

## DISTRIBUTION OF BIRDS IN RELATION TO VEGETATION IN THE CALICUT UNIVERSITY CAMPUS, KERALA

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### Abstract

A study of the birds of Calicut University Campus Kerala was carried out by direct observations between August 1997 to October 2000. Status and distribution of birds, their habitats and feeding habits were studied. A total of 111 species of birds belonging to 14 orders, 36 families and 83 genera were recorded.

### Keywords

Birds, Calicut University campus, habitat, Kerala

### Introduction

The Indian subcontinent has a rich and diverse avifauna as more than 1200 bird species and 900 subspecies have been described from this region (Ali & Ripley, 1983). Research at community level of birds in the Indian subcontinent is essential, as large-scale changes have been taking place in the natural habitats of birds (Khan *et al.*, 1993). There is a need to study the community structure and dynamics of birds of different areas of this country to investigate the impact of changing natural habitats. The aim of this study is to categorize the avifauna of various habitat types at Calicut University Campus.

### Study Area

Calicut University Campus (10°30'-10°35'N & 75°40'-75°50'E) is situated at a distance of about 25km south of Calicut City, in the Malappuram District of Kerala State. The Campus has an area of 400 acres and a mean altitude of 50m. It is divided into two unequal sectors by National Highway 17. The climate of the study area is hot and humid. The warm season from March to May is followed by the southwest monsoon from June to September. It may continue to rain in October and November but rains cease after December. During southwest monsoon, rainfall is heavy and amounts to more than half of the total rainfall. Temperature in this area varies from 22°-33°C and the annual rainfall is between 2500 and 4000mm. The campus

vegetation has been described by Manilal and Sivarajan (1976). They have recorded 447 species of plants. Joseph and Mathew (1975) recorded 85 species of birds in the study area. However, this study revealed the presence of 111 species of birds. Based on the nature of vegetation, five different types of habitats were distinguished in the main study area and are described below.

**Urban area:** The highly modified area around residential, academic and administrative buildings are systematically watered and cultivated. Natural vegetation is represented by a few species like *Macaranga peltata*, *Chromolena odorata*, *Clerodendrum viscosum*, *Ziziphus oenoplea*, *Bridelia scandens*, *Alstonia scholaris* and introduced trees like *Cocos nucifera*, *Mangifera indica*, *Albizia lebbek* and *Artocarpus hirsutus*.

**Scrub jungle:** Open grass-covered hillocks and scrub jungles with scattered plants and bushes such as *Calicopterys floribunda*, *Memecylon umbellatum*, *Rauvolfia tetraphylla*, *Mimosa pudica*, *Canthium angustifolium* and isolated trees of *Anacardium occidentale*, *Macaranga peltata*, *Acacia auriculiformes* and *Mangifera indica*. In 1980, nearly half of this type of habitat was planted with *Acacia auriculiformes*, *Casuarina equisetifolia* and *Eucalyptus citriodora* as part of the social forestry programme by the Government of Kerala and still thrive well.

**Woodland:** Almost closed canopy woodlands with fairly good undergrowth and a number of wild trees about 8-15m tall like *Strychnos nuxvomica*, *Swietenia mahogany*, *Albizia lebbek*, *Macaranga peltata*, *Alstonia scholaris* and cultivated trees like *Cocos nucifera*, *Anacardium occidentale*, *Artocarpus hirsutus* are found here.

**Secondary jungle:** Uninhabited secondary jungle with some large trees like *Tectona grandis*, *Mangifera indica*, *Alstonia scholaris*, with sparse or no undergrowth, constantly disturbed by removal of vegetation for manuring.

