



BIRDS OF SACRED GROVES OF NORTHERN KERALA, INDIA

K.M. Jyothi¹ & P.O. Nameer²ISSN 0974-7907 (Online)
ISSN 0974-7893 (Print)^{1,2}Centre for Wildlife Sciences, College of Forestry, Kerala Agricultural University, Thrissur, Kerala 680656, India
¹jyokrish25@gmail.com, ²nameer.po@kau.in (corresponding author)

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Abstract: Sacred groves are patches of vegetation preserved due to religious or cultural tradition. They are protected through spiritual beliefs. Sacred groves provide an excellent abode to the biodiversity of the region where they are located. Scientific exploration of fauna from sacred groves of India is few and far between. The present study was conducted to explore the bird diversity and abundance in 15 selected sacred groves of northern Kerala, eight from Kannur District and seven from Kasargod District each. A total of 111 bird species were observed belonging to 49 families and 16 orders. The sacred groves of northern Kerala support many of the 'forest-birds' such as the Grey Junglefowl *Gallus sonneratii*, Asian Fairy-bluebird *Irena puella*, Tickell's Blue-flycatcher *Cyornis tickelliae*, Malabar Trogon *Harpactes fasciatus*, Heart-spotted Woodpecker *Hemicircus canente*, Malabar Whistling-Thrush *Myophonus horsfieldii*, Little Spiderhunter *Arachnothera longirostra*, etc. The sacred groves of northern Kerala also support two endemic bird species of the Western Ghats, such as the Malabar Grey Hornbill *Ocyrceros griseus* and Rufous Babbler *Turdoides subrufa*. Five species of raptors and four owl species were reported from the sacred groves of north Kerala during the present study. The breeding of the White-bellied Sea-Eagle has been reported at Edayilakadu Kavu, a sacred grove in Kasargod District. The sacred groves of northern Kerala also supported 17 species of long distant migratory birds. Thazhe Kavu, recorded the Black-headed Ibis *Threskiornis melanocephalus*, a Near-Threatened bird according to IUCN.

Keywords: Bird community, endemism, line transect method, migratory birds, point count, sacred groves, Western Ghats.

Sacred groves are age old luxuriant patches of vegetation preserved for deity (Gadgil & Vartak 1974). They are protected through 'social fencing' (Khumbongmayum et al. 2005), rather than any law imposed by government for the protection of forests. It is believed that the cutting of trees or harming any animal in sacred groves leads to the wrath of the deity (Gadgil & Vartak 1974; Dagal et al. 2007; Samati & Gogoi 2007).

India is exceptionally rich in sacred groves with around 13,720 sacred groves spread across 19 States (Malhotra et al. 2001). The state of Kerala harbours 1500 to 2000 sacred groves, the extent of which varies from 0.004ha to >20ha (Menon 1997). Induchoodan (1998) reported 361 sacred groves in Kerala having an area of more than 0.02ha. Many small sacred groves have been lost in recent years and no recent data are available to assess their status.

Sacred groves are locally known as 'kavu' in Malayalam. There are different terminologies associated with the kavu depending upon the deity being worshipped at different sacred groves. These include 'Ayyappan Kavu' where the deity is lord Ayyappan, 'Bhagavathy Kavu' where the deity is goddess Bhagavathy, 'Muthappan Kavu' if the deity is Muthappan, incarnation of Lord



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Shiva, and if the deity is a serpent it is called 'Sarpa Kav'u', 'Naga Kav'u' or 'Nagam'. There are also sacred groves dedicated to spirits, demons or ancestors called 'Yakshi Kav'u' (Malhotra et al. 2001). Sacred groves are managed either by individual families, groups of families or by the statutory agencies for temple management, the Devaswom Boards (Chandrashekara & Sankar 1998).

STUDY AREA AND METHODS

Study area

The present study was conducted at 15 sacred groves, eight in Kannur District and seven in Kasargod District of northern Kerala (Fig. 1).

Methods

The point count method as well as the line transect methods were used for studying the birds in the sacred groves (Bibby et al. 1992; Sashikumar 2004). For sacred groves that are less than 3ha (small-sized sacred groves) the point count method was used, while the line transect method was used to study the birds in bigger sacred groves (>3ha). Out of the 15 sacred groves studied, five were small and 10 big.

All the birds that were encountered (including those heard) were recorded for three hours each from 07:00–10:00 hr and from 15:00–18:00 hr. The details recorded include species of birds, number of individuals

and the distance from the point of observation. This bird count was repeated once every two months at each of the sacred groves for two years from March 2012 to December 2013.

