
Research Article**Avifaunal survey of Mengilan Forest Reserve and its surrounding areas in Pensiangan, Sabah, Malaysia**

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Abstract

An avifaunal survey was carried out at Mengilan Forest Reserve. The MacKinnon List method was used to assess species diversity. The three-day survey recorded a total of 18 lists with 486 individuals detected. Seventy-five species from 33 families were recorded, with $H=3.86$ and $E_H=0.62$. True species richness was estimated (using SuperDuplicates® online calculator) to be approximately 91 species, with approximately 16 species not detected. The seven Bornean endemics detected were: Black-crowned Pitta, Bornean Leafbird, Bornean Black Magpie, Bornean Necklaced Partridge, Dusky Munia, White-crowned Shama and Yellow-rumped Flowerpecker. Pellorneidae (jungle babblers) and Pycnonotidae (bulbuls) were the most speciose families with six species. Nectariniidae (sunbirds and spiderhunters) and Cuculidae (cuckoos) each had five species. Timaliidae had four species. Apodidae (swifts), Pycnonotidae and Cisticolidae (warblers) had the highest percentages of individuals detected with 10.7%, 9.7% and 8.4%, respectively. The five species with the highest relative abundance index were Silver-rumped Spinetail (0.084), Dusky Munia (0.058), Yellow-bellied Prinia (0.045), Blue-crowned Hanging Parrot and Green Iora (both 0.043) and the Eurasian Tree Sparrow (0.039). The majority of the species detected (68) were forest-dependent species. Of these, 55 species were strictly forest birds. Insectivores made up the most dominant dietary guild, i.e., a total of 46 species (from 21 families) with 41 species in 18 families being strict insectivores.

Keywords: avifaunal survey, MacKinnon List method, Mengilan Forest Reserve, Pensiangan district, feeding guilds.

Introduction

Birds are important indicators of forest ecosystem health and have only recently been included when surveying biodiversity in the forest reserves of Sabah, Malaysia. Realising this, the Sabah Forestry Department has begun rapid assessment of avifaunal communities to help it determine forest ecosystem health. This paper documents the outcomes of a brief bird survey conducted during the Mengilan Forest Reserve (MFR) Scientific Expedition from 10th to 15th August, 2020. The expedition was organised by the Forest Research Centre,

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Sabah Forestry Department, under the auspices of the Heart of Borneo Initiative. The main objective of this survey is to provide information for future forest management initiatives. Surveys using the MacKinnon List (ML) method (MacKinnon & Phillipps, 1993) were conducted at two sites within the forest reserve and one site close to the expedition base camp.

The Forest Research Centre of the Sabah Forestry Department aims to develop a rapid assessment methodology based on a modified ML method specifically for the department's researchers and field staff with limited time (three to four days) for field work. The Mengilan survey was part of a series of on-going field trials.

Methods

Site description

The Mengilan Forest Reserve (MFR), a Class I Protection Forest Reserve gazetted in 2012, lies approximately within latitudes 4.333-4.45 N and longitudes 116.9-117.017 E, or about 100km west of Tawau town. The forest reserve comprised two parts with the northern portion being larger than the one in the south. Both parts are separated by a logging road and surrounding secondary forests. Its southernmost boundary is also the international border between Sabah and Kalimantan, Indonesia. With an area of approximately 6,684 ha, MFR is located in the Pensiangan district and is jointly administered by the Serudong and Kalabakan district forestry offices. Approximately 60% of its soils are of the Maliau Association while the remainder are of the Serudong Association. The natural vegetation comprised the upland mixed dipterocarp forest (MDF), upland kerangas and the lower montane kerangas forest types. The forest reserve is extremely hilly with many slopes above 70°. The elevation ranged from 500 to 1,500m a.s.l. Due to accessibility and safety concerns, the bird surveys were conducted mainly where the main logging road intersected the larger portion of the forest reserve in its southwest, and northwards from there into the reserve until we faced the sheer cliffs.