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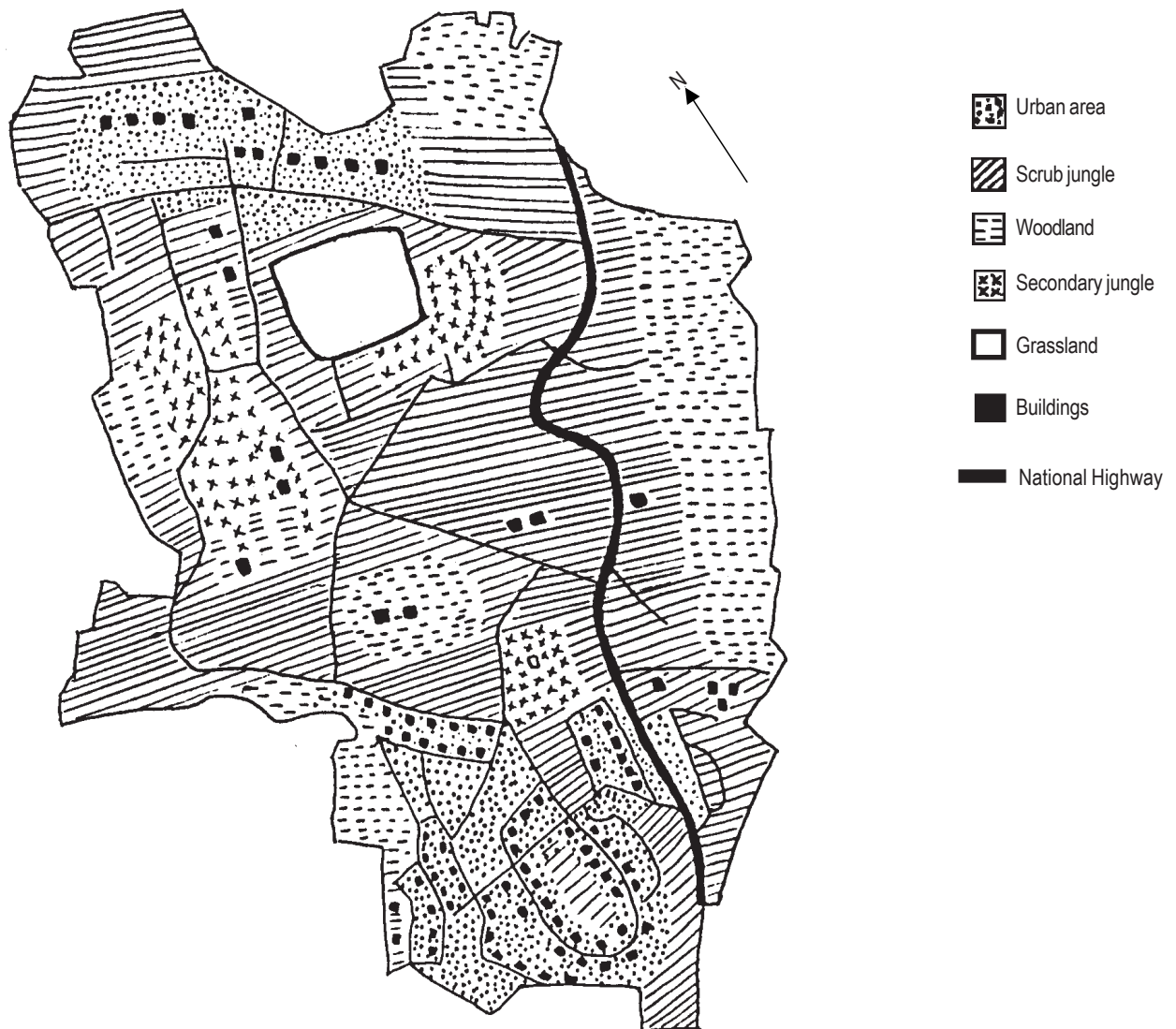


Figure 1. Habitat types identified in the Calicut University Campus

**Grassland:** Open ground, only scanty grass present. This area is affected severely from overgrazing.

### Materials and Methods

A monthly census was carried out on systematically walked routes through the study area and all types of habitats. The time schedule chosen for the study was from 0600 to 1000hr and from 1600 to 1830hr. Observations were carried out with the aid of 8 x 40 binoculars and field characteristics were noted down on special ornithological data sheets. Occurrence of the recorded birds was assessed on the basis of standard methods followed by Khan (1980).