The birds were identified using binoculars (10x50) and field guides of Ali & Ripley (1987), Grimmett et al. (1998), Kazmierczak (2000), and Rasmussen & Anderton (2012).

The relative abundance of bird species were worked out from encounter rates per 100 hours. Shannon index and Simpson index were calculated to know species diversity and species richness. Bird species were categorised into resident (R), migratory (M), endemic (E), forest edge (FE) and forest interior (FI) species. A resident species is one that is known to breed within Kerala's boundaries (Ali 1969; Sashikumar et al. 2011); migratory birds are ones that are non-breeding visitors to Kerala's limits (Grimmett & Inskipp 2005); endemic are those that are restricted in distribution and confined only to the Western Ghats; forest edge species are the ones that are seen in forest fringes and ecotones; while forest interior species are those that require pristine forests or a significant area of undisturbed forest (Sashikumar 2004). Birds were also assigned to various feeding guilds such as aerial (AER), aquatic (AQ), bark surface feeders (BAR), canopy insectivores (CAN), carnivores (CAR), granivorous (GRA), frugivores (FRU), nectarivore-

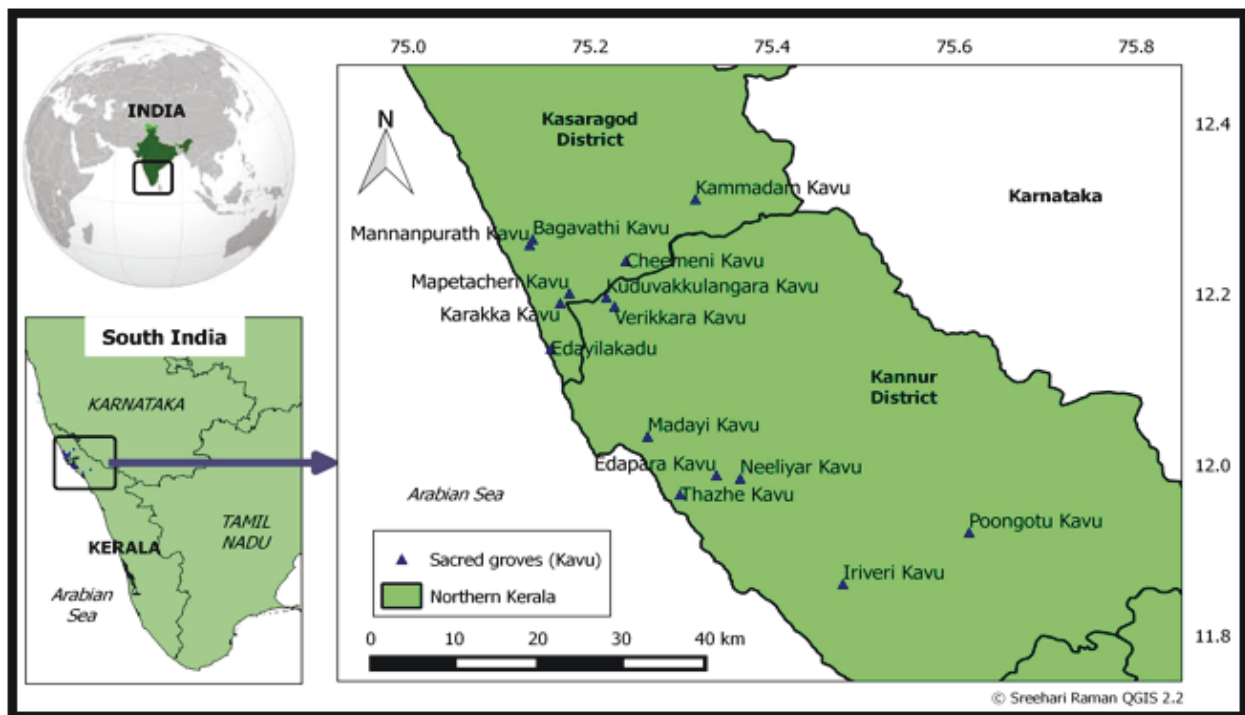


Figure 1. Study area in northern Kerala

insectivores (NEC), omnivores (OMN), piscivores (PIS), terrestrial insectivores (TER), understory insectivores (UND), modified after Raman et al. (1998) and Praveen & Nameer (2009). The whole two year long bird data per transect from the sacred groves of northern Kerala were uploaded into a web-based forum (www.ebird.org) for public access.

