



Bird Diversity of Thattekkad Bird Sanctuary, Kerala, India

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Abstract

A total of 12176 individuals belonging to 134 bird species were recorded from August 2017 to December 2018 in four fixed line transects comprised of Kootikkal (n = 3718), Watchtower (n = 2960), Bharanikuzhi (n = 2421), and Urulanthanni (n = 3077). Highest number of individuals were recorded in December 2018 (n = 1013), followed by October 2018 (n = 945), November and January 2018 (n = 943). The highest number of individual bird species were recorded in four transects includes Greater racket tailed drongo (n = 886), Yellow browed bulbul (n = 765), Heart-spotted woodpecker (n = 632), Hill myna (n = 512), Malabar grey hornbill (n = 506), Jungle babbler (n = 474), Black-headed oriole (n = 388), White-cheeked barbet (n = 357), Jerdon's leafbird (n = 355), Grey junglefowl (n = 349), and Malabar parakeet (n = 342).

A total of 24 migratory bird species were recorded in Thattekkad Bird Sanctuary from October 2017 to May 2018 and October 2018 to March 2019. Also, a total of 771 individuals were recorded in four transects. Among the migratory bird species, highest number of individuals were recorded includes Plum-headed parakeet (19.58%), followed by Tickell's leaf warbler (14.66%), of Blyth's starling (12.71%), and of Greenish warbler (8.69%). Few migratory bird species were recorded as one individual such as White-browed wagtail, Sulphur-bellied warbler, and Booted warbler.

Keywords: Birds; Thattekkad; Individuals; Diversity; Sanctuary

Introduction

Birds are the indicators of natural ecosystem. They are often brightly coloured, highly vocal certain times of the year and relatively easy to see. Thattekkad is the first Bird Sanctuary in Kerala and is a heaven for the nature lovers and bird watchers. The study area also consists of 284 bird species, 728 plant species, 222 species of butterflies, 52 species of fishes, 39 species of reptiles, and 17 amphibians are reported in Thattekkad [1]. Since Thattekkad Bird Sanctuary is located on the foothills of Western Ghats which is one of the hotspots of biodiversity, main endemic bird species such as Malabar Trogon, Malabar Grey Hornbill, Malabar Parakeet etc. The flagship species of the sanctuary is Sri Lanka frogmouth are also seen in the sanctuary.

Thattekkad Bird Sanctuary falls between 10°7' and 11°N Latitude and 76°40' and 76°45'E Longitude and is in Ernakulam District. The sanctuary covering a 25.16 km² area lying on the northern

bank of the Periyar River. The natural forest in the sanctuary area includes disturbed evergreen, semi-evergreen, moist deciduous, and monoculture plantations of teak and mahogany. The terrain is undulating with elevation ranges from 20m to 528m (above mean sea level). The ridges and hilltops are entirely rocky and slopes have a fair amount of fertile soil but it is mixed with good deal of boulders. The soil depth varies according to terrain in hill regions.

The climate of Thattekkad is tropical and humid with temperatures varying from 20°C to 30°C. Rainfall is received during both Southwest and Northeast monsoon with an average rainfall of 3000mm. 75% of the precipitation occurs during the southwest monsoon, from June to mid-September with the maximum precipitation in the month of July accompanied by strong winds with speed of over 60 km/hour which are common during the monsoons. January and February are generally dry months.

The sanctuary consists of several natural and artificial water sources to meet the needs of the wildlife. The whole area is drained by river Periyar and Edamalar. Several small seasonal streams bisect the area and drains into the Periyar river. The Periyar river-bank remains submerged for about 8 months by the Bhoothathankettu barrage on the mainstream of Periyar river. Many submerged areas, wetlands, marshy lands and Vayals are also found inside the sanctuary. The Bhoothathankettu dam constructed in 1964 plays a significant role in the water cycle of Thattekkad Bird Sanctuary. From June to October the shutters of the dam are kept open to allow the free flow of water in river Periyar, while the shutters are closed from October to June to retain sufficient water for irrigation. The closure of dam floods the plains of the sanctuary, and the level of water gets reduced considerably once the shutters of the dam are opened. The periodic cycle of flooding of plains and subsequent draining leads to ecological variations in the habitat.