The status was assessed as follows: Very common (VC) - Bird species, that were recorded on 80-100% of the field visits; common (C) - birds that were observed on 50-79% of the field visits; fairly common (FC) - species that were found on 20-49% of the field visits; rare (R) - species that were found in less than 19% of the field visits. Birds sighted during the study period were categorized into breeding birds or residents (B), local migrants (LM), and migrants (M) based on observations and previous records. The birds were also classified into eight categories on the basis of their food habits such as, insectivores (I), nectarivores (N), omnivores (O), scavengers (S), frugivores (F), predators (PR), piscivores (P) and granivores (G). The identified bird species have been listed (Table 1).

**Table 1. Systematic list, with annotations of recorded birds in the study area**

English name	Scientific name	Occurrence	Status	Habitat type	Feeding habit
<u>Ardeidae</u>					
Little Egret	<i>Egretta garzetta</i>	VC	B	2,5	I,P
Cattle Egret	<i>Bubulcus ibis</i>	VC	B	1,2,5	I,P
Pond Heron	<i>Ardeola grayii</i>	VC	B	2,5	I,P
<u>Accipitridae</u>					
Crested Honey buzzard	<i>Pernis ptilorhynchus</i>	FC	B	1,3,4	I,PR
Crested Serpent Eagle	<i>Spilornis cheela</i>	R	B	1,3,4,5	PR
Black Kite	<i>Milvus migrans</i>	C	B	1,3,4,5	S,PR
Brahminy Kite	<i>Haliastur indus</i>	FC	B	1,5	PR
Shikra	<i>Accipiter badius</i>	Vc	B	1,2,3	PR
<u>Cuculidae</u>					
Greater Coucal	<i>Centropus sinensis</i>	VC	B	1,2,3	I,P
<u>Phasianidae</u>					
Grey Francolin	<i>Francolinus pondicerianus</i>	R	B	2	I,G
<u>Rallidae</u>					
White-breasted Waterhen	<i>Amauornis phoenicurus</i>	R	B	2,3,5	I,G
<u>Charadriidae</u>					
Red-wattled Lapwing	<i>Vanellus indicus</i>	VC	B	2,5	I
Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>	C	B	2,5	I
Little-ringed Plover	<i>Charadrius dubius</i>	R	M	2	I
<u>Burhinidae</u>					
Stone Curlew	<i>Burhinus oedicnemus</i>	R	B	2	I
<u>Glareolidae</u>					
Indian Courser	<i>Cursorius coromandelicus</i>	R	B	2	I
<u>Columbidae</u>					
Yellow-legged Green-Pigeon	<i>Treron phoenicoptera</i>	R	LM	3,4	F
Pompadour Green-Pigeon	<i>Treron pompadora</i>	R	LM	2,3	F
Orange-breasted Green-Pigeon	<i>Treron bicincta</i>	R	LM	3	G
Blue Rock Pigeon	<i>Columba livia</i>	C	B	1,2	G
Spotted Dove	<i>Streptopelia chinensis</i>	VC	B	1,2,3	G
Emerald Dove	<i>Chalcophaps indica</i>	FC	B	3,4	F,G
<u>Psittacidae</u>					
Rose-ringed Parakeet	<i>Psittacula krameri</i>	R	B	3	F,G
Blossom-headed Parakeet	<i>Psittacula roseata</i>	FC	B	3,4	F,G
Indian Hanging-Parrot	<i>Loriculus vernalis</i>	R	B	1,3	F,N
<u>Cuculidae</u>					
Asian Koel	<i>Eudynamis scolopacea</i>	C	B	1,2,3	I,F
Brainfever Bird	<i>Hierococcyx varius</i>	FC	B	1,2,3	I,F
Indian Cuckoo	<i>Cuculus micropterus</i>	R	B	2,3	I
Banded-Bay Cuckoo	<i>Cacomantis sonneratti</i>	R	B	2,3	I
Indian Plaintive Cuckoo	<i>Cacomantis passerinus</i>	R	B	2,3	I
Pie Crested Cuckoo	<i>Clamator jacobinus</i>	R	B	2,3	I
<u>Tytonidae</u>					
Barn Owl	<i>Tyto alba</i>	R	B	1	PR
<u>Strigidae</u>					
Eurasian Eagle-Owl	<i>Bubo bubo</i>	R	B	2,3	PR
Jungle Owlet	<i>Glaucidium radiatum</i>	R	B	3,4	I
Mottled Wood-Owl	<i>Strix ocellata</i>	R	B	2,3	I,PR
Brown Hawk-Owl	<i>Ninox scutulata</i>	R	B	3,4	I

