



Avifaunal diversity of Macfast campus, Thiruvalla, Kerala

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Abstract

Pathanamthitta District abodes a wide variety of avifauna. Avifaunal diversity of MACFAST campus was studied during December 2017 to May 2019. Avifauna of MACFAST campus was surveyed on foot twice in a week and birds were photo-documented. A total of 130 species belonging to 14 orders and 45 families were recorded from the campus. Of these 14 orders, Passeriformes dominated the list with 51 species followed by Pelicaniformes (19) and Charadriiformes (14). Among the species recorded 62 per cent comprised of resident birds followed by 31 per cent of winter visitors, five per cent of local migrants and two per cent of breeding visitors. Of these, 68 species were terrestrial birds and rest of the 62 species was wetland dependent birds. MACFAST campus accounts for 25 per cent species, 51 per cent families and 64 per cent orders of birds of Kerala. Forty two taxa of birds are newly reported in the present study. Baillon's Crake *Zapornia pusilla* and Paddyfield Warbler *Acrocephalus Agricola* were the new addition to the birds of Pathanamthitta District.

Keywords: Avifauna, diversity, MACFAST, Thiruvalla, Kerala

1. Introduction

Twenty first century is considered as the era of rapid development and industrialization. Urbanization is considered as one of the major threats to the bird population, as under the tremendous pressures of urbanization the native habitats are lost, fragmented or modified, the native vegetation is altered and the exotic species or ornamental plants get introduced [1]. The increase in urban development decreases the species richness and diversity but increases the density of birds [2]. Urban biodiversity has received very little attention from conservation biologists as compared to natural and protected ecosystems [3,4].

But urban biodiversity was considered with least preference. Many cities in India contain vast biodiversity of flora and fauna but due to rapid urbanization there has been an alarming reduction in biodiversity [5]. Birds are considered one among the best ecological indicators and the avifaunal diversity varies with different habitat throughout the world. Their habitat preferences are more or less specialized and they occupy higher trophic levels in food webs [6]. India abodes 1263 species of birds [7] and of which 527 species are seen in Kerala [8,9]. Kerala is a home ground for birds including migratory, endangered as well as endemic birds and also birds are one of the better studied groups in Kerala [8]. The importance of natural habitats in urban as well as sub-urban space is needed to be documented very wisely and more attention should be paid for the monitoring, and conservation activities in a sub-urban landscape. MACFAST campus is a sub-urban landscape and a preliminary checklist of avifauna of this campus has already been reported [10]. The present study aims to give more information regarding the abundance and status of the birds in the campus.

2. Material and Methods

Avifauna of MACFAST campus was surveyed on foot, twice in a week during December 2017 to May 2019.

Observations were made from 06.00 hrs to 09.00 hrs and 17.00 hrs to 19.00 hrs. Birds were photo-documented and species identification was done with the help of field guides and reference books [11,12].

3. Study Area

Present study on Avifaunal diversity was carried out in the campus of Mar Athanasios College for Advanced Studies (MACFAST) (9° 22' 23" N & 76° 35' 4"E) (Fig.1) from December 2017 to May 2019. MACFAST campus in Pathanamthitta District is located about 3 km to the South of Thiruvalla town. The total area of the campus is about 12.5 acres, with varied micro habitats like ponds, grasslands and paddy fields nearby. The vegetation is dominated by *Racosperma auriculiforme*, *Anacardium occidentale*, *Artocarpus heterophyllus*, *Racosperma mangium*, *Nephelium lappaceum*, *Artocarpus hirsutus*, *Ficus auriculata*, *Flacourtia jangomas*, *Mangifera indica*, Bamboo Sps., *Cocos nucifera*, *Azadirachta indica*, *Syzygium jambos*, *Phyllanthus emblica*, *Carica papaya*, *Cassia fistula*, *Sapindus emarginatus*, *Corypha umbraculifera*, *Lagerstroemia microcarpa*, *Tectona grandis*, *Macaranga indica*, *Bauhinia racemosa*, *Albizia chinensis*, *Delonix regia*, *Muntingia calabura*, *Averrhoa carambola*, *Elaeocarpus serratus*, *Manilkara zapota* and *Artocarpus incisus*. Aquatic weeds like *Eichhornia crassipes*, *Salvinia molesta* were also present in water bodies near paddy fields [10].