The present study was conducted in Thattekkad Bird Sanctuary from August 2017 to December 2018. A total of 12176 individuals belongs to 134 bird species were recorded. The main objective of the study is long-term monitoring of bird species in selected transect areas of Thattekkad Bird Sanctuary.

Materials and Methods

Line transect method were used to conduct bird study in four 2 km fixed routes in Thattekkad Bird Sanctuary viz., Kootikkal, Watchtower, Bharanikuzhi and Urulanthanni (Table 1). In a month, each transects where walked into two times and total number of walks were eight. For migratory bird species same transect method was used. The study was conducted during the migratory season from October 2017 to May 2018 and October 2018 to March 2019. The observation of birds was done by direct sighting and call of the bird on either side of that route. Normal walking speed were maintained in all transects and the study was conducted from 08.00 am to 10.30 am.

| Transect number | Transect name | Geo-coordinates – starting point | Elevation (in meter) | Geo-coordinates – end point | Elevation (in meter) |
|-----------------|---------------|----------------------------------|----------------------|-------------------------------|----------------------|
| 1 | Kootikkal | N 10°07'51.81" E076°41'17.49" | 45 | N 10°08'26.07" E076°40'39.35" | 55 |
| 2 | Watchtower | N 10°07'44.37" E076°41'22.25" | 41 | N 10°07'31.21" E076°42'06.94" | 74 |
| 3 | Bharanikuzhi | N 10°08'27.17" E076°43'24.73" | 64 | N 10°07'35.76" E076°43'24.33" | 79 |
| 4 | Urulanthanni | N 10°07'39.74" E076°45'08.74" | 71 | N 10°07'37.14" E076°44'35.69" | 154 |

Table 1: Geo-coordinates details of fixed transects in Thattekkad Bird Sanctuary.

Results and Discussion

A total of 12176 individuals belong to 134 bird species (Table 14) were recorded between August 2017 to December 2018 (19 months) in four fixed line transects comprised of Kootikkal (n = 3718), Watchtower (n = 2960), Bharanikuzhi (n = 2421), and Urulanthanni (n = 3077).

Highest number of individuals were recorded in December 2018 (n = 1013), followed by October 2018 (n = 945), November and January 2018 (n = 943) (Table 2, Figure 1). The highest number of individual bird species were recorded in four transects includes Greater racket tailed drongo (n = 886), Yellow browed bulbul (n = 765), Heart-spotted woodpecker (n = 632), Hill myna (n = 512), Malabar grey hornbill (n = 506), Jungle babbler (n = 474), Black-

headed oriole (n = 388), White-cheeked barbet (n = 357), Jerdon’s leafbird (n = 355), Grey junglefowl (n = 349), Malabar parakeet (n = 342) etc. (Table 3).

A total of 24 migratory bird species were recorded in Thattekkad Bird Sanctuary between October 2017 to May 2018 and October 2018 to March 2019. Among the 24 bird species, a total of 771 individuals were recorded among the four transects. The highest number of individuals were recorded in the Watchtower (N = 240), followed by in Kootikkal (N = 238), Bharanikuzhi (N = 152), and Urulanthanni (N = 141) (Table 4).

