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**Research Article**

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## Avifaunal Survey of Bukit Balingkadus, A Small Fragmented Forest in Ranau, Sabah, Malaysia

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### ABSTRACT

An avifaunal survey was carried out at Bukit Balingkadus Forest Reserve in Ranau, Sabah, Malaysia. The MacKinnon List method was used to assess species diversity. The four-day survey recorded a total of 16 MacKinnon lists with 388 individuals detected. A total of 86 species from 37 families were recorded, with  $H=3.89$  and  $E_H=0.65$ . True species richness was estimated (using SuperDuplicates® online calculator) to be approximately 114 species, with approximately 28 species not detected. There were 13 species of Bornean endemics, two of which were listed as Vulnerable in the IUCN Red List of Threatened Species. Pycnonotidae was the most speciose family with 10 species. Cuculidae and Megalaimidae were ranked second with 6 species each. Zosteropidae had the highest number of individuals at 47. The top ten most detected species made up 49.5 % of all species detected. The most detected species was the Chestnut-crested Yuhina (Zosteropidae). The majority of the species detected (81) were forest-dependent, of which 60 were strictly forest birds. Insectivores made up the most dominant dietary guild, i.e., a total of 41 species (from 22 families). Frugivores ranked second with 29 species from 10 families.

**Keywords:** avifaunal survey, MacKinnon List method Bukit Balingkadus Forest Reserve, Ranau district, feeding guilds.

### Introduction

Birds have evolved and diversified to a wide variety of habitats and foraging strategies (Naish 2014). They have intimate associations with their habitats, prey or food sources, and some have established strong symbiotic relationships, such as flower-pollinators. As such, they make effective bio-indicators of negative impacts on forest biodiversity due to natural and man-made disturbances (Karr et al. 1990). Due to their conspicuous nature and relative

ease of detection and study, they are among the best-researched animals in forest ecosystems.

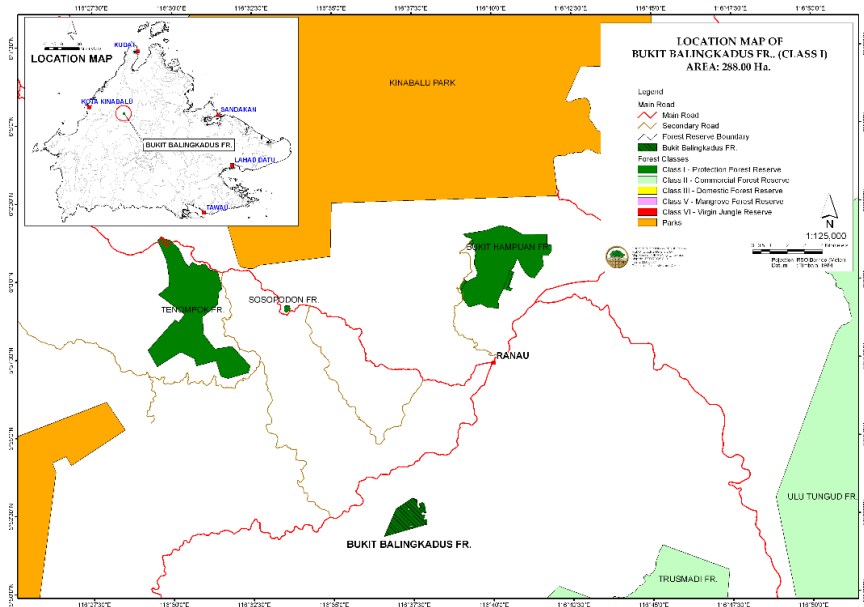
Recently, the Sabah Forestry Department began a rapid assessment of avifaunal communities to help it determine forest ecosystem health. This paper documents the outcome of a brief bird survey conducted in the Bukit Balingkadus Forest Reserve (BBFR) Scientific Expedition, 25-30<sup>th</sup> September 2021. The expedition was organised by the Forest Research Centre, Sabah Forestry Department, under the auspices of the Heart of Borneo Initiative. The main objective of this survey was to provide a brief description of the bird community and ecology in the forest reserve to provide information for future forest management initiatives. Surveys using the MacKinnon List (ML) method (MacKinnon & Phillipps, 1993) were conducted at three sites within the forest reserve.

The Forest Research Centre of the Sabah Forestry Department aims to develop a rapid assessment programme using a modified ML method, which will allow the department's researchers and field staff with limited time for fieldwork (three to four days) to collect data rapidly. The Balingkadus survey was part of a series of these ongoing field trials.