Fig 1: Study area- MACFAST Campus, Thiruvalla, Kerala

4. Result and Discussion

A total of 130 species belonging to 14 orders and 45 families were observed from the campus during December 2017 to May 2019 (Table 1). About 25 % of the bird species reported from Kerala was recorded from this small campus. Of these 14 orders, Passeriformes dominated the list with 51 species followed by Pelicaniformes (19) and Charadriiformes (14) (Fig. 2).

Among the families Ardeidae consists of the maximum number (11) of birds followed by Accipitridae (9), Scolopacidae (7), Cuculidae (6), Rallidae (6), Sturnidae (5), Acrocephalidae (5), Apodidae (4), Columbidae (4), Alcedinidae (4), Cisticolidae (4); Ciconiidae (3), Motacillidae (3), Muscicapidae (3), Nectariniidae (3), Oriolidae (3), Dicruridae (3), Corvidae (3), Meropidae (3), Charadriidae (3) and Anatidae (3). Other families representing the bird species were Jacanidae, Estrildidae, Hirundinidae, Laniidae, Leiothrichidae, Ploceidae, Pycnonotidae, Phalacrocoracidae, Threskiornithidae, Psittaculidae, Tytonidae with two species each and Anhingidae, Aegithinidae, Artamidae, Accipitridae, Laridae, Recurvirostridae, Campephagidae, Dicaeidae, Phylloscopidae, Paridae, Monarchidae, Ramphastidae, Picidae, and Podicipedidae with single species each. Of these 130 birds, 89 species were seen commonly in the campus. *Treron pompadora*, *Treron phoenicopterus*, *Centropus bengalensis*, *Clamator jacobinus*, *Zapornia fusca*, *Gallinago gallinago*, *Gallinago stenura*, *Pernis ptilorhynchus*, *Spilornis cheela*, *Clanga clanga*, *Hieraaetus pennatus*, *Merops orientalis*, *Merops leschenaultia*, *Zapornia pusilla*, *Lewinia striata* were the rare sightings from the campus. Among the species recorded 62 per cent comprised of resident birds followed by 31 per cent of winter visitors, five per cent of local migrants and two per cent of breeding visitors. Of these, 68 species were terrestrial birds and rest of the 62 species was wetland dependent birds. As per the IUCN 2018, 125 taxa of birds recorded from the campus was

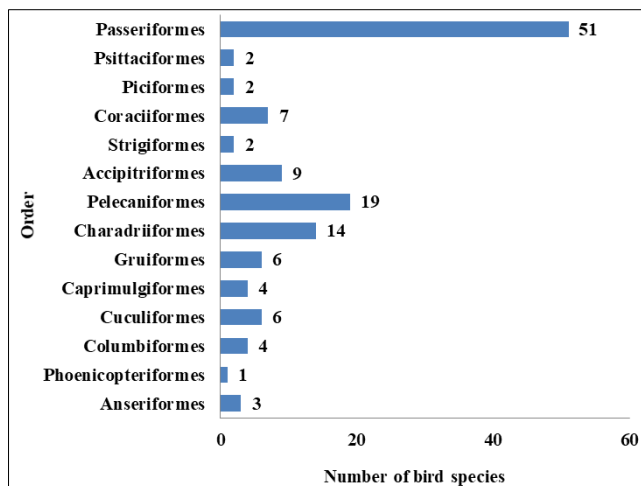


Fig 2: Order wise distribution of bird species recorded from MACFAST Campus

found to be included under the Least Concern category, three species (*Mycteria leucocephala*, *Anhinga melanogaster*, *Threskiornis melanocephalus*) under Near Threatened category

and two species (*Ciconia episcopus*, *Clanga clanga*) under the Vulnerable category (Fig.3).