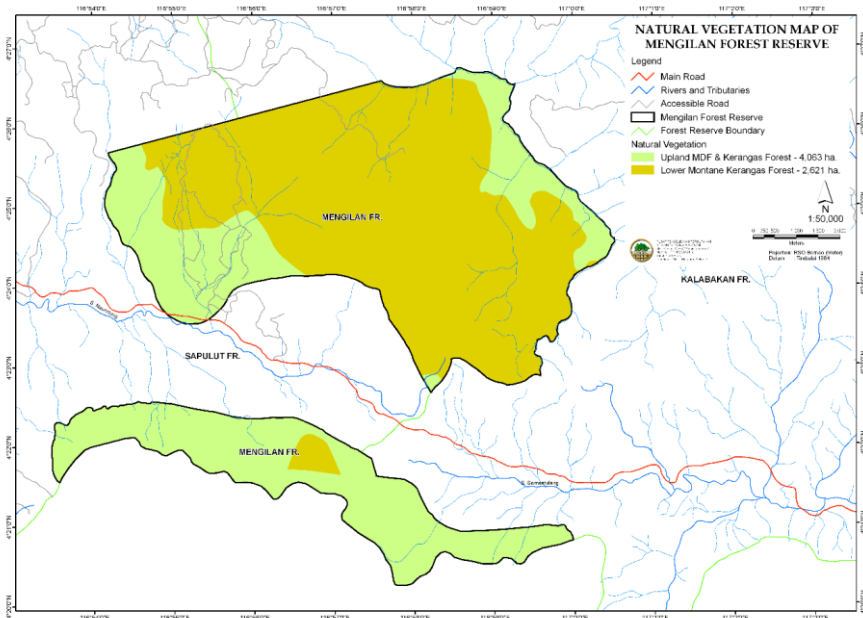


Figure 1: Natural vegetation map of Mengilan Forest Reserve.

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 (MacKinnon & Phillipps, 1993). It was designed for those 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 comparison of data obtained by different observers or under varying field conditions (Herzog et al., 2002). The ML method has been gaining popularity since the 1990s, not just in avian surveys but also 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 consisted of 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 of individuals.

Observation methods

Every observer had a pair of Nikon binoculars (8 x 42s). The reference field guide of choice was the 'Phillipps' *Field Guide to the Birds of Borneo*, 3rd Ed., 2014. The latest taxonomic changes were determined from online sources and published papers. For example, the Brown Fulvetta was recently placed in the new family Alcippeidae (Cai et al., 2019), and the species has been treated accordingly in this paper. Audio identification was verified using pre-recorded bird songs.

The initial four-day survey was reduced to three days (11th to 13th August, 2020) due to a team member participating in a search-and-rescue operation. For the first two days, the survey was conducted for 4-5 hours beginning at about 8am. The delayed starts were due to rainy conditions experienced during the expedition, which in turn exacerbated the slippery road conditions heading towards the sites. Surveys were conducted along the main logging road that intersects the forest reserve, along its boundary and up to 1.8km into the forest reserve. On the third day, the survey began at 6am at the base camp and its nearby forests and road network. Due to the slippery and muddy road conditions during the expedition, surveys to detect nocturnal birds were carried out close to the expedition base camp.

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, individuals were listed only when and if the observers were certain that they were different individuals, especially when inputting abundance data within the same 15-species list. Criteria for determining difference in individuals were: a) when the calls originated from a different direction; b) there were two or more calls heard subsequently from a similar direction of a previously recorded individual of the same species; c) the distance from the previously recorded individual was deemed far enough for a call to be considered a different individual. For species in flocks, such as the Chestnut-crested Yuhina, photographs were taken using a handphone and then immediately viewed to estimate the number of individuals. Care was taken not to double-count the same flock. When the trails were not looped, only bird species not recorded earlier were recorded on the return leg

of the trails. Evening surveys were conducted at the expedition base camp, located about 8km from the north-westernmost boundary of MFR.

Analyses

From the acquired data, basic diversity information was extracted, such as species richness, a diversity index (H), relative abundance (EH), most common families, most speciose families and Bornean endemics. 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. To estimate true 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 Bornean endemics, were also determined.

Analyses of feeding guilds provided information on how communities of species utilize certain forest resources (for example fruits, insects, arthropods and seeds) and may indicate the condition or health of the forest ecosystem. Thus, the species were categorised according to six 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, such as Ins/Gra, Fru/Ins and Nec/Fru/Ins. Guild information was determined mainly from Phillipps (2014) and Wells (1999 & 2007). The feeding guilds were then described according to habitat types (for example, forest, forest edge and open areas) to examine the importance of habitats to different guilds.