Among 24 migratory bird species, the highest number of individuals were recorded in Plume-headed parakeet (N = 151), fol-

| Month and Year | Number of individual bird species recorded in each transect | | | | Total number of Individuals |
|---|---|------------|--------------|--------------|-----------------------------|
| | Kootikkal | Watchtower | Bharanikuzhi | Urulanthanni | |
| Aug-17 | 105 | 117 | 99 | 80 | 401 |
| Sep-17 | 162 | 92 | 154 | 106 | 514 |
| Oct-17 | 220 | 204 | 100 | 217 | 741 |
| Nov-17 | 360 | 190 | 100 | 138 | 788 |
| Dec-17 | 245 | 192 | 236 | 218 | 891 |
| Jan-18 | 338 | 195 | 173 | 237 | 943 |
| Feb-18 | 250 | 233 | 170 | 255 | 908 |
| Mar-18 | 281 | 211 | 193 | 202 | 887 |
| Apr-18 | 213 | 235 | 141 | 191 | 780 |
| May-18 | 174 | 144 | 79 | 130 | 527 |
| Jun-18 | 138 | 88 | 138 | 173 | 537 |
| Jul-18 | 95 | 93 | 81 | 117 | 386 |
| Aug-18 | 73 | 73 | 48 | 189 | 383 |
| Sep-18 | 217 | 159 | 109 | 104 | 589 |
| Oct-18 | 320 | 193 | 225 | 207 | 945 |
| Nov-18 | 212 | 271 | 166 | 294 | 943 |
| Dec-18 | 315 | 270 | 209 | 219 | 1013 |
| Total number of individuals recorded in each transect from Aug 2017 to Dec 2018 | 3718 | 2960 | 2421 | 3077 | 12176 |

Table 2: Bird species individuals recorded using line transect in Thattekkad Bird Sanctuary.

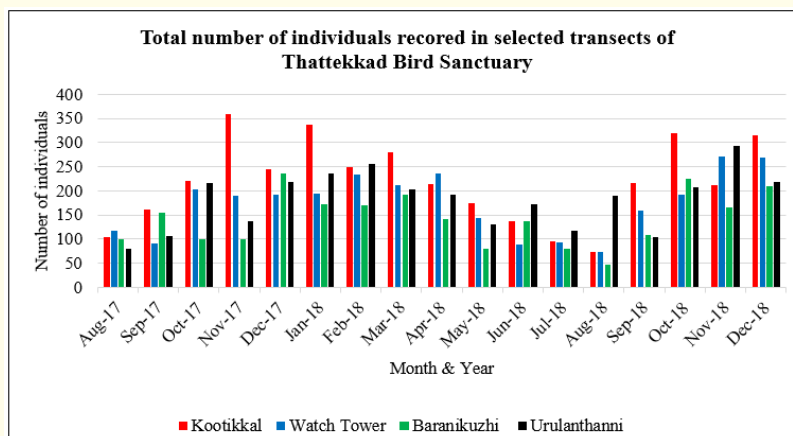


Figure 1: Monthly wise comparison of number of individuals recorded in Thattekkad Bird Sanctuary.

lowed by Tickell’s leaf warbler (N = 113), Blyth’s starling (N = 98), Greenish warbler (N = 67), etc. There are few bird species were recorded one individual such as White-browed wagtail, Sulphurbellied warbler, and Booted warbler (Table 4).

Warbler species are hard to identify when they are camouflage and have similarities with the warbler species. Most bird species

will be migrating from European countries, north India, the Himalayan region, northeast India, etc. Black baza was the only migratory raptor species were recorded in Thattekkad Bird Sanctuary. The study also understands that water is the main factor is to attract migratory birds.