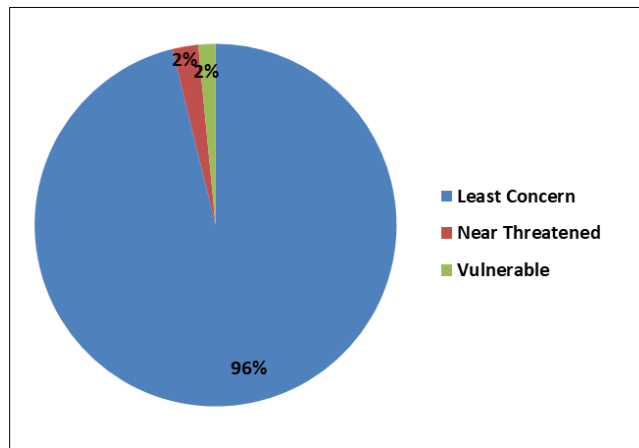


Fig 3: IUCN Conservation status of birds recorded from the MACFAST campus

Table 1: Checklist of birds recorded from MACFAST Campus, Thiruvalla

Order	Family	Sl. no.	Common name	Scientific name	IUCN conservation status	Occurrence status
Anseriformes	Anatidae	1	Lesser Whistling Duck	<i>Dendrocygna javanica</i>	LC	C
		2	Cotton Pygmy-Goose	<i>Nettapus coromandelianus</i>	LC	U
		3	Garganey	<i>Spatula querquedula</i>	LC	C
Phoenicopteriformes	Podicipedidae	4	Little Grebe	<i>Tachybaptus ruficollis</i>	LC	C
Columbiformes	Columbidae	5	Rock Pigeon	<i>Columba livia</i>	LC	C
		6	Spotted Dove	<i>Streptopelia chinensis</i>	LC	C
		7	Grey-fronted Green Pigeon	<i>Treron pompadora</i>	LC	C
		8	Yellow-footed Green Pigeon)	<i>Treron phoenicopterus</i>	LC	U
Cuculiformes	Cuculidae	9	Greater Coucal	<i>Centropus sinensis</i>	LC	C
		10	Lesser Coucal	<i>Centropus bengalensis</i>	LC	U
		11	Pied Cuckoo	<i>Clamator jacobinus</i>	LC	U
		12	Asian Koel	<i>Eudynamys scolopaceus</i>	LC	C
		13	Grey-bellied Cuckoo	<i>Cacomantis passerinus</i>	LC	U
		14	Common Hawk Cuckoo	<i>Hierococcyx varius</i>	LC	C
Caprimulgiformes	Apodidae	15	Indian Swiftlet	<i>Aerodramus unicolor</i>	LC	C
		16	Asian Palm Swift	<i>Cypsiurus balasiensis</i>	LC	C
		17	Alpine Swift	<i>Tachymarptis melba</i>	LC	U
		18	Indian House Swift (Little Swift)	<i>Apus affinis</i>	LC	C
Gruiformes	Rallidae	19	Ruddy-breasted Crane	<i>Zapornia fusca</i>	LC	U
		20	Slaty-breasted Rail	<i>Lewinia striata</i>	LC	U
		21	Baillon's Crane	<i>Zapornia pusilla</i>	LC	R
		22	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	LC	C
		23	Watercock	<i>Gallix cinerea</i>	LC	U
		24	Grey-headed Swamphen	<i>Porphyrio porphyrio</i>	LC	C
Charadriiformes	Recurvirostridae	25	Black-winged Stilt	<i>Himantopus himantopus</i>	LC	C
	Charadriidae	26	Pacific Golden Plover	<i>Pluvialis fulva</i>	LC	C
		27	Red-wattled Lapwing	<i>Vanellus indicus</i>	LC	C
		28	Little Ringed Plover	<i>Charadrius dubius</i>	LC	U
	Jacanidae	29	Pheasant-tailed Jacana	<i>Hydrophasianus chirurgus</i>	LC	U
		30	Bronze-winged Jacana	<i>Metopidius indicus</i>	LC	C
	Scolopacidae	31	Common Snipe	<i>Gallinago gallinago</i>	LC	C
		32	Pintail Snipe	<i>Gallinago stenura</i>	LC	C
		33	Common Sandpiper	<i>Actitis hypoleucos</i>	LC	C
		34	Green Sandpiper	<i>Tringa ochropus</i>	LC	C
		35	Common Greenshank	<i>Tringa nebularia</i>	LC	C
		36	Wood Sandpiper	<i>Tringa glareola</i>	LC	C