English name	Scientific name	Occurrence	Status	Habitat type	Feeding habit
Spotted Owlet	<i>Athene brama</i>	FC	B	3,4	I,PR
<u>Caprimulgidae</u>					
Common Indian Nightjar	<i>Caprimulgus asiaticus</i>	R	B	1,2	I
<u>Apodidae</u>					
House Swift	<i>Apus affinis</i>	C	B	1	I
Asian Palm-Swift	<i>Cypsiurus balasienis</i>	C	B	1	I
<u>Alcedinidae</u>					
Lesser Pied Kingfisher	<i>Ceryle rudis</i>	VC	B	2,3	I,P
White-breasted Kingfisher	<i>Halcyon smymensis</i>	VC	B	1,2,3	I,P
Small Blue Kingfisher	<i>Alcedo atthis</i>	VC	B	1,2,3	I,P
<u>Meropidae</u>					
Blue-tailed Bee-eater	<i>Merops philippinus</i>	FC	M	1,2,5	I
Small Bee-eater	<i>Merops orientalis</i>	C	B	1,2,5	I
<u>Coraciidae</u>					
Indian Roller	<i>Coracias benghalensis</i>	C	B	2,3	I
<u>Upupidae</u>					
Common Hoopoe	<i>Upupa epops</i>	FC	B	1,2,3	I
<u>Capitonidae</u>					
White-cheeked Barbet	<i>Megalaima viridis</i>	VC	B	1,2,3	F,N
Coppersmith Barbet	<i>Megalaima haemacephala</i>	C	B	1,2,3,4	F
<u>Picidae</u>					
Common Golden-backed Woodpecker	<i>Dinopium javanense</i>	VC	B	1,2,3,4	I
Lesser Golden-backed Woodpecker	<i>Dinopium benghalense</i>	C	B	1,2,3	I
Small Yellow-napped Woodpecker	<i>Picus chlorolophus</i>	R	B	3,4	I
Heart-spotted Woodpecker	<i>Hemicircus canente</i>	C	B	3,4	I
Rufous Woodpecker	<i>Celeus brachyurus</i>	R	B	3,4	I
Yellow-fronted Pied Woodpecker	<i>Dendrocopos mahrattensis</i>	R	B	3,4	I
<u>Pitidae</u>					
Indian Pitta	<i>Pitta brachyura</i>	R	M	3	I
<u>Alaudidae</u>					
Bengal Bush-Lark	<i>Mirafra assamica</i>	R	B	2	G,I
Common Crested Lark	<i>Galerida cristata</i>	R	B	2	G,I
<u>Hirundinidae</u>					
Common Swallow	<i>Hirundo rustica</i>	R	M	1,2,3	I
Red-rumped Swallow	<i>Hirundo daurica</i>	R	B	2,3	I
<u>Laniidae</u>					
Bay-backed Shrike	<i>Lanius vittatus</i>	R	B	1,2,3	O
Brown Shrike	<i>Lanius cristatus</i>	R	B	1,2	I
<u>Oriolidae</u>					
Eurasian Golden Oriole	<i>Oriolus oriolus</i>	FC	M	1,2,3,4	I,F,N
Black-headed Oriole	<i>Oriolus xanthomus</i>	C	B	1,2,3,4	I,F,N
<u>Dicruridae</u>					
Black Drongo	<i>Dicrurus macrocercus</i>	VC	B	1,3,4	I,N
Ashy Drongo	<i>Dicrurus leucophaeus</i>	FC	M	1,3,4	I,N
Bronzed Drongo	<i>Dicrurus aeneus</i>	FC	B	3,4	I,N
Greater Racket-tailed Drongo	<i>Dicrurus paradiseus</i>	VC	B	1,3,4	I,N
<u>Artamidae</u>					
Ashy Woodswallow	<i>Artamus fuscus</i>	R	B	1,2	I
<u>Sturnidae</u>					
Common Myna	<i>Acridotheres tristis</i>	VC	B	1,2,3,4	O