| Sl. No | Name of the bird species | Number of individuals recorded in each transect | | | | Number of individuals recorded in all transects for each bird species |
|--------|----------------------------|---|------------|--------------|--------------|---|
| | | Kootikkal | Watchtower | Bharanikuzhi | Urulanthanni | |
| 1 | Alpine swift | 0 | 3 | 14 | 2 | 19 |
| 2 | Ashy drongo | 35 | 25 | 15 | 40 | 115 |
| 3 | Asian fairy bluebird | 65 | 35 | 67 | 86 | 253 |
| 4 | Asian koel | 2 | 1 | 0 | 0 | 3 |
| 5 | Asian paradise flycatcher | 10 | 7 | 10 | 12 | 39 |
| 6 | Asian-brown flycatcher | 9 | 5 | 5 | 15 | 34 |
| 7 | Banded bay cuckoo | 1 | 5 | 14 | 13 | 33 |
| 8 | Black baza | 0 | 13 | 0 | 0 | 13 |
| 9 | Black drongo | 18 | 26 | 15 | 16 | 75 |
| 10 | Black-headed cuckoo shrike | 0 | 5 | 6 | 0 | 11 |
| 11 | Black-headed oriole | 192 | 90 | 53 | 53 | 388 |
| 12 | Black-naped monarch | 5 | 7 | 19 | 29 | 60 |
| 13 | Black-naped oriole | 21 | 11 | 1 | 3 | 36 |
| 14 | Blue-bearded bee-eater | 0 | 0 | 1 | 0 | 1 |
| 15 | Blue-throated flycatcher | 0 | 3 | 2 | 2 | 7 |
| 16 | Blyth’s reed warbler | 4 | 6 | 3 | 3 | 16 |
| 17 | Brahminy kite | 4 | 0 | 2 | 0 | 6 |
| 18 | Bronzed drongo | 28 | 42 | 21 | 39 | 130 |
| 19 | Brown fish owl | 0 | 1 | 0 | 1 | 2 |
| 20 | Brown-breasted flycatcher | 0 | 0 | 1 | 3 | 4 |
| 21 | Brown-headed barbet | 1 | 0 | 1 | 0 | 2 |
| 22 | Brown shrike | 1 | 0 | 4 | 0 | 5 |
| 23 | Booted warbler | 0 | 1 | 0 | 0 | 1 |
| 24 | Blyth’s starling | 18 | 31 | 15 | 34 | 98 |
| 25 | Cattle egret | 0 | 0 | 0 | 3 | 3 |
| 26 | Chestnut-headed bee-eater | 6 | 10 | 3 | 1 | 20 |
| 27 | Chestnut tailed starling | 2 | 1 | 0 | 0 | 3 |
| 28 | Clamorous reed warbler | 1 | 1 | 0 | 0 | 2 |
| 29 | Common hawk cuckoo | 26 | 11 | 4 | 5 | 46 |
| 30 | Common hoopoe | 1 | 6 | 1 | 0 | 8 |
| 31 | Common iora | 27 | 70 | 50 | 30 | 177 |