RESULTS AND DISCUSSION

Species Diversity Analysis

A total of 107 bird species were observed belonging to 48 families and 17 orders in 15 selected sacred groves of Kannur and Kasargod districts of northern Kerala (Tables 1 & 3). As for the taxonomic sequence and English /scientific names we follow the IOC's World Checklist version 4.3 (Gill & Donsker 2014). Highest species richness was found in Cheemeni Kavu (55) followed by Verikkara Kavu (54) and Mapetachery Kavu (46), while the maximum individuals of birds were seen at Thazhe Kavu (2237) followed by Mapetachery Kavu

(1926) and Madayi Kavu (1617). Bird species diversity was more in Cheemeni Kavu with a Shannon index of 1.51 and a Simpson index of 0.96 (Table 2). While the bird species diversity was lower at Edayilekadu having a Shannon index and Simpson index, 1.17 and 0.89 respectively. The maximum species diversity that was found in Cheemeni Kavu may have been due to the undisturbed condition of the sacred grove.

Twenty-five percent of the birds of the sacred groves of northern Kerala, were forest birds. These include Little Spiderhunter *Arachnothera longirostra*, Malabar Trogon *Harpactes fasciatus*, Malabar Whistling-Thrush *Myophonus horsfieldii*, Grey Junglefowl *Gallus sonneratii*, Asian Fairy-bluebird *Irena puella*, Tickell's Blue-flycatcher *Cyornis tickelliae*, etc. (Ali 1969; Ripley 1982; Ali & Ripley 1987; Rasmussen & Anderton 2012). However, in an earlier study on the birds of sacred groves Sashikumar (2004) reported the occurrence of 50% of forest birds in the sacred groves of northern Kerala.

The sacred groves also support good populations of

Table 1. Study locations selected in northern Kerala

	Name of the sacred grove	Co-ordinates	Altitude (m)	Aerial Distance from the reserve forest (km)	Area of sacred grove (ha)	Vegetation	Neighbouring vegetation	Water source
1	Kammadam Kavu (Kasargod)	12°18'41.0"N & 75°18'55.8"E	85	3.56	24.40	Evergreen with fresh water myristica swamp	Rubber, banana, coconut and areca nut plantations	Perennial Stream
2	Bagavathi Kavu (Kasargod)	12°15'51.84"N & 75°08'11.8"E	8	16.50	1.92	Semi-evergreen type	Homesteads	Well
3	Mannanpurath Kavu (Kasargod)	12°15'27.6"N & 75°07'59.4"E	8	17	2.80	Semi-evergreen type	Homesteads	Pond
4	Cheemeni Kavu (Kasargod)	12°14'20.7"N & 75°14'20.7"E	99	11.30	4	Semi-evergreen type	Paddy fields and homesteads	Pond
5	Mapetachery Kavu (Kasargod)	12°12'04.3"N & 75°10'36.8"E	17	18	4	Evergreen	Paddy fields, Homesteads	Pond
6	Karakka Kavu (Kasargod)	12°11'22.2"N & 75°10'00.8"E	19	20	3.05	Evergreen	Homesteads	Pond
7	Kuduvakolangara Kavu (Kasargod)	12°11'45.88"N & 75°13'03.24"E	24	14	3.40	Semi evergreen	Homesteads	Well
8	Verikkara Kavu (Kannur)	12°11'08.6"N & 75°13'36.0"E	20	17	4.40	Moist deciduous	Paddy field, rubber plantation	Rain-fed stream and Well
9	Edayilekadu (Kasargod)	12°08'10.72"N & 75°09'23.88"E	14	20	6.40	Evergreen	Paddy fields and Homesteads	Pond
10	Madayi Kavu (Kannur)	12°01'59.7"N & 75°15'46.5"E	43	35	1.6	Moist deciduous	Homesteads and Grassland	Well and rain-fed stream
11	Edapara Kavu (Kannur)	11°59'16.2"N & 75°20'18.7"E	16	11.30	2.80	Semi evergreen	Cashew Plantation and homesteads	Well
12	Neeliyar Kavu (Kannur)	11°59'02.6"N & 75°21'53.1"E	31	30	8.07	Evergreen	Homesteads	Wells
13	Thazhe Kavu (Kannur)	11°57'54.6"N & 75°17'54.5"E	3	38	7.52	Mangrove	Paddy fields	Well and pond
14	Poongotu Kavu (Kannur)	11°55'14.7"N & 75°36'58.9"E	90	13	14.60	Fresh water myristica swamp	Rubber plantation, homesteads, paddy field	Perennial Stream
15	Iriveri Kavu (Kannur)	11°51'36.9"N & 75°28'39.4"E	42	18	2.12	Semi evergreen	Homestead	Pond

Table 2. Bird species richness and diversity in the sacred groves of northern Kerala.