English name	Scientific name	Occurrence	Status	Habitat type	Feeding habit
Jungle Myna	<i>Acridotheres fuscus</i>	R	B	2,3	O
Grey-headed Starling	<i>Sturnus malabaricus</i>	FC	M	1,2,3	I,F,N
Rosy Starling	<i>Sturnus roseus</i>	R	M	1,3	I,F
Brahminy Starling	<i>Sturnus pagodarum</i>	FC	B	1,2	O
<u>Corvidae</u>					
House Crow	<i>Corvus splendens</i>	VC	B	1,3	O,S
Jungle Crow	<i>Corvus macrorhynchos</i>	VC	B	1,3	O,S
Grey Treepie	<i>Dendrocitta vagabunda</i>	VC	B	1,2,3,4	I
<u>Campephagidae</u>					
Large Cuckoo-Shrike	<i>Coracina macei</i>	R	B	1,2	I,F
Common Woodshrike	<i>Tephrodornis pondicerianus</i>	R	B	1,2	I
Black-headed Cuckoo-Shrike	<i>Coracina melanoptera</i>	R	B	1,2	I
Small Minivet	<i>Pericrocotus cinnamomeus</i>	FC	B	3,4	I
<u>Irenidae</u>					
Gold-fronted Chloropsis	<i>Chloropsis aurifrons</i>	C	B	3,4	I
Common Iora	<i>Aegithina tiphia</i>	R	B	3	I
<u>Pycnonotidae</u>					
Red-vented Bulbul	<i>Pycnonotus cafer</i>	VC	B	1,2,3	I,F
Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	VC	B	1,2,3	I,F
White-browed Bulbul	<i>Pycnonotus luteolus</i>	R	B	1,2,3	I,F,N
<u>Muscicapinae</u>					
Asian Brown Flycatcher	<i>Muscicapa dauurica</i>	R	B	2,3	I
<u>Turdinae</u>					
Oriental Magpie Robin	<i>Copsychus saularis</i>	VC	B	1,2,3	I
Indian Robin	<i>Saxicoloides fulicata</i>	VC	B	1,2,3	I
Pied Bush Chat	<i>Saxicola caprata</i>	R	B	2,3	I
Orange-headed Thrush	<i>Zoothera citrina</i>	FC	B	3	I
<u>Timaliinae</u>					
Jungle Babbler	<i>Turdoides striatus</i>	VC	B	1,3,4	I,F,G
White-headed Babbler	<i>Turdoides affinis</i>	VC	B	1,2	I,F
<u>Sylviinae</u>					
Blyth's Reed-warbler	<i>Acrocephalus dumetorium</i>	R	M	2	I
Ashy Prinia	<i>Prinia socialis</i>	R	B	1,2	I
Greenish Leaf-warbler	<i>Phylloscopus trochiloides</i>	R	M	1,3	I
Common Tailor Bird	<i>Orthotomus sutorius</i>	R	B	1,2	I
<u>Monarchinae</u>					
Asian Paradise Flycatcher	<i>Terpsiphone paradisi</i>	FC	M	3	I
<u>Rhipidurinae</u>					
White-browed Fantail Flycatcher	<i>Rhipidura aureola</i>	C	B	2,3	I
<u>Motacillidae</u>					
Paddyfield Pipit	<i>Anthus rufulus</i>	FC	B	2,5	I
Large Pied Wagtail	<i>Motacilla maderaspatensis</i>	FC	B	2,5	I
Grey Wagtail	<i>Motacilla cinerea</i>	R	M	2,5	I
<u>Dicaeidae</u>					
Tickell's Flowerpecker	<i>Dicaeum erythrorhynchos</i>	C	B	1,3	F
<u>Nectariniidae</u>					
Purple-rumped Sunbird	<i>Nectarinia zeylonica</i>	C	B	1,2,3,4	I
Loten's Sunbird	<i>Nectarinia lotenia</i>	C	B	1,3,4	I,N
Purple sunbird	<i>Nectarinia asiatica</i>	C	B	1,2,3	I,N
<u>Passerinae</u>					
House Sparrow	<i>Passer domesticus</i>	VC	B	1,2,5	O