| | | | | | | |
|----|----------------------------------|-----|-----|-----|-----|-----|
| 32 | Common kingfisher | 0 | 2 | 0 | 0 | 2 |
| 33 | Common myna | 7 | 2 | 0 | 0 | 9 |
| 34 | Common tailor bird | 12 | 26 | 8 | 11 | 57 |
| 35 | Copper smith barbet | 5 | 10 | 26 | 46 | 87 |
| 36 | Crested serpent eagle | 18 | 27 | 16 | 15 | 76 |
| 37 | Crested tree swift | 0 | 0 | 10 | 0 | 10 |
| 38 | Crimson-backed sunbird | 7 | 17 | 23 | 16 | 63 |
| 39 | Crimson-fronted barbet | 13 | 8 | 8 | 19 | 48 |
| 40 | Dark fronted babbler | 0 | 0 | 12 | 4 | 16 |
| 41 | Dollar bird | 3 | 6 | 8 | 3 | 20 |
| 42 | Drongo cuckoo | 10 | 14 | 6 | 12 | 42 |
| 43 | Emerald dove | 41 | 28 | 9 | 16 | 94 |
| 44 | Forest wagtail | 1 | 0 | 1 | 0 | 2 |
| 45 | Golden fronted leafbird | 30 | 12 | 10 | 17 | 69 |
| 46 | Great-eared nightjar | 0 | 7 | 1 | 0 | 8 |
| 47 | Greater coucal | 90 | 109 | 52 | 54 | 305 |
| 48 | Greater golden backed woodpecker | 8 | 0 | 1 | 0 | 9 |
| 49 | Greater racket tailed drongo | 270 | 240 | 172 | 204 | 886 |
| 50 | Grey-fronted green pigeon | 17 | 27 | 9 | 14 | 67 |
| 51 | Grey jungle fowl | 137 | 110 | 34 | 68 | 349 |
| 52 | Green bee-eater | 1 | 2 | 1 | 0 | 4 |
| 53 | Green imperial pigeon | 8 | 6 | 2 | 6 | 22 |
| 54 | Greenish warbler | 16 | 26 | 13 | 12 | 67 |
| 55 | Grey headed bulbul | 5 | 21 | 0 | 6 | 32 |
| 56 | Grey heron | 0 | 12 | 26 | 38 | 76 |
| 57 | Grey tit | 10 | 2 | 2 | 3 | 17 |
| 58 | Grey wagtail | 2 | 34 | 45 | 50 | 131 |
| 59 | Heart-spotted woodpecker | 32 | 272 | 137 | 191 | 632 |
| 60 | Hill myna | 498 | 13 | 0 | 1 | 512 |
| 61 | House crow | 6 | 3 | 0 | 0 | 9 |
| 62 | Indian cuckoo | 2 | 11 | 1 | 10 | 24 |
| 63 | Indian golden oriole | 33 | 3 | 0 | 0 | 36 |
| 64 | Indian pitta | 0 | 6 | 0 | 0 | 6 |
| 65 | Indian pond heron | 3 | 1 | 0 | 0 | 4 |
| 66 | Indian roller | 1 | 3 | 6 | 2 | 12 |
| 67 | Indian scimitar babbler | 5 | 1 | 0 | 0 | 6 |
| 68 | Inter-mediate egret | 0 | 0 | 2 | 0 | 2 |
| 69 | Jerdon's leafbird | 1 | 157 | 118 | 79 | 355 |
| 70 | Jungle babbler | 450 | 12 | 4 | 8 | 474 |
| 71 | Jungle crow | 22 | 6 | 1 | 6 | 35 |

| | | | | | | |
|-----|---------------------------------|-----|-----|----|-----|-----|
| 72 | Jungle owlet | 32 | 9 | 8 | 5 | 54 |
| 73 | Large hawk cuckoo | 0 | 66 | 69 | 62 | 197 |
| 74 | Lesser golden backed woodpecker | 70 | 65 | 0 | 0 | 135 |
| 75 | Lesser whistling duck | 0 | 3 | 0 | 0 | 3 |
| 76 | Little cormorant | 3 | 0 | 0 | 0 | 3 |
| 77 | Little egret | 1 | 1 | 1 | 4 | 7 |
| 78 | Little spider hunter | 0 | 0 | 4 | 0 | 4 |
| 79 | Loten's sunbird | 3 | 2 | 20 | 8 | 33 |
| 80 | Malabar barbet | 1 | 72 | 42 | 56 | 171 |
| 81 | Malabar grey hornbill | 51 | 123 | 89 | 243 | 506 |
| 82 | Malabar parakeet | 244 | 22 | 34 | 42 | 342 |
| 83 | Malabar trogon | 17 | 7 | 18 | 21 | 63 |
| 84 | Malabar whistling thrush | 1 | 40 | 33 | 37 | 111 |
| 85 | Malabar wood shrike | 31 | 0 | 0 | 1 | 32 |
| 86 | Mottled wood owl | 0 | 1 | 3 | 3 | 7 |
| 87 | Nilgiri wood pigeon | 4 | 3 | 4 | 9 | 20 |
| 88 | Orange headed thrush | 15 | 2 | 0 | 0 | 17 |
| 89 | Oriental darter | 0 | 3 | 0 | 1 | 4 |
| 90 | Oriental dwarf kingfisher | 0 | 0 | 2 | 0 | 2 |
| 91 | Oriental honey buzzard | 3 | 6 | 11 | 5 | 25 |
| 92 | Oriental magpie robin | 18 | 1 | 1 | 1 | 21 |
| 93 | Oriental scops owl | 0 | 8 | 0 | 2 | 10 |
| 94 | Oriental white eye | 0 | 8 | 0 | 2 | 10 |
| 95 | Plum-headed parakeet | 67 | 23 | 61 | 82 | 233 |
| 96 | Puff-throated babbler | 0 | 6 | 2 | 0 | 8 |
| 97 | Purple sunbird | 6 | 20 | 5 | 14 | 45 |
| 98 | Purple-rumped sunbird | 52 | 56 | 84 | 113 | 305 |
| 99 | Pygmy woodpecker | 0 | 2 | 1 | 0 | 3 |
| 100 | Red spurfowl | 28 | 43 | 8 | 3 | 82 |
| 101 | Red whiskered bulbul | 43 | 8 | 30 | 36 | 117 |
| 102 | Red-rumped swallow | 0 | 0 | 0 | 4 | 4 |
| 103 | Red-wattled lapwing | 3 | 2 | 0 | 0 | 5 |
| 104 | River tern | 2 | 26 | 0 | 0 | 28 |
| 105 | Ruby-throated bulbul | 56 | 59 | 83 | 142 | 340 |
| 106 | Rufous babbler | 4 | 1 | 0 | 0 | 5 |
| 107 | Rufous treepie | 105 | 42 | 26 | 15 | 188 |
| 108 | Rufous woodpecker | 4 | 2 | 0 | 0 | 6 |
| 109 | Scarlet minivet | 22 | 26 | 96 | 179 | 323 |
| 110 | Shikra | 8 | 4 | 4 | 3 | 19 |
| 111 | Small minivet | 2 | 14 | 2 | 29 | 47 |