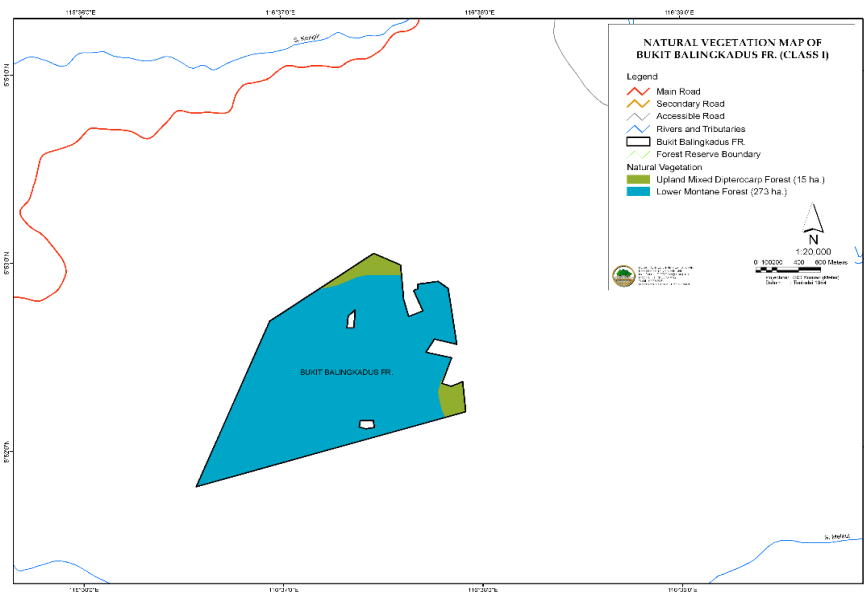
#### *Site description*

Bukit Balingkadus Forest Reserve (BBFR), a Class I Protection Forest Reserve gazetted in 2012, lies approximately within latitudes 5.862-5.883 N and longitudes 116.612-116.635 E, or about 20 km southwest of Ranau town along the Ranau-Tambunan main road. The reserve is very small (approximately 288 ha) and is administered by the Ranau district forestry office. It is also situated within Kampung Kinarasan, about 7 km from Ranau town at its closest point. Access to the forest reserve is mainly through a network of earth roads that encircle the reserve. It is about a 50minute drive uphill to get to the reserve from Kampung Kinarasan.

The natural vegetation consisted of lower montane (273 ha) and upland mixed dipterocarp (15 ha) forest types over the Crocker soil association consisting of predominantly sandstone and mudstone-based soils. The hill itself has an amplitude in excess of 300 m and slope normally greater than 25°. Ridge crests and valley bottoms are narrow, and landslips are common (Bower et al., 1975).



Map 1: Location of Bukit Balingkadus Forest Reserve.



Map 2: Natural vegetation map of Bukit Balingkadus Forest Reserve.

Most of BBFR is relatively intact lower montane forest, although the eastern side is a mixture of agricultural land and degraded forest. This level of disturbance was likely in place when the reserve was gazetted in 2012 and not the result of recent encroachment activities. The forest edges at the boundaries have been negatively affected by the clearing of surrounding lands for agriculture. These surrounding areas are dominated by the highly invasive bracken fern, *Pteridium esculentum*, with occasional pioneer trees (*Trema* spp., *Macaranga* spp., and *Vitex* spp.).

On a larger scale, BBFR is an isolated forest reserve, surrounded on all sides by alienated land, much of which is planted with oil palm and miscellaneous fruit trees and cash crops. About 20 km to the north, east, and west of BBFR lie the large forested areas of Kinabalu Park, Tongod Forest Reserve, and the northern tip of the Crocker Range Park, respectively. The nearest forests are the northern tip of Trus Madi Forest Reserve to the south, and Tenompok Forest Reserve to the northwest, about 8 km and 12 km from BBFR, respectively.

### *Survey methods*

The MacKinnon Lists (ML) method is a time-efficient and cost-effective sampling approach developed for studying avian tropical biodiversity, in which a series of lists of species recorded are collected from a single survey site (MacKinnon & Phillipps, 1993). It was designed for researchers who have limited time, resources, and personnel to carry out surveys, such as government agencies, non-governmental organisations, citizen scientists, and forest concessionaires. It also accounts for differences in effort, observer experience and knowledge, and weather (Poulsen et al., 1997). As the method relates species richness to the number of observations rather than to time, area, or walking speed, it allows for the comparison of data obtained by different observers or under varying field conditions (Herzog et al., 2002). The ML method has gained popularity since the 1990s, not just in avian surveys but also in biodiversity assessments of mammal and fish species (Bach et al., 2020).