Results and Discussions

Avifaunal Composition and Species Richness

The three survey days yielded 18 lists and 486 detected individuals, of which 283 (58.2%) individuals were detected by their calls/vocalisations. A total of 75 species belonging to 33 families were recorded (see Appendix I for the complete species list). The Shannon Diversity Index (H) value was 3.86 with Evenness Index (E_H) of 0.62. Compared to the lowland mixed dipterocarp forest of the Kabili-Sepilok Virgin Jungle Reserve (Class 6) with 308 species and 59 families (Petol & Ong, 2013), the lower value for the total number of species may be, amongst others, due to the MFR having been logged in the past. It has to be stated that

the avifaunal data of Sepilok had been collected since the 1970s and thus, provided a more accurate checklist compared to the rapid four-day survey of MFR.

The survey also yielded seven Bornean endemics (Table 1). Besides Bornean Black Magpie, Black-crowned Pitta and Bornean Necklaced Partridge, the other four species were categorised as Least Concern (LC) in the IUCN Red List of Threatened Species. The Bornean Necklaced Partridge was the sole species listed as Vulnerable (VU).

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

No.	Species	Category
1	Black-crowned Pitta	NT
2	Bornean Black Magpie	NT
3	Bornean Leafbird	LC
4	Bornean Necklaced Partridge	VU
5	Dusky Munia	LC
6	White-crowned Shama	LC
7	Yellow-rumped Flowerpecker	LC

Table 2 lists species that were listed as NT and VU in the IUCN Red List of Threatened Species. The sole species listed as Critically Endangered was the Helmeted Hornbill. A large majority of those in the NT category were common lowland MDF species, with the exception of the Great Argus and the Chestnut-naped Forktail. Besides the Bornean Necklaced Partridge, the Rhinoceros and Asian Black Hornbills were also listed as VU.

Table 2. Species listed as Near Threatened (NT) and Vulnerable (VU) in the IUCN Red List of Threatened Species.

No.	Species	Category	No.	Species	Category
1	Black-crowned Pitta	NT	14	Great Argus	NT
2	Bornean Black Magpie	NT	15	Green Iora	NT
3	Black-and-yellow Broadbill	NT	16	Lesser Green Leafbird	NT
4	Black-throated Babbler	NT	17	Moustached Hawk-cuckoo	NT
5	Black-throated Wren-babbler	NT	18	Puff-backed Bulbul	NT
6	Brown Fulvetta	NT	19	Rufous-crowned Babbler	NT
7	Buff-necked Woodpecker	NT	20	Short-tailed Babbler	NT
8	Buff-vented Bulbul	NT	21	Sooty-capped Babbler	NT
9	Chestnut-naped Forktail	NT	22	Yellow-crowned Barbet	NT
10	Crested Jay	NT	23	Bornean Necklaced Partridge	VU
11	Dark-throated Oriole	NT	24	Asian Black Hornbill	VU

12	Diard's Trogon	NT	25	Rhinoceros Hornbill	VU
13	Fluffy-backed Tit-babbler	NT			

Table 3 shows that Pellorneidae (ground babblers) and Pycnonotidae (bulbuls) had six species respectively. This was followed by other common families, many of which had similar numbers of species. All 33 families had a mean number of species of 2.27 with a standard deviation of 1.5.

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

Rank	Family	No. of species
1	Pellorneidae	6
1	Pycnonotidae	6
2	Nectariniidae	5
2	Cuculidae	5
3	Timaliidae	4
4	Apodidae	3
4	Cisticolidae	3
4	Corvidae	3
4	Megalaimidae	3
4	Rhipiduridae	3
4	Muscicapidae	3
4	Bucerotidae	3