| | | | | | | |
|---|---------------------------|------|------|------|------|-------|
| 112 | Speckled piculet | 1 | 1 | 2 | 6 | 10 |
| 113 | Spotted dove | 19 | 11 | 13 | 3 | 46 |
| 114 | Spotted owl | 1 | 3 | 0 | 0 | 4 |
| 115 | Stork-billed kingfisher | 2 | 3 | 1 | 1 | 7 |
| 116 | Sulphur-bellied warbler | 1 | 0 | 0 | 0 | 1 |
| 117 | Tawny-bellied babbler | 0 | 15 | 0 | 0 | 15 |
| 118 | Tickell's Blue-flycatcher | 4 | 24 | 8 | 17 | 53 |
| 119 | Tickell's flowerpecker | 42 | 14 | 36 | 52 | 144 |
| 120 | Tickell's leaf warbler | 46 | 28 | 19 | 20 | 113 |
| 121 | Velvet-fronted nuthatch | 0 | 0 | 12 | 7 | 19 |
| 122 | Verditer flycatcher | 2 | 18 | 0 | 1 | 21 |
| 123 | Vernal hanging parrot | 71 | 75 | 96 | 92 | 334 |
| 124 | White-bellied treepie | 105 | 90 | 63 | 32 | 290 |
| 125 | White-bellied woodpecker | 6 | 8 | 7 | 7 | 28 |
| 126 | White-breasted waterhen | 6 | 33 | 0 | 0 | 39 |
| 127 | White-browed wagtail | 0 | 1 | 0 | 0 | 1 |
| 128 | White-cheeked barbet | 121 | 47 | 97 | 92 | 357 |
| 129 | White-rumped munia | 0 | 0 | 4 | 0 | 4 |
| 130 | White-rumped shama | 1 | 2 | 9 | 0 | 12 |
| 131 | White-throated kingfisher | 13 | 9 | 0 | 6 | 28 |
| 132 | Wayanad laughingthrush | 0 | 36 | 2 | 0 | 38 |
| 133 | Yellow-browed bulbul | 122 | 108 | 220 | 315 | 765 |
| 134 | Yellow-naped woodpecker | 18 | 6 | 0 | 3 | 27 |
| Total number of individuals recorded in each transect | | 3718 | 2960 | 2421 | 3077 | 12176 |