English name	Scientific name	Occurrence	Status	Habitat type	Feeding habit
<b>Ploceinae</b>					
Baya Weaver	<i>Ploceus philippinus</i>	R	B	1,3	I,G
<b>Estrildidae</b>					
White-rumped Munia	<i>Lonchura striata</i>	FC	B	1,2	G
Spotted Munia	<i>Lonchura punctulata</i>	R	B	1,2	I,G
Black-headed Munia	<i>Lonchura malacca</i>	R	B	2	G

VC - Very common; FC - fairly common; R - rare; B - breeding birds or residents; LM - local migrants; M - migrants; I - insectivores; N - nectarivores; O - omnivores; S - scavenger; F - frugivores; PR - predator; P - piscivores; G - granivores

\*Systematic list follows Ali (1996); English names according to Manakadan and Pittie (2001).

## Results and Discussion

During the study period, a total of 111 species of birds were recorded, belonging to 14 orders, 36 families and 83 genera, which comprised 55 non passerine and 56 passerine species. Out of 111 species, 96 were resident, three were local migrants and 12 migrants. Twenty-five species were found to be very common, and 19 fairly common while 49 were rare. Of these, the Grey Partridge and the Indian Courser were found only four and two times respectively.

Many bird species use more than one habitat in the study area, 74 species use the mixed woodland, 73, 62, 28 and 15 species use the scrub jungle, urban area, secondary jungle and grassland, respectively. The mixed woodland supports a higher number of species than the other vegetation types, mainly because the mixed woodland was structurally different from other vegetation types, as it was multi-storied and average tree heights ranging between 8-15m with emergents going up to 20m, and had more plant species in the tree layer and several shrub species. This idea is also supported by MacArthur and MacArthur (1961), and MacArthur *et al.* (1962), based on their findings from temperate region where structural complexity of habitat has been found to be the main factor in controlling the bird species diversity.

During the study, birds with diverse food habits were observed, viz., insectivores (84 spp.), nectarivores (12 spp.), omnivores (7 spp.), scavengers (3 spp.), frugivores (21 spp.), predators (9 spp.), piscivores (6 spp.), and granivores (15 spp.). Although more than 70% of the birds in the study area were insectivores, food competition was reduced by the utilization of different habitat types, feeding behaviour, and food items. When insect food was in shortage particularly during the months of December, January and February, largely insectivorous birds like babblers and drongos fed on fruits and seeds of plants like *Macaranga peltata*, *Lantana aculeata*, *Acacia auriculiformes* and nectar of *Erythrina indica*

(Zacharias & Mathew, 1988), thus reducing the extent of food competition. Though Calicut University Campus is subjected to maximum human interference, both direct and indirect, including collection of firewood, cattle grazing, building construction etc, the campus supports a large variety of birds. If the destruction of habitat is continued at the present rate, the bird fauna of the campus will be adversely affected.

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