Camp	Mannapurath Kavu	Cheemeni Kavu	Mapetachery Kavu	Karakka Kavu	Bagavathy Kavu	EdayilaKadu	Kammadam Kavu	Madayi Kavu	Thazhe Kavu	Edapara Kavu	Iriveri Kavu	Poongotu Kavu	Neeliyar Kavu	Verikkara Kavu	Kudakolangara Kavu
No of Species	35	55	46	40	23	31	44	43	42	36	36	36	32	54	37
Abundance	1069	1926	1249	1464	866	1224	1236	1617	2237	1282	1200	827	1316	1738	1574
Shannon Index (log base 10)	1.33	1.51	1.40	1.36	1.19	1.17	1.45	1.43	1.36	1.34	1.27	1.32	1.28	1.39	1.42
Simpson Index (D)	0.06	0.04	0.05	0.06	0.08	0.11	0.05	0.05	0.06	0.06	0.09	0.07	0.08	0.07	0.05
Inverse Simpson Index (1/D)	16.66	23.19	18.42	17.52	12.78	9.08	20.17	18.25	17.36	16.77	11.73	14.77	13.32	14.16	21.16
Gini Simpson Index (1-D)	0.94	0.96	0.95	0.94	0.92	0.89	0.95	0.95	0.94	0.94	0.91	0.93	0.92	0.93	0.95

the birds of prey belonging to the families Acciptridae and Strigidae. Five species of raptors and four species of owls were recorded during the present study, while Sashikumar (2004) reported seven species of raptors and five species of owls.

Edayilekadu sacred grove acted as the nesting site for the White-bellied Sea-Eagle *Haliaeetus leucogaster*, the breeding of which was reported from the area in 2000 (Palot 2011), and it may be considered as a good sign that this species continues to breed at this sacred grove even now. Nocturnal birds of prey sighted were Brown Fish-Owl *Bubo zeylonensis*, Mottled Wood-Owl *Strix ocellata*, Brown Wood-Owl *Strix leptogrammica* and Spotted Owlet *Athene brama*. Sashikumar (2004), Deb et al. (1997) and Deb (2007) opined that sacred groves provide a habitat for the roosting and nesting of many raptors.

It is interesting to note that all 15 sacred groves supported migratory birds and 13 species were sighted during the present study (Table 3). Sacred groves also help in the conservation of endemic birds; in the present study two species endemic to the Western Ghats were observed. The Malabar Grey Hornbill was sighted from Kammadam Kavu and Poongotu Kavu, while Rufous Babblers were found at Kammadam Kavu, Kuduvakolangara Kavu and Verikkara Kav.

Sashikumar (2004) however had reported four species of endemic birds from the sacred groves of northern Kerala. Apart from the above two species, he reported the presence of the Grey-headed Bulbul *Pycnonotus priocephalus* and the Small Sunbird *Leptocoma minima*,

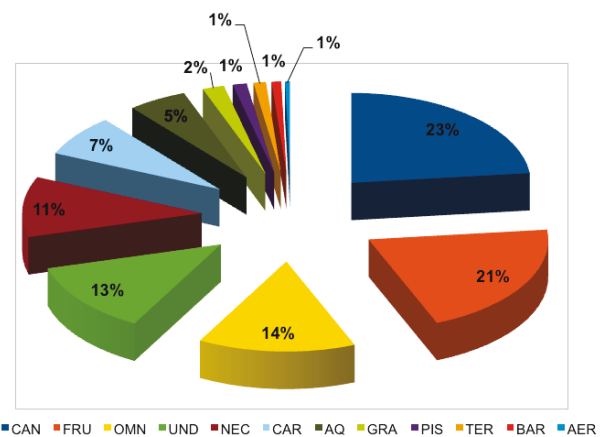


Figure 2. Overall Feeding guild structure of birds in the sacred grove of northern Kerala

which we did not sight during the present study. The sacred groves also support threatened bird species. The Thazhe Kav, recorded the Black-headed Ibis *Threskiornis melanocephalus*, a Near-Threatened bird according to IUCN Red List of Threatened Species.