Table 3: Bird species recorded from August 2017 to December 2018 in selected transects of Thattekkad Bird Sanctuary.

| Sl. No | Migratory Bird Species | Transect name | | | | Total number of species recorded in all transect | % Proportion |
|--------|----------------------------|---------------|------------|--------------|--------------|--|--------------|
| | | Kootikkal | Watchtower | Bharanikuzhi | Urulanthanni | | |
| 1 | Asian paradise flycatcher | 10 | 7 | 10 | 12 | 39 | 5.06 |
| 2 | Asian-brown Flycatcher | 9 | 5 | 5 | 15 | 34 | 4.41 |
| 3 | Black baza | 0 | 13 | 0 | 0 | 13 | 1.69 |
| 4 | Black-headed cuckoo shrike | 0 | 5 | 6 | 0 | 11 | 1.43 |
| 5 | Black-naped oriole | 21 | 11 | 1 | 3 | 36 | 4.67 |
| 6 | Blue-throated Flycatcher | 0 | 3 | 2 | 2 | 7 | 0.91 |
| 7 | Blyth's reed warbler | 4 | 6 | 3 | 3 | 16 | 2.08 |
| 8 | Brown-breasted Flycatcher | 0 | 0 | 1 | 3 | 4 | 0.52 |
| 9 | Brown shrike | 1 | 0 | 4 | 0 | 5 | 0.65 |
| 10 | Booted warbler | 0 | 1 | 0 | 0 | 1 | 0.13 |
| 11 | Blyth's starling | 18 | 31 | 15 | 34 | 98 | 12.71 |

| | | | | | | | |
|--|---------------------------|-----|-----|-----|-----|-----|-------|
| 12 | Clamorous reed warbler | 1 | 1 | 0 | 0 | 2 | 0.26 |
| 13 | Forest wagtail | 1 | 0 | 1 | 0 | 2 | 0.26 |
| 14 | Greenish warbler | 16 | 26 | 13 | 12 | 67 | 8.69 |
| 15 | Grey headed starling | 2 | 21 | 0 | 6 | 29 | 3.76 |
| 16 | Grey wagtail | 2 | 2 | 2 | 3 | 9 | 1.17 |
| 17 | Indian golden oriole | 33 | 11 | 1 | 10 | 55 | 7.13 |
| 18 | Indian pitta | 0 | 3 | 0 | 0 | 3 | 0.39 |
| 19 | Plum-headed parakeet | 67 | 23 | 61 | 0 | 151 | 19.58 |
| 20 | Sulphur-bellied warbler | 1 | 0 | 0 | 0 | 1 | 0.13 |
| 21 | Tickell's blue flycatcher | 4 | 24 | 8 | 17 | 53 | 6.87 |
| 22 | Tickell's leaf warbler | 46 | 28 | 19 | 20 | 113 | 14.66 |
| 23 | Verditer flycatcher | 2 | 18 | 0 | 1 | 21 | 2.72 |
| 24 | White-browed wagtail | 0 | 1 | 0 | 0 | 1 | 0.13 |
| Total Number of Individuals in Each Transect | | 238 | 240 | 152 | 141 | 771 | 100% |

Table 4: Migratory bird species of Thattekkad Bird Sanctuary.

Conclusion

Thattekkad is not only a well-versed bird habitat. It is also home for several mammal species includes Asian elephants, Wild dog, Sambar deer, Indian porcupine, Wild dog, Leopard, Bonnet macaques etc. Conduct regular research and monitoring in different aspects will be very effective for the protection and conservation of bird habitat of Thattekkad Bird Sanctuary.

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Conflict of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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1. Management plan of Thattekkad Bird Sanctuary 2012-13 to 2021-2022.