Brown Fish Owl



Image 11. Shikra



Image 12. Asian Paradise-flycatcher

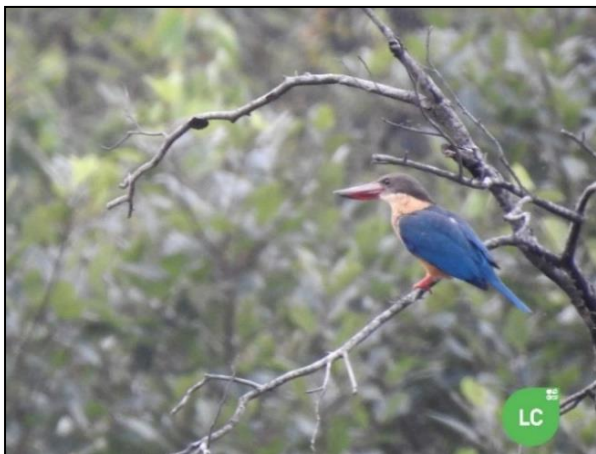


Image 13. Stork-billed Kingfisher



Image 14. Orange-headed thrush



Image 15. Verditer Flycatcher

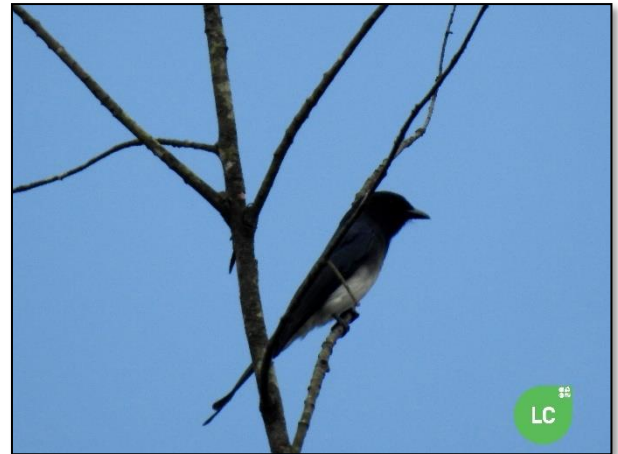


Image 16. White-bellied Drongo

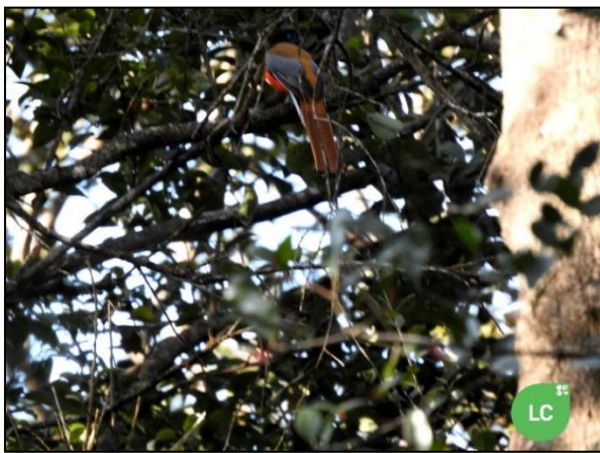


Image 17. Malabar Trogon

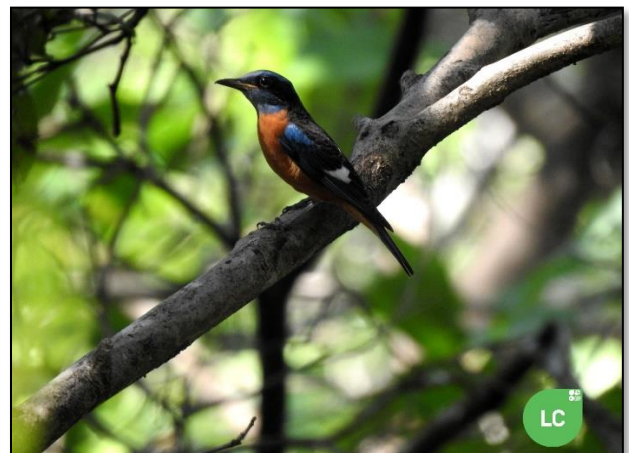


Image 18. Blue-capped Rock Thrush



Image 19. Black-naped Monarch



Image 20. Legge's hawk-eagle

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