Feeding guild structure

The overall feeding guild structure is given in Fig. 2 and the feeding guild details of the different sacred groves are given in Fig. 2. Canopy insectivores and frugivores were the dominant feeding guilds accounting for 23% and 21%, respectively while Omnivorous, Understorey

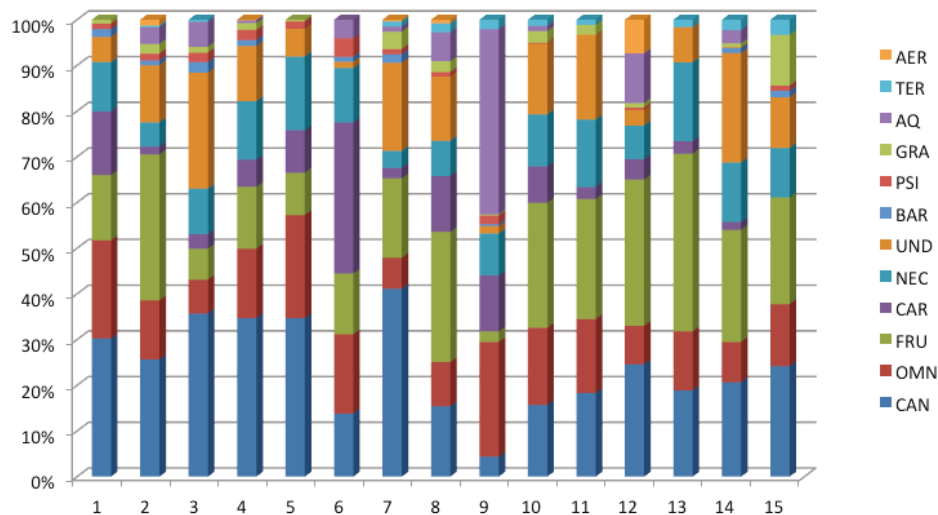


Figure 3. Feeding guild structure in the sacred groves of northern Kerala

dependants and nectarivorous-insectivorous feeding guilds accounted for 14%, 13% and 11% respectively.

CONCLUSION

Social fencing of sacred groves provides excellent protection to the biodiversity of the locality; they help in supporting diverse species of birds, including raptors, owls, forest birds, endemic birds, threatened birds as well as migratory birds. The results of the present study thus signifies the importance of the sacred groves in bird conservation. These small repositories of biodiversity should be conserved at any cost. Many of these sacred groves are under different kinds of threats such as dumping of waste including plastic, encroachment, people extensively using the trails passing through the sacred groves as short-cuts to their destination and general quality deterioration due to the urbanisation of the surrounding areas. Unless urgent steps are taken towards the conservation of these crucial island repositories of biodiversity, we might lose them in the near to medium-term future. This could also lead to socio-cultural and environmental problems.

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Table 3. Checklist and relative abundance of birds found in the sacred groves of northern Kerala

	Order/Family/Common name	Scientific name	Status	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Overall
I	Galliformes/ Phasianidae																		
1	Red Spurfowl	<i>Galloperdix spadicea</i>	FE/R								19		18	14		22	30	13	8
2	Grey Junglefowl	<i>Gallus sonneratii</i>	F/R			5				14							9	40	4
II	Ciconiiformes/Ciconiidae																		
3	Asian Openbill	<i>Anastomus oscitans</i>	R														3		0
III	Pelecaniformes/Threskiornithidae																		
4	Black-headed Ibis	<i>Threskiornis melanocephalus</i>	R									57							3
IV	Pelecaniformes/Ardeidae																		
5	Indian Pond Heron	<i>Ardeola grayii</i>	R		29	27	3	30	5				134		45		6		16
6	Cattle Egret	<i>Bubulcus ibis</i>	R		17	22		7				67			33		18		10
7	Purple Heron	<i>Ardea purpurea</i>	R			3		7				26							2
8	Great Egret	<i>Ardea alba</i>	R		4							5							0
9	Intermediate Egret	<i>Ardea intermedia</i>	R			5											3		1
10	Little Egret	<i>Egretta garzetta</i>	R									31			8				2
V	Suliformes/Phalacrocoracidae																		
11	Little Cormorant	<i>Microcarbo niger</i>	R		13		5			5					4				2
VI	Accipitriformes/Accipitridae																		
12	Crested Serpent Eagle	<i>Spilornis cheela</i>	R			5				9			3	4	4		3		2
13	Shikra	<i>Accipiter badius</i>	R	3	13	3	8	10					3	4	4		6		4
14	Black Kite	<i>Milvus migrans</i>	R	110	17	14	8	59	40	19	103	139	15	14	29	11	12		38
15	Brahminy Kite	<i>Haliastur indus</i>	R	38		19	69	10	323		96	129	82	11		25	9		56
16	White-bellied Sea Eagle	<i>Haliaeetus leucogaster</i>	R						27			5							2
VII	Gruiformes/Rallidae																		
17	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	R		4	3			7								6		3
18	Ruddy-breasted Crake	<i>Zapornia fusca</i>	R									15							1
VIII	Charadriiformes/Charadriidae																		
19	Red-wattled Lapwing	<i>Varellus indicus</i>	R		4	11				5	103	175	15				15		19
IX	Charadriiformes/Scolopacidae																		
20	Common Sandpiper	<i>Actitis hypoleucos</i>	M									196							9
X	Charadriiformes/Laridae																		