To apply the ML method, we compiled lists of consecutive bird species recorded aurally and visually. Each list comprised 15 species. A species accumulation curve was generated from the addition of those species not recorded on any of the previous lists to the total species number, which was then plotted as a function of the list number. However, in contrast to the traditional ML method, the number of individuals in each species observed within each list was also recorded. This was to provide more accurate species abundance ranks and to decrease the chances of double-counting individuals.

### ***Observation methods***

Every observer had a pair of Nikon binoculars (8 x 42s). The reference field guide of choice was *Phillipps' Field Guide to the Birds of Borneo*, 3<sup>rd</sup> Ed., (Phillipps and Phillipps, 2014). The latest taxonomic changes were determined from online sources ([www.worldbirdnames.com](http://www.worldbirdnames.com) and <https://birdsoftheworld.org>) and published papers. For example, Ochraceous Bulbul (*Alophoixus ochraceus*) is now listed as Penan Bulbul (*Alophoixus ruficrissus*) as per del Hoyo et al. (2021). A Nikon P1000 mega-zoom camera (3000 mm equivalent) was used to photograph birds to confirm their identities.

Surveys were conducted over four days (26-29<sup>th</sup> September 2021), beginning at 7.30am and ending after 4 hours. Four sites in the western portion of the reserve were chosen for the surveys, as access to the eastern boundary was difficult due to rainy conditions. This point of entry allowed the team to conduct surveys close to the centre of the reserve, which is quite small. Night surveys to detect nocturnal birds were not conducted due to the rainy conditions during the evenings, which made the steep earth road extremely slippery.

All observations were recorded by a designated person. Care was taken to prevent intra-list and inter-list double-counts of individuals. As about half of the individuals were detected by their calls/vocalizations, individual birds were listed only when and if the observers were certain that they were different, especially when inputting abundance data within the same 15-species list. Criteria for determining distinct individuals of the same species were: a) their calls originated from different directions; b) there were two or more calls heard subsequently from a similar direction of a previously recorded individual; c) the distance from a previously recorded individual was deemed sufficient for a call to be considered as from a separate individual. For species in flocks, such as the Chestnut-crested Yuhina, photographs were taken and immediately viewed to estimate the number of individuals. Care was taken not to double-count the same flock. As the trails were not looped, only bird species not recorded earlier were recorded on the return leg of the trails.

### ***Analyses***

From survey observations, basic diversity information was extracted, including species richness, a diversity index (H), relative abundance ( $E_H$ ), species family, endemism, etc. A species accumulation curve was generated from the addition of those species not recorded on any of the previous lists to the total species number, which was then plotted as a function of list number. To estimate species richness of the area, we used the SuperDuplicates® online calculator

developed by Chao et al. (2017), which requires only the total number of species observed and the number of species observed only once (uniques/singletons). The relative abundance indices of species observed were calculated. The most common families and species, and number of Bornean endemics, were also determined.

Analyses of feeding guilds provided information on how communities of species use certain forest resources (fruits, insects, arthropods, seeds, etc.) and may indicate the condition or health of the forest ecosystem. Thus, the species were categorised according to 6 feeding guilds based on their preferred diet; carnivores (Car), frugivores (Fru), insectivores (Ins), nectarivores (Nec), granivores (Gra) and omnivores (Omn). Species were considered as omnivores if they are known to consume roughly similar amounts of animal and plant-based food resources. Guild information was determined mainly from Phillipps (2014) and Wells (1999 & 2007). Feeding guilds were then described according to habitat type (e.g., forest, forest edge and open areas) to examine the importance of various habitats to different guilds.

## Results

### *Avifaunal Composition and Species Richness*

The four survey days yielded 16 lists and 388 individuals, of which 203 (52.3%) were detected by their calls/vocalisations. A total of 86 species belonging to 37 families were recorded (see **Appendix I** for the complete species list). The Shannon Diversity Index (H) value was 3.89, with an Evenness Index ( $E_H$ ) of 0.65. The survey also yielded 13 species that were endemic to Borneo (**Table 1**). Two species are listed as Vulnerable (VU) while the rest are considered of Least Concern (LC) by the IUCN (2022).