As shown in Table 4, individuals from Apodidae (swifts) were the most commonly detected with 52 (10.7%), with the Silver-rumped Spinetail accounting for 41 individuals. With a total of 6 species, the Pycnonotidae (bulbuls) ranked second with 47 individuals detected, approximately 57% of which were the Spectacled and the Yellow-vented Bulbuls. The Cisticolidae, ranked third, was represented by Red-headed Tailorbird, Rufous-tailed Tailorbird and Yellow-bellied Prinia. Being highly vocal, 88.8% of these individuals were detected by their calls. The fourth ranked munia family (Estrilidae) was solely represented by the Dusky Munias. Sharing the same rank was Timaliidae (Old World babblers), represented by four species with the Bold-striped Tit-babblers accounting for 50% of the individuals detected. Both the Psittaculidae (Old World parrots) and Nectariniidae (sunbirds/spiderhunters) ranked fifth with the former represented by Blue-crowned Hanging Parrots. From the five species of Nectariniidae, about 57% of the individuals comprised Little Spiderhunters and Purple-naped Sunbirds. From the list, both Aegithinidae and Alcippeidae, ranked seventh and tenth respectively, were represented by one species each, i.e. Green lora and Brown Fulvetta, with 19 and 14 individuals detected respectively.

Table 4. Ten families with the highest percentage of individuals detected (note similar rankings).

Rank	Family	No. of individuals	% of individuals detected
1	Apodidae	52	10.70
2	Pycnonotidae	47	9.67
3	Cisticolidae	41	8.44
4	Estrilidae	28	5.76
4	Timaliidae	28	5.76
5	Psittaculidae	21	4.32
5	Nectariidae	21	4.32
6	Cuculidae	20	4.12
7	Aegithinidae	19	3.91
7	Passeridae	19	3.91
8	Pellorneidae	18	3.70
9	Rhipiduridae	16	3.26
9	Eurylaimidae	16	3.29
9	Megalaimidae	16	3.29
10	Alcippeidae	14	2.88

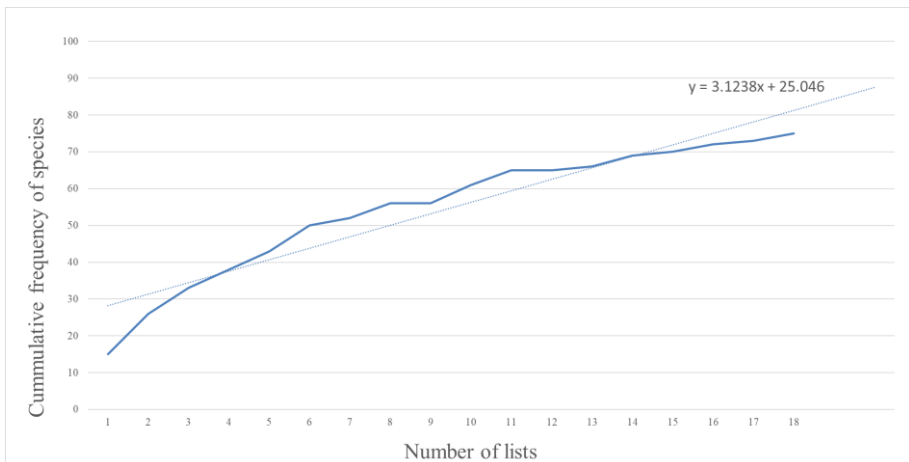


Figure 2. Species accumulation curve and linear regression line of bird species in MFR.

As expected for the ML rapid assessment method, and with a 3-day duration of the survey, the species accumulation curve (Figure 2) had not achieved asymptote. To estimate the true 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 5 is a summary of the results. It estimated Chao1 (species richness using abundance data) to be approximately 91 species, with an upper and lower threshold of approximately 108 and 83 species respectively, at 95% confidence interval. The number of doubletons was estimated to be about 10 while the actual number detected during the survey was 13 species. The calculator also estimated that approximately 16 species were undetected, i.e. the survey managed to detect approximately 84% of the total species in the area. Based on the linear regression line in Figure 2, it estimated that another three lists, or an extra survey day, were needed to detect the estimated 91 species of birds.

Table 5. 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 (%)
9.53	90.87	6.1	109.91	133.29	16.96	14.38

Relative abundance index

During the survey, 283 individuals (58.2%) were detected aurally. Table 6 shows the top five species with the highest relative abundance index. With the exception of the Green lora, all the other five species were detected along the logging road that intersected the MFR in the south, and in open areas close the expedition base camp. By nature, Silver-rumped Spinetail, Dusky Munia and Eurasian Tree Sparrow were highly visible and were often seen flying in flocks. However, Yellow-bellied Prinia and Blue-crowned Hanging Parrot were mainly detected by their calls; the former being amongst the long grasses and the latter heard from high above the canopy.