	Order/Family/Common name	Scientific name	Status	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Overall
21	Whiskered Tern	<i>Chlidonias hybrida</i>	M									160							7
XI	Columbiformes/Columbidae																		
22	Rock Pigeon	<i>Columba livia</i>	R	9	21	14	22	3			22	5				6			7
23	Spotted Dove	<i>Streptopelia chinensis</i>	R		21	3				47	16		32	18		6		88	14
24	Emerald Dove	<i>Chalcophaps indica</i>	FE/R							19			6		4				2
XII	Cuculiformes/Cuculidae																		
25	Greater Coucal	<i>Centropus sinensis</i>	R	72	63	62	71	63	106	5	58	36	38	36	12	25	76	75	55
26	Blue-faced Malkoha	<i>Phaenicophaeus viridirostris</i>	FE/R		4						16						46	9	5
27	Asian Koel	<i>Eudynamis scolopaceus</i>	R	41	34	5	38	24	50		29	31	9	7		18	12	13	21
28	Banded Bay Cuckoo	<i>Cacomantis sonneratii</i>	FE/R											7					0
XIII	Strigiformes/Strigidae																		
29	Brown Fish Owl	<i>Ketupa zeylonensis</i>	R	6															0
30	Mottled Wood Owl	<i>Strix ocellata</i>	R				3												0
31	Brown Wood Owl	<i>Strix leptogrammica</i>	R		4														0
32	Spotted Owlet	<i>Athene brama</i>	R						17										1
XIV	Apodiformes/Apodidae																		
33	Indian House Swift	<i>Apus affinis</i>	R				3								53				3
XV	Trogoniformes/Trogonidae																		
34	Malabar Trogon	<i>Harpactes fasciatus</i>	F/R							5									0
XVI	Coraciiformes/Coraciidae																		
35	Indian Roller	<i>Coracias benghalensis</i>	R						13		13	5							2
XVII	Coraciiformes/Alcedinidae																		
36	Stork-billed Kingfisher	<i>Pelargopsis capensis</i>	R						10			10							1
37	White-throated Kingfisher	<i>Halcyon smyrnensis</i>	R	6	21	24	27	14	40	14	16	21	3		4	3	18	14	14
38	Common Kingfisher	<i>Alcedo atthis</i>	R		8	3	5					10							2
XVIII	Coraciiformes/Meropidae																		
39	Green Bee-eater	<i>Merops orientalis</i>	R	38	63		8		7		45	21	20	11	12	18	18	17	17
40	Blue-tailed Bee-eater	<i>Merops philippinus</i>	M	25		5					10	15				6			4
XIX	Bucerotiformes/Bucerotidae																		
41	Malabar Grey Hornbill	<i>Ocyrocus griseus</i>	F/E/R							19					4				1