		37	Marsh Sandpiper	<i>Tringa stagnatilis</i>	LC	C
	Laridae	38	Whiskered Tern	<i>Chlidonias hybrida</i>	LC	C
Pelecaniformes	Ciconiidae	39	Painted Stork	<i>Mycteria leucocephala</i>	NT	U
		40	Asian Openbill	<i>Anastomus oscitans</i>	LC	U
		41	Woolly-necked Stork	<i>Ciconia episcopus</i>	VU	U
	Phalacrocoraciidae	42	Little Cormorant	<i>Microcarbo niger</i>	LC	C
		43	Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	LC	U
	Anhingidae	44	Oriental Darter	<i>Anhinga melanogaster</i>	NT	C
	Ardeidae	45	Yellow Bittern	<i>Ixobrychus sinensis</i>	LC	U
		46	Black Bittern	<i>Ixobrychus flavicollis</i>	LC	U
		47	Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	LC	U
		48	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	LC	U
		49	Indian Pond Heron	<i>Ardeola grayii</i>	LC	C
		50	Grey Heron	<i>Ardea cinerea</i>	LC	U
		51	Purple Heron	<i>Ardea purpurea</i>	LC	U
		52	Cattle Egret	<i>Bubulcus ibis</i>	LC	C
		53	Great Egret	<i>Ardea alba</i>	LC	U
54		Intermediate Egret	<i>Ardea intermedia</i>	LC	C	
Threskiornithidae	55	Little Egret	<i>Egretta garzetta</i>	LC	C	
	56	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	NT	C	
	57	Glossy Ibis	<i>Plegadis falcinellus</i>	LC	U	
Accipitriformes	Accipitridae	58	Black-winged Kite	<i>Elanus caeruleus</i>	LC	C
		59	Oriental Honey Buzzard	<i>Pernis ptilorhynchus</i>	LC	C
		60	Crested Serpent Eagle	<i>Spilornis cheela</i>	LC	C
		61	Greater Spotted Eagle	<i>Clanga clanga</i>	VU	U
		62	Booted Eagle	<i>Hieraaetus pennatus</i>	LC	U
		63	Western Marsh Harrier	<i>Circus aeruginosus</i>	LC	C
		64	Shikra	<i>Accipiter badius</i>	LC	C
		65	Brahminy Kite	<i>Haliastur indus</i>	LC	C
Strigiformes	Tytonidae	66	Black Kite	<i>Milvus migrans</i>	LC	C
		67	Common Barn Owl	<i>Tyto alba</i>	LC	C
		68	Jungle Owlet	<i>Glaucidium radiatum</i>	LC	C
Coraciiformes	Alcedinidae	69	Common Kingfisher	<i>Alcedo atthis</i>	LC	C
		70	Pied Kingfisher	<i>Ceryle rudis</i>	LC	U
		71	Stork-billed Kingfisher	<i>Pelargopsis capensis</i>	LC	C
		72	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	LC	C
	Meropidae	73	Green Bee-eater	<i>Merops orientalis</i>	LC	C
		74	Chestnut-headed Bee-eater	<i>Merops leschenaulti</i>	LC	C
75		Blue-tailed Bee-eater	<i>Merops philippinus</i>	LC	C	
Piciformes	Picidae	76	Black-rumped Flameback	<i>Dinopium benghalense</i>	LC	C
	Ramphastidae	77	White-cheeked Barbet	<i>Psilopogon viridis</i>	LC	C
Psittaciformes	Psittaculidae	78	Plum-headed Parakeet	<i>Psittacula cyanocephala</i>	LC	C
		79	Rose-ringed Parakeet	<i>Psittacula krameri</i>	LC	C
Passeriformes	Campephagidae	80	Black-headed Cuckooshrike	<i>Lalage melanoptera</i>	LC	C
	Oriolidae	81	Black-hooded Oriole	<i>Oriolus xanthornus</i>	LC	C
		82	Indian Golden Oriole	<i>Oriolus kundoo</i>	LC	C
		83	Black-naped Oriole	<i>Oriolus chinensis</i>	LC	U
	Artamidae	84	Ashy Woodswallow	<i>Artamus fuscus</i>	LC	C
	Laniidae	85	Brown Shrike	<i>Lanius cristatus</i>	LC	U
		86	Long-tailed Shrike	<i>Lanius schach</i>	LC	U
	Aegithinidae	87	Common Iora	<i>Aegithina tiphia</i>	LC	C
	Dicruridae	88	Black Drongo	<i>Dicrurus macrocercus</i>	LC	C
		89	Ashy Drongo	<i>Dicrurus leucophaeus</i>	LC	U
		90	Greater Racket-tailed Drongo	<i>Dicrurus paradiseus</i>	LC	C
	Corvidae	91	Rufous Treepie	<i>Dendrocitta vagabunda</i>	LC	C
		92	House Crow	<i>Corvus splendens</i>	LC	C
		93	Large-billed Crow	<i>Corvus macrorhynchos</i>	LC	C
	Monarchidae	94	Indian Paradise-flycatcher	<i>Terpsiphone paradisi</i>	LC	C
	Dicaeidae	95	Pale-billed Flowerpecker	<i>Dicaeum erythrorhynchos</i>	LC	C
	Nectariniidae	96	Purple-rumped Sunbird	<i>Leptocoma zeylonica</i>	LC	C
97		Purple Sunbird	<i>Cinnyris asiaticus</i>	LC	C	
98		Loten's Sunbird	<i>Cinnyris lotenius</i>	LC	C	
Estrildidae	99	White-rumped Munia	<i>Lonchura striata</i>	LC	C	