Table 6. Top 5 species with the highest relative abundance index (note similar rankings).

Rank	Species	Family	Total individuals	Relative abundance index
1	Silver-rumped Spinetail	Apodidae	41	0.0844
2	Dusky Munia	Estrildidae	28	0.0576
3	Yellow-bellied Prinia	Cisticolidae	22	0.0453
4	Blue-crowned Hanging Parrot	Psittaculidae	21	0.0432
5	Green lora	Aegithinidae	19	0.0391
5	Eurasian Tree-sparrow	Passeridae	19	0.0391

Habitat types and feeding guilds

The species were categorised according to their preferred habitats (e.g. forests, forest edges, open area) and respective feeding guilds (Figure 3). The majority of the species (63 species) detected were forest-dependent species. Of these, 55 species from 27 families were strictly forest birds. The high number of forest-dependent species—and the low number of open area specialists—reflected the relatively intact forest ecological functions of the MFR. The presence of eight individuals from three species of hornbills may support this assumption as they are highly dependent on tall forest trees with crevices to breed. Additionally, a pair of the nomadic endemic Bornean Leafbirds were seen. The presence of families such as Campephagidae (minivets), Dicruridae (drongos), Monarchidae (monarchs), Phasianidae (pheasants), Pittidae (pittas), Rhipiduridae (fantails) and Trogonidae (trogons) further reflects the relatively intact ecological functions of the forest. However, the absence of certain families was also bewildering and we lack any explanation for this phenomenon. For example, not a single bird-of-prey or kingfisher was detected aurally nor visually during the survey. Additionally, there was a lack of woodpeckers (Picidae) with only five Buff-necked Woodpeckers and a single Rufous Piculet detected.

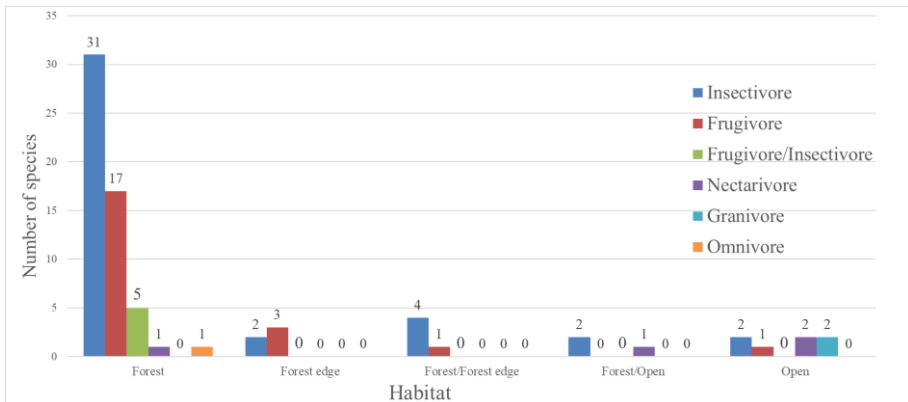


Figure 3. Number of species according to habitat types and feeding guilds in MFR.

As expected, insectivores made up the most dominant dietary guild, with a total of 45 species in 21 families. Of these, 41 species in 19 families were strict insectivores and the rest were mixed-diet insectivores. The dominance of insectivorous (strict and otherwise) bird species in MFR indicated the presence of plentiful food resources. The second most dominant guild was the frugivores with 21 species, 5 of which were mixed-diet frugivorous species. All 4 species of nectarivores were from the spiderhunter/sunbird family, Nectariniidae. The sole

granivore was the Bornean endemic and very common Dusky Munia. The sole, predominantly omnivorous species was the Hill Myna although it may be more frugivorous in forests.

Summary

The survey team managed to obtain a preliminary insight on the avian diversity and ecology in MFR. Its avian diversity (75 species from 33 families) is not representative of the forest that included three forest types, namely the upland MDF and kerangas forest, and the lower montane kerangas forest. However, this was mainly attributed to our team's inability to access these forest types due to the lack of roads and the extreme steepness of the terrain. Thus, the inaccessible areas of the lower montane kerangas forest (2,621 ha) in the north, central and southeast portions of the forest reserve were not surveyed, resulting in the lower diversity numbers. However, taking into account the low observation hours of approximately 20.5 hours, the results of this survey is sufficient to describe the current forest ecology when including information from other fields of ecological research that were carried out during the scientific expedition. This forest reserve deserves priority in future ecological research and monitoring activities as and when road access to the said areas improves in the future.