	Order/Family/Common name	Scientific name	Status	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Overall
XX	Piciformes/Megalauidae																		
42	White-cheeked Barbet	<i>Psilopogon viridis</i>	R	75	134	65	118	77	53	42	77	21	88	39	53	73	49	66	71
43	Coppersmith Barbet	<i>Psilopogon haemacephalus</i>	R				3	3			6			4					1
XXI	Piciformes/Picidae																		
44	Heart-spotted Woodpecker	<i>Hemicircus canente</i>	F/R		8											12	18		2
45	Lesser Golden-backed Woodpecker	<i>Dinopium benghalense</i>	R	19	13	30	19		7	23		10				6			9
46	Greater Golden-backed Woodpecker	<i>Chrysocolaptes lucidis</i>	FE/R						7										0
47	Rufous Woodpecker	<i>Micropternus brachyurus</i>	FE/R															4	0
XXII	Psittaciformes/Psittacidae																		
48	Vernal Hanging Parrot	<i>Loriculus vernalis</i>	FE/R		8					14						6	26		3
49	Rose-ringed Parakeet	<i>Psittacula krameri</i>	R		163				110	28									18
50	Plum-headed Parakeet	<i>Psittacula cyanocephala</i>	FE/R		4					47									3
XXIII	Passeriformes/Pittidae																		
51	Indian Pitta	<i>Pitta brachyura</i>	FE/M	3										7					1
XXIV	Passeriformes/Artamidae																		
52	Ashy Woodswallow	<i>Artamus fuscus</i>	R		25					5					8				2
XXV	Passeriformes/Aegithinidae																		
53	Common Iora	<i>Aegithina tiphia</i>	R	6	38	19	25		3		32	15	23	18		40	12	13	17
XXVI	Passeriformes/Campophagidae																		
54	Black-headed Cuckooshrike	<i>Lalage melanoptera</i>	R										3						0
55	Small Minivet	<i>Pericrocotus cinnamomeus</i>	R		13										8				1
56	Scarlet Minivet	<i>Pericrocotus flammeus</i>	FE/R		8					5				7				9	2
XXVII	Passeriformes/Laniidae																		
57	Brown Shrike	<i>Lanius cristatus</i>	M	3													6		1
XXVIII	Passeriformes/Oriolidae																		
58	Indian Golden Oriole	<i>Oriolus kundoo</i>	M	13	13	24	27	52		42	19				8		18		15
59	Black-headed Oriole	<i>Oriolus xanthornus</i>	R		8	54	5	3		42	22		3	7	16	7		48	14
XXIX	Passeriformes/Dicruridae																		
60	Black Drongo	<i>Dicrurus macrocerus</i>	R	25	63	62	88	14	13	61	10		26	36	70	22	27	57	39
61	Ashy Drongo	<i>Dicrurus leucophaeus</i>	M	16	13	14	14		23	14	6			11				26	9

	Order/Family/Common name	Scientific name	Status	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Overall
62	Bronzed Drongo	<i>Dicrurus aeneus</i>	FE/R							98							9		6
63	Greater Racket-tailed Drongo	<i>Dicrurus paradiseus</i>	R	53	75	98	143	77		70	19		50	61	33	55	55	62	59
XXX	Passeriformes/Monarchidae																		
64	Black-naped Monarch	<i>Hypothymis azurea</i>	FE/R		42	35			23	23					37	7		18	12
65	Indian Paradise-flycatcher	<i>Terpsiphone paradisi</i>	M	9	29	11	16		23	9	6		9	4		7		13	9
XXXI	Passeriformes/Corvidae																		
66	Rufous Treepie	<i>Dendrocitta vagabunda</i>	R	88	46	122	113	105	7	108	16	10	32	32	12	33	125	62	64
67	House Crow	<i>Corvus splendens</i>	R	116	46	24	137	56	100		39	206	108	25	20	44	55	70	70
68	Large-billed Crow - Indian Jungle	<i>Corvus macrorhynchos culminatus</i>	R		8	3				5	26	129		136	16	98	3	4	25
XXXII	Passeriformes/Alaudidae																		
69	Malabar Lark	<i>Galerida malabarica</i>	R								13	15							2
XXXIII	Passeriformes/Pycnonotidae																		
70	Black-crested Bulbul - Flame-throated	<i>Pycnonotus melanicterus gularis</i>	FE/R													4			0
71	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	R	50	121	3	77				253	31	146	257	61	247	319	193	119
72	Red-vented Bulbul	<i>Pycnonotus cafer</i>	R	28	188					37	42		23		8	18	6		21
73	White-browed Bulbul	<i>Pycnonotus luteolus</i>	R		4	5	3				77		79			73	30	57	23
74	Yellow-browed Bulbul	<i>Acritillas indica</i>	F/R		8	14				19	6		15	18	139	102	18	26	23
XXXIV	Passeriformes/Hirundinidae																		
75	Barn Swallow	<i>Hirundo rustica</i>	M								6								0
76	Wire-tailed Swallow	<i>Hirundo smithii</i>	M								6								0
XXXV	Passeriformes/Phylloscopidae																		
77	Greenish Leaf Warbler	<i>Seicercus trachiloides</i>	M	3	8		33	10	7	19	6		26	21		36			12
XXXVI	Passeriformes/Acrocephalidae																		
78	Blyth's Reed Warbler	<i>Acrocephalus dumetorum</i>	M											7					0
XXXVII	Passeriformes/Cisticolidae																		
79	Grey-breasted Prinia	<i>Prinia hodgsonii</i>	R				5				13					11			2
80	Ashy Prinia	<i>Prinia socialis</i>	R									10							0
81	Plain Prinia	<i>Prinia inornata</i>	R	3											4				1
82	Common Tailorbird	<i>Orthotomus sutorius</i>	R	19	17	41	19	3	13	14	80	5	23	57	4	22	39	75	30
XXXVIII	Passeriformes/Pellorneidae																		