**Table 1.** Species endemic to Borneo and their respective categories in the IUCN Red List of Threatened Species.

No.	Species	Family	Category
1	Blue-banded Pitta	Pittidae	VU
2	Bornean Banded Pitta	Pittidae	LC
3	Kinabalu Serpent Eagle	Accipitridae	VU
4	Bornean Barbet	Megalaimidae	LC
5	Bornean Brown Barbet	Megalaimidae	LC
6	Pale-faced Bulbul	Pycnonotidae	LC
7	Penan Bulbul	Pycnonotidae	LC
8	White-crowned Shama	Muscicapidae	LC
9	Bornean Green Magpie	Corvidae	LC
10	Bornean Bulbul	Pycnonotidae	LC

11	Bornean Treepie	Corvidae	LC
12	Chestnut-crested Yuhina	Zosteropidae	LC
13	Dusky Munia	Estrildidae	LC

**Table 2** provides species that are listed as Near Threatened (NT) and Vulnerable (VU), respectively, by the IUCN (2022). All species categorized as NT are lowland mixed dipterocarp forest species. Of those listed as VU, the Blue-banded Pitta and the Kinabalu Serpent Eagle are Bornean endemics.

**Table 2.** Species listed as Near Threatened (NT) and Vulnerable (VU) by the IUCN (2022).

No.	Species	Category	No.	Species	Category
1	Giant Pitta	NT	11	Brown Fulvetta	NT
2	Crested Jay	NT	12	Buff-necked Woodpecker	NT
3	Dark-throated Oriole	NT	13	Diard's Trogon	NT
4	Green Broadbill	NT	14	Rufous-crowned Babbler	NT
5	Lesser Green Leafbird	NT	15	Green Iora	NT
6	Red-throated Barbet	NT	16	Blue-banded Pitta	VU
7	Scaly-breasted Bulbul	NT	17	Kinabalu Serpent Eagle	VU
8	Scarlet-breasted Flowerpecker	NT	18	Greater Green Leafbird	VU
9	Yellow-crowned Barbet	NT	19	Wreathed Hornbill	VU
10	Black-and-yellow Broadbill	NT			

Table 3 shows that Pycnonotidae (bulbuls) was the most speciose family (10 species). The six families in the table contributed 35 species or approximately 41% of the total number of species observed.

**Table 3.** Top four most speciose families (with shared rankings).

Rank	Family	No. of species
1	Pycnonotidae	10
2	Cuculidae	6
2	Megalaimidae	6
3	Columbidae	5
4	Eurylaimidae	4
4	Nectariniidae	4

As shown in **Table 4**, the Chestnut-crested Yuhina caused the Zosteropidae to be the most commonly detected family with 47 individuals, i.e., 12.1% of all individuals detected. Unlike most other species, yuhinas were detected visually as they normally flew in flocks of more than 15 individuals. Care was taken not to double-count the same flocks. Both second-ranked Megalaimidae (barbets)

and Pycnonotidae (bulbuls) had 38 individuals respectively. Of the former, the Gold-whiskered and Bornean barbets were the most commonly detected (all aurally), with 31 individuals compared to a total of 38 for the family. Among the bulbuls, the Yellow-vented bulbul was the most detected species with 13 individuals. Other bulbuls of interest were the Black-and-white, Bornean, Penan, Pale-faced and Scaly-breasted. Nectariniidae (sunbirds/spiderhunters) were mostly represented by the Little Spiderhunter, with 24 out of 35 individuals sighted for the family.

**Table 4.** Top ten families with the highest percentage of individuals detected (note shared rankings).

Rank	Family	No. of individuals	% of individuals detected
1	Zosteropidae	47	12.11
2	Megalaimidae	38	9.79
2	Pycnonotidae	38	9.79
3	Nectariniidae	35	9.02
4	Cisticolidae	31	7.99
5	Alcippeidae	20	5.15
6	Apodidae	18	4.64
7	Timaliidae	16	4.12
8	Columbidae	13	3.35
8	Eurylaimidae	13	3.35
9	Dicaeidae	11	2.84
9	Muscicapidae	11	2.84
10	Cuculidae	9	2.32

Amongst the Cisticolidae, which was ranked fourth, the Rufous-tailed Tailorbird and the Yellow-bellied Prinia contributed 13 and 11 individuals respectively out of 31. The Brown Fulvetta was the sole representative of the fifth-ranked Alcippeidae.