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Appendix

List of species detected in Mengilan Forest Reserve

No.	Common name	Species	Family
1	Green lora	<i>Aegithina viridissima</i>	Aegithinidae
2	Brown Fulvetta	<i>Alcippe brunneicauda</i>	Alcippeidae
3	Mossy-nest Swiftlet	<i>Aerodramus salangana</i>	Apodidae
4	Plume-toed Swiftlet	<i>Collocalia affinis</i>	Apodidae
5	Silver-rumped Spinetail	<i>Rhaphidura leucopygialis</i>	Apodidae
6	Asian Black Hornbill	<i>Anthracoceros malayanus</i>	Bucerotidae
7	Helmeted Hornbill	<i>Rhinoplax vigil</i>	Bucerotidae
8	Rhinoceros Hornbill	<i>Buceros rhinoceros</i>	Bucerotidae
9	Scarlet Minivet	<i>Pericrocotus speciosus</i>	Campephagidae
10	Lesser Green Leafbird	<i>Chloropsis cyanopogon</i>	Chloropseidae
11	Red-headed Tailorbird	<i>Orthotomus ruficeps</i>	Cisticolidae
12	Rufous-tailed Tailorbird	<i>Orthotomus sericeus</i>	Cisticolidae
13	Yellow-bellied Prinia	<i>Prinia flaviventris</i>	Cisticolidae
14	Green Imperial Pigeon	<i>Ducula aenea</i>	Columbidae
15	Bornean Black Magpie	<i>Platysmurus leucopterus aterrimus*</i>	Corvidae
16	Crested Jay	<i>Platylophus galericulatus</i>	Corvidae
17	Slender-billed Crow	<i>Corvus enca</i>	Corvidae
18	Banded Bay Cuckoo	<i>Cacomantis sonneratii</i>	Cuculidae
19	Greater Coucal	<i>Centropus sinensis</i>	Cuculidae
20	Moustached Hawk-cuckoo	<i>Hierococcyx vagans</i>	Cuculidae
21	Plaintive Cuckoo	<i>Cacomantis merulinus</i>	Cuculidae
22	Raffles's Malkoha	<i>Rhinorhiza chlorophaea</i>	Cuculidae
23	Orange-bellied Flowerpecker	<i>Dicaeum trigonostigma</i>	Dicaeidae
24	Yellow-rumped Flowerpecker	<i>Prionochilus xanthopygius*</i>	Dicaeidae
25	Bronzed Drongo	<i>Dicrurus aeneus</i>	Dicruridae
26	Greater Racquet-tailed Drongo	<i>Dicrurus paradiseus</i>	Dicruridae
27	Dusky Munia	<i>Lonchura fuscans*</i>	Estrildidae
28	Black-and-red Broadbill	<i>Cymbirhynchus macrorhynchus</i>	Eurylaimidae
29	Black-and-yellow Broadbill	<i>Eurylaimus ochromalus</i>	Eurylaimidae
30	Asian Fairy-bluebird	<i>Irena puella</i>	Irenidae
31	Bornean Leafbird	<i>Chloropsis kinabaluensis*</i>	Irenidae
32	Blue-eared Barbet	<i>Psilopogon cyanotis</i>	Megalaimidae
33	Gold-whiskered Barbet	<i>Psilopogon chrysopogon</i>	Megalaimidae
34	Yellow-crowned Barbet	<i>Psilopogon henrici</i>	Megalaimidae
35	Red-bearded Bee-eater	<i>Nyctyornis amictus</i>	Meropidae
36	Black-naped Monarch	<i>Hypothymis azurea</i>	Monarchidae
37	Chestnut-naped Forktail	<i>Enicurus ruficapillus</i>	Muscicapidae
38	Verditer Flycatcher	<i>Eumyias thalassinus</i>	Muscicapidae
39	White-crowned Shama	<i>Copsychus stricklandii*</i>	Muscicapidae
40	Brown-throated Sunbird	<i>Anthreptes malacensis</i>	Nectariniidae
41	Little Spiderhunter	<i>Arachnothera longirostra</