		100	Scaly-breasted Munia	<i>Lonchura punctulata</i>	LC	C
Motacillidae		101	Western Yellow Wagtail	<i>Motacilla flava</i>	LC	C
		102	White-browed Wagtail	<i>Motacilla maderaspatensis</i>	LC	C
		103	Grey Wagtail	<i>Motacilla cinerea</i>	LC	C
Ploceidae		104	Streaked Weaver	<i>Ploceus manyar</i>	LC	U
		105	Baya Weaver	<i>Ploceus philippinus</i>	LC	C
Hirundinidae		106	Barn Swallow	<i>Hirundo rustica</i>	LC	C
		107	Wire-tailed Swallow	<i>Hirundo smithii</i>	LC	C
Paridae		108	Cinereous Tit	<i>Parus cinereus</i>	LC	U
Pycnonotidae		109	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	LC	C
		110	Red-vented Bulbul	<i>Pycnonotus cafer</i>	LC	C
Phylloscopidae		111	Greenish Leaf Warbler	<i>Seicercus trochiloides</i>	LC	U
Acrocephalidae		112	Thick-billed Warbler	<i>Arundinax aedon</i>	LC	U
		113	Booted Warbler	<i>Iduna caligata</i>	LC	U
		114	Blyth's Reed Warbler	<i>Acrocephalus dumetorum</i>	LC	C
		115	Paddyfield Warbler	<i>Acrocephalus agricola</i>	LC	U
		116	Clamorous Reed Warbler	<i>Acrocephalus stentoreus</i>	LC	C
Cisticolidae		117	Common Tailorbird	<i>Orthotomus sutorius</i>	LC	C
		118	Zitting Cisticola	<i>Cisticola juncidis</i>	LC	U
		119	Ashy Prinia	<i>Prinia socialis</i>	LC	C
		120	Plain Prinia	<i>Prinia inornata</i>	LC	C
Leiothrichidae		121	Jungle Babbler	<i>Turdoides striata</i>	LC	C
		122	Yellow-billed Babbler	<i>Turdoides affinis</i>	LC	C
Muscicapidae		123	Oriental Magpie Robin	<i>Copsychus saularis</i>	LC	C
		124	Asian Brown Flycatcher	<i>Muscicapa dauurica</i>	LC	U
		125	Brown-breasted Flycatcher	<i>Muscicapa muttui</i>	LC	U
Sturnidae		126	Rosy Starling	<i>Pastor roseus</i>	LC	U
		127	Chestnut-tailed Starling	<i>Sturnia malabarica</i>	LC	C
		128	Malabar starling	<i>Sturnia blythii</i>	LC	C
		129	Common Myna	<i>Acridotheres tristis</i>	LC	C
		130	Jungle Myna	<i>Acridotheres fuscus</i>	LC	C

Apart from foraging, hundreds of birds choose their resting place in the MACFAST campus. [2], 527 species in 88 families and 22 orders from Kerala. Thus MACFAST campus accounts for 25 per cent species, 51 per cent families and 63.64 per cent orders of birds of Kerala. Of these 130 species, 12 species falls under the Schedule I, 105 species under Schedule IV and one species under the Schedule V category of Wildlife (Protection) Act and 11 species fall under the Appendix II of CITES. Earlier studies conducted in MACFAST campus [10] recorded 88 taxa of birds belonging to 12 orders and 38 families, whereas 42 taxa of birds are newly reported in the present study. Baillon's Crake *Zapornia pusilla* and Paddyfield Warbler *Acrocephalus Agricola* were the new addition to the birds of Pathanamthitta District.

5. Conclusion

Even though MACFAST campus is a small sub-urban area, located in the midst of human habitations, the high species diversity in the campus could be due to the least anthropogenic disturbances and also by the presence of different type of flora. The presence of indigenous fruiting trees, along with large trees as roosting sites, attract more birds to this campus. Least disturbances to the habitat and conservation awareness among the college people had led to the safe movement of birds all the time in the campus. This study highlights the importance of green space of college/educational campus for the maintenance of the ecological balance for sustainable urban development.

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