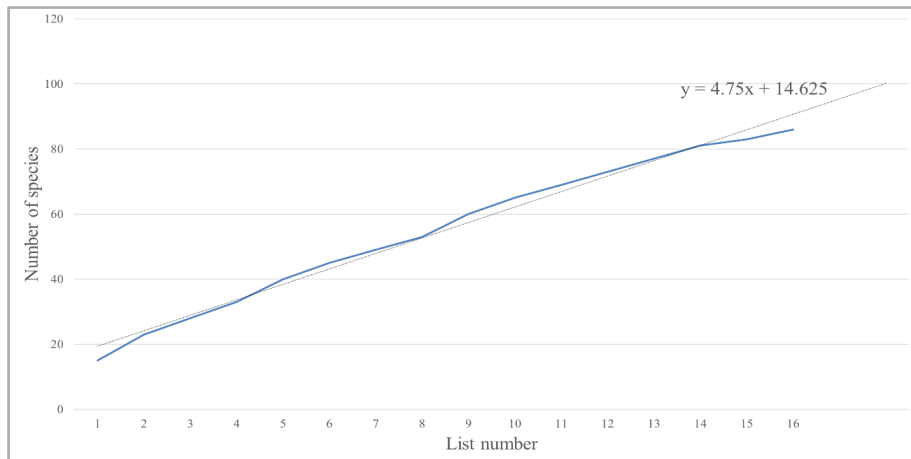
**Table 5.** Top ten most detected species (note shared rankings).

Rank	Species	Family	No. of individuals detected	% Detected visually	Relative abundance Index
1	Chestnut-crested Yuhina	Zosteropidae	44	88.6	0.1134
2	Little Spiderhunter	Nectariniidae	24	62.5	0.0619
3	Brown Fulvetta	Alcippeidae	20	65.0	0.0515
4	Gold-whiskered Barbet	Megalaimidae	19	0.0	0.0490
5	Plume-toed Swiftlet	Apodidae	17	100.0	0.0438
6	Rufous-tailed Tailorbird	Cisticolidae	13	23.1	0.0335
6	Yellow-vented Bulbul	Pycnonotidae	13	84.6	0.0335
7	Bornean Barbet	Megalaimidae	12	0.0	0.0309
8	Yellow-bellied Prinia	Cisticolidae	11	0.0	0.0284
9	White-crowned Shama	Muscicapidae	10	20.0	0.0258
10	Orange-bellied Flowerpecker	Estrildidae	9	33.3	0.0232



**Table 5** shows the top ten most detected species. These species made up approximately 49.5% of all species detected. The Chestnut-crested Yuhina was the most detected species with 44 individuals. It was easily detected as it usually travels in flocks and also vocalized while in flight. Similarly, all individuals of the fifth-ranked Plume-toed Swiftlet were seen while flying.

The Little Spiderhunter, Brown Fulvetta, and Yellow-vented Bulbul, being very vocal and conspicuous while feeding, were commonly detected visually. The Gold-whiskered Barbet, Bornean Barbet, and Yellow-bellied Prinia were all detected aurally and noted only when the individuals were approximately 10-20 m from the survey team. The Rufous-tailed Tailorbird and White-crowned Shama were more inclined to vocalize when the survey team was closer, i.e., less than 10 m away.



**Figure 1:** Species accumulation curve and linear regression line of birds in Bukit Balingkadus Forest Reserve.

As expected for the ML rapid assessment method, and with a 4-day duration of the survey, the species accumulation curve (**Figure 1**) did not achieve an asymptote. To estimate the probable species richness, the SuperDuplicates® online calculator was used (Chao et al., 2017). Only the total number of species detected and the number of singletons (species detected only once) were needed to input into the calculator. Table 6 displays the summary of results. It estimated Chao1 (species richness using abundance data) to be approximately 114 species, with an upper and lower threshold of approximately 138 and 101 species, respectively, in the 95% confidence interval. The number of doubletons was estimated to be 14, which was the actual number detected during the

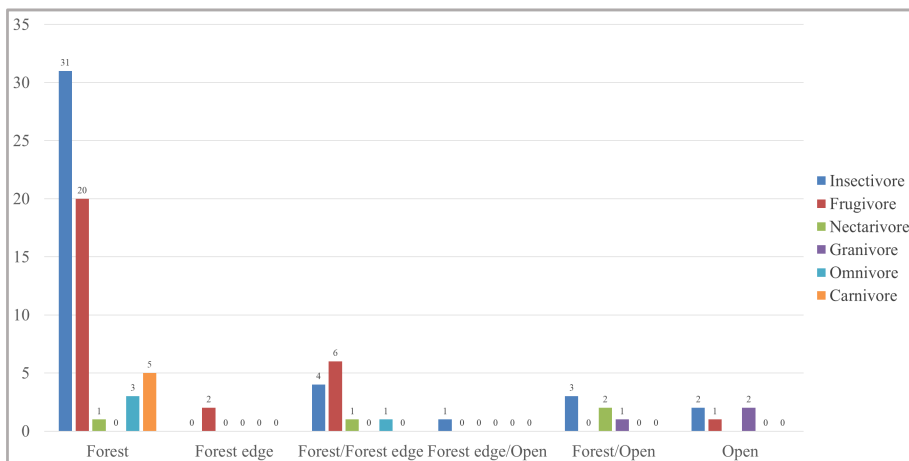
survey. The calculator also estimated that approximately 28 species were undetected, i.e., the survey detected approximately 75.4 % of the total species in the area. Based on the linear regression line in **Figure 1**, it estimated that another five lists, or an extra survey day, were needed to detect the estimated 114 species of birds in BBFR.

**Table 6.** Results from SuperDuplicates®.

Estimated number of doubletons	Estimated species richness	Standard error	95% C.I. lower	95% C.I. upper	Number of undetected species	Undetected percentage (%)
14.01	114.02	9.01	101.15	137.81	28.02	24.57

### *Habitat types and feeding guilds*

Species were categorised according to their preferred habitats (e.g., forest, forest edge, open areas) and feeding guilds (**Figure 2**). Of the 81 forest-dependent species, 60 were strictly forest birds. The high number of forest-dependent species—and the low number of open area specialists (5 species)—may possibly be a positive indication of the overall ecological health of BBFR. Most of the families common in Bornean forests were present. These included hornbills, leafbirds, tailorbirds, pigeons/doves, cuckoos, broadbills, barbets, woodpeckers, pittas, bulbuls and trogons. Furthermore, hill and lower montane species were well represented; these included the Kinabalu Serpent Eagle, Ruddy Cuckoo Dove, Bornean Green Magpie, Bornean Treepie, Ashy Drongo, Bornean Barbet, Bornean Bulbul, Pale-faced Bulbul, Penan Bulbul, Blue-banded Pitta and the Chestnut-crested Yuhina.



**Figure 2:** Number of species according to habitat types and feeding guilds in Bukit Balingkadus Forest Reserve.

In terms of feeding guilds, insectivores and frugivores comprised 82.5 % of the total individuals detected, with the former being the most abundant at 205 individuals. Of the 41 species (representing 22 families) of insectivores, 31 were strictly forest species. The Brown Fulvetta, Rufous-tailed Tailorbird, and the White-crowned Shama were the most commonly detected insectivores with 20, 13, and 10 individuals respectively. The second most dominant guild was frugivores, with 115 individuals (from 29 species, 10 families) detected. From their conspicuous calls, 38 individuals of barbets (6 species in total) were the most detected, with the Gold-whiskered and the Bornean barbets accounting for 19 and 12 individuals respectively. With 10 species, the bulbuls (Pycnonotidae) were the most speciose family amongst the frugivores. Three of the bulbul species were Bornean endemics (see **Table 1** above).

As in our previous surveys, the number of insectivorous and frugivorous species (31 & 20 respectively) were significantly higher in the 'Forest' habitat as compared to other habitats (Petol & Rudolf, 2019; Petol et al., 2021a; Petol et al., 2021b; Joeman et al., 2020a & Joeman et al., 2020b). Their dominance in BBFR may indicate the constant availability of their primary food sources, which may also reflect the overall good forest health.

## Discussion

Most of the families common in Bornean forests were present in BBFR. However, being surrounded by farmland for many years and located between 10-20 km away from large forest reserves, certain avifauna communities in the BBFR may have been negatively affected. For example, not a single species from Phasianidae (e.g., the Great Argus and the firebacks) was detected. Being surrounded by human settlements, it was assumed that the ground-dwelling species are regularly hunted or trapped. Curiously, the famous Whitehead trio (Whitehead's Broadbill, Spiderhunter, and Trogon)—although represented by other members of their respective families—were not detected.

Additionally, BBFR's high Bornean endemic count of 13 species was also the highest we have encountered in our avifaunal surveys of forest reserves. It is unclear whether the large swaths of forests between 8 to 20 km away on all sides may have contributed to its avian diversity over the years. It is possible that birds use BBFR to cross over to the other larger forest reserves/parks, hence explaining the reserve's relatively modest species count. This may be true for most species that are constantly airborne. However, the presence of 3 species of pittas, exclusively ground birds, may discount this simple explanation.

Another possibility might be that the forest—before it was gazetted as a forest reserve—served as a refugium when the surrounding areas were cleared for agriculture; thus, concentrating species into a small space. Further surveys in the coming years should be conducted to ascertain whether the composition of the bird community is stable, declining, or growing.

## Conclusions

The survey team obtained a preliminary insight into the avian diversity and ecology of BBFR. Although it is a small, fragmented forest surrounded by farmland, its avifaunal diversity (86 species from 37 families) was rather representative of lower montane forests in the surrounding areas. A further two or three surveys in the coming years are necessary to better understand the reserve's avian diversity.

## Acknowledgements

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## APPENDIX I

List of bird species detected at Bukit Balingkadus Forest Reserve. Common names in bold denotes Bornean endemics. Bird names are according to the classification in Gill, Donsker and Rasmussen (2022).

NO.	COMMON NAME	SPECIES	FAMILY
1	Golden-bellied Gerygone	<i>Gerygone sulphurea</i>	Acantizidae
2	<b>Kinabalu Serpent Eagle</b>	<i>Spilornis kinabaluensis</i>	Accipitridae
3	Changeable Hawk-eagle	<i>Spizaetus cirrhatus</i>	Accipitridae
4	Common Iora	<i>Aegithina tiphia</i>	Aegithinidae
5	Green Iora	<i>Aegithina viridissima</i>	Aegithinidae
6	Brown Fulvetta	<i>Alcippe brunneicauda</i>	Alcippeidae
7	Plume-toed Swiftlet	<i>Collocalia offinis</i>	Apodidae
8	Brown Noddy	<i>Hirundapus giganteus giganteus</i>	Apodidae
9	Wreathed Hornbill	<i>Rhyticeros undulatus</i>	Bucerotidae
10	Yellow-bellied warbler	<i>Abroscopus superciliosus</i>	Cettiidae
11	Lesser Green Leafbird	<i>Chloropsis cyanopogon</i>	Chloropseidae
12	Greater Green Leafbird	<i>Chloropsis sonnerati</i>	Chloropseidae
13	Red-headed Tailorbird	<i>Orthotomus ruficeps</i>	Cisticolidae
14	Rufous-tailed Tailorbird	<i>Orthotomus sericeus</i>	Cisticolidae
15	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	Cisticolidae
16	Emerald Dove	<i>Chalcophaps indica</i>	Columbidae
17	Zebra Dove	<i>Geopelia striata</i>	Columbidae
18	Ruddy Cuckoo-dove	<i>Macropygia emiliana</i>	Columbidae
19	Little Cuckoo Dove	<i>Macropygia ruficeps</i>	Columbidae
20	Spotted Dove	<i>Streptopelia chinensis</i>	Columbidae
21	<b>Bornean Green Magpie</b>	<i>Cissa jeffreyi</i>	Corvidae
22	<b>Bornean Treepie</b>	<i>Dendrocitta cinerascens</i>	Corvidae
23	Crested Jay	<i>Platylophus galericulatus</i>	Corvidae
24	Plaintive Cuckoo	<i>Cacomantis merulinus</i>	Cuculidae
25	Greater Coucal	<i>Centropus rectunguis</i>	Cuculidae
26	Oriental Cuckoo	<i>Cuculus optatus</i>	Cuculidae
27	Raffles's Malkoha	<i>Phaenicophaeus chlorophaeus</i>	Cuculidae
28	Red-billed Malkoha	<i>Phaenicophaeus javanicus</i>	Cuculidae
29	Square-tailed Drongo-cuckoo	<i>Surniculus lugubris</i>	Cuculidae
30	Orange-bellied Flowerpecker	<i>Dicaeum trigonostigma</i>	Dicaeidae
31	Yellow-breasted Flowerpecker	<i>Prionochilus maculatus</i>	Dicaeidae
32	Scarlet-breasted Flowerpecker	<i>Prionochilus thoracicus</i>	Dicaeidae
33	Ashy Drongo	<i>Dicrurus leucophaeus</i>	Dicruridae
34	<b>Dusky Munia</b>	<i>Lonchura fuscans</i>	Estrildidae
35	Green Broadbill	<i>Calyptomena viridis</i>	Eurylaimidae
36	Dusky Broadbill	<i>Corydon sumatranus</i>	Eurylaimidae
37	Black-and-red Broadbill	<i>Cynbirhynchus macrorhynchus</i>	Eurylaimidae
38	Black-and-yellow Broadbill	<i>Eurylaimus ochromalus</i>	Eurylaimidae
39	Pacific Swallow	<i>Hirundo tahitica</i>	Hirundinidae
40	Asian Fairy-bluebird	<i>Irena puella</i>	Irenidae
41	<b>Bornean Brown Barbet</b>	<i>Calorhamphus fuliginosus</i>	Megalaimidae

42	Blue-eared Barbet	<i>Megalaima australis</i>	Megalaimidae
43	Gold-whiskered Barbet	<i>Megalaima chrysopogon</i>	Megalaimidae
44	<b>Bornean Barbet</b>	<i>Megalaima eximia</i>	Megalaimidae
45	Yellow-crowned Barbet	<i>Megalaima henricii</i>	Megalaimidae
46	Red-throated Barbet	<i>Megalaima mystacophanos</i>	Megalaimidae
47	Red-bearded Bee-eater	<i>Nyctornis amictus</i>	Meropidae
48	Black-naped Monarch	<i>Hypothymis azurea</i>	Monarchidae
49	<b>White-crowned Shama</b>	<i>Copsychus stricklandi</i>	Muscicapidae
50	Hill Blue Flycatcher	<i>Cyornis whitei</i>	Muscicapidae
51	Temminck's Sunbird	<i>Aethopyga temminckii</i>	Nectariniidae
52	Little Spiderhunter	<i>Arachnothera longirostra</i>	Nectariniidae
53	Long-billed Spiderhunter	<i>Arachnothera robusta</i>	Nectariniidae
54	Rubycheek	<i>Chalcoparia singalensis</i>	Nectariniidae
55	Dark-throated Oriole	<i>Oriolus xanthonotus</i>	Oriolidae
56	Rufous-crowned Babbler	<i>Malacopteron magnum</i>	Pellorneidae
57	Black-capped Babbler	<i>Pellorneum capistratum</i>	Pellorneidae
58	Ferruginous Babbler	<i>Trichastoma bicolor</i>	Pellorneidae
59	Maroon Woodpecker	<i>Blythipicus rubiginosus</i>	Picidae
60	Grey-and-buff Woodpecker	<i>Hemicircus concretus</i>	Picidae
61	Buff-necked Woodpecker	<i>Meiglyptes tukki</i>	Picidae
62	<b>Blue-banded Pitta</b>	<i>Pitta arquata</i>	Pittidae
63	Giant Pitta	<i>Pitta caerulea</i>	Pittidae
64	<b>Bornean Banded Pitta</b>	<i>Pitta schwaneri</i>	Pittidae
65	<b>Penan Bulbul</b>	<i>Alophoixus ruficrissus</i>	Pycnonotidae
66	Spectacled Bulbul	<i>Ixodia erythrophthalmos</i>	Pycnonotidae
67	Scaly-breasted Bulbul	<i>Ixodia squamata</i>	Pycnonotidae
68	Black-and-white bulbul	<i>Microtarsus melanoleucos</i>	Pycnonotidae
69	Red-eyed Bulbul	<i>Pycnonotus brunneus</i>	Pycnonotidae
70	Yellow-vented Bulbul	<i>Pycnonotus goiavier</i>	Pycnonotidae
71	<b>Pale-faced bulbul</b>	<i>Pycnonotus leucops</i>	Pycnonotidae
72	Olive-winged Bulbul	<i>Pycnonotus plumosus</i>	Pycnonotidae
73	Cream-vented Bulbul	<i>Pycnonotus simplex</i>	Pycnonotidae
74	<b>Bornean Bulbul</b>	<i>Rubigula montis</i>	Pycnonotidae
75	Spotted Fantail	<i>Rhipidura perlata</i>	Rhipiduridae
76	Grey-headed Canary-flycatcher	<i>Culicicapa ceylonensis</i>	Stenostiridae
77	Hill Myna	<i>Gracula religiosa</i>	Sturnidae
78	Bold-striped Tit-babbler	<i>Mixornis bornensis</i>	Timaliidae
79	Chestnut-backed Scimitar Babbler	<i>Pomatorhinus mantanus</i>	Timaliidae
80	Chestnut-winged Babbler	<i>Stachyris erythroptera</i>	Timaliidae
81	Diard's Trogon	<i>Harpactes diardii</i>	Trogonidae
82	Black-winged Flycatcher Shrike	<i>Hemipus hirundinaceus</i>	Vangidae
83	Bar-winged Flycatcher-shrike	<i>Hemipus picatus</i>	Vangidae
84	Erpornis	<i>Erpornis zantholeuca</i>	Vireonidae
85	<b>Chestnut-crested Yuhina</b>	<i>Yuhina everetti</i>	Zosteropidae
86	Everett's White-eye	<i>Zosterops everetti</i>	Zosteropidae