	Order/Family/Common name	Scientific name	Status	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Overall
83	Puff-throated Babbler	<i>Pellorneum ruficeps</i>	FE/R		13	109	44				45		26	21	8	11	33	31	26
XXXX	Passeriformes/Leiothrichidae																		
84	Rufous Babbler	<i>Argya subrufa</i>	FE/R/E							42							43	18	6
85	Jungle Babbler	<i>Turdoides striata</i>	R							154							27		10
86	Yellow-billed Babbler	<i>Turdoides affinis</i>	R		96	120	58	28			29		129	64			213		55
XL	Passeriformes/Irenidae																		
87	Asian Fairy-bluebird	<i>Irena puella</i>	FE/R	3															0
XLI	Passeriformes/Sturnidae																		
88	Hill Myna - Southern	<i>Gracula religiosa indica</i>	FE/R							9									0
89	Common Myna	<i>Acridotheres tristis</i>	R	44	42	5	16	77	7	28	35	191	70		20	4	21	66	38
90	Chestnut-tailed Starling	<i>Sturnia malabarica</i>	M		96					47									8
XLII	Passeriformes/Turdidae																		
91	Orange-headed Thrush - White-throated	<i>Geokichia citrina cyanota</i>	FE/R	9	50	35	16	3	3	5	6		3	11	4	11	12	9	12
92	Malabar Whistling Thrush	<i>Myophonus horsfieldii</i>	F/R							5									0
XLIII	Passeriformes/Muscicapidae																		
93	Indian Robin	<i>Saxicolaoides fulvicaetus</i>	R		13														1
94	Oriental Magpie Robin	<i>Copsychus saularis</i>	R	25	59	22	36	21			55	10	12	57	4	47	52	44	30
95	Brown-breasted Flycatcher	<i>Muscicapa muttui</i>	F/M			5		14											1
96	Tickell's Blue Flycatcher	<i>Cyornis tickelliae</i>	FE/R							14									1
XLIV	Passeriformes/Chloropseidae																		
97	Jerdon's Leafbird	<i>Chloropsis jerdoni</i>	R/F	3	8	3									8		6		2
98	Golden-fronted Leafbird	<i>Chloropsis aurifrons</i>	FE/R		42											25	21	35	7
XLV	Passeriformes/Dicaeidae																		
99	Pale-billed Flowerpecker	<i>Dicaeum erythrorhynchos</i>	R				14					5	6				4	9	3
100	Plain Flowerpecker	<i>Dicaeum concolor</i>	F/R														6		0
XLVI	Passeriformes/Nectariniidae																		
101	Purple-rumped Sunbird	<i>Leptocoma zeylonica</i>	R	91	80	98	135	115	116	23	83	160	100	111	61	116	131	75	101
102	Purple Sunbird	<i>Cinnyris asiaticus</i>	R	16	25	5	8			14	10	10	6	18		15	33		11
103	Loten's Sunbird	<i>Cinnyris lotenius</i>	R	9		11	33	24	30		32	31	35	50		95	46	84	32

	Order/Family/Common name	Scientific name	Status	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Overall
104	Little Spiderhunter	<i>Arachnothera longirostra</i>	F/R			14				9						3	3	13	3
XLVII	Passeriformes/Estrildidae																		
105	White-rumped Munia	<i>Lonchura striata</i>	R											7	8	3	3	88	6
XLVIII	Passeriformes/Motacillidae																		
106	White-browed Wagtail	<i>Motacilla maderaspatensis</i>	R		8														0
107	Paddyfield Pipit	<i>Anthus rufulus</i>	R									31							1
		<i>Total</i>		1078	1976	1285	1480	866	1227	1240	1624	2237	1285	1211	831	1327	1750	1582	1381

1 - Mannanpurath Kavay; 2 - Cheemini Kavay; 3 - Mapetachery Kavay; 4 - Karakka Kavay; 5 - Bagavathy Kavay; 6 - Edayilakadu; 7 - Kammadam Kavay; 8 - Thazhe Kavay; 9 - Madayi Kavay; 10 - Edapara Kavay; 11 - Irivveri Kavay;

12 - Poongotu Kavay; 13 - Neeliyar Kavay; 14 - Verikkara Kavay; 15 - Kudakolangara Kavay.

R - Resident birds; M - Migratory birds; E - Endemic birds; FI - Forest interior birds; FE - Forest edge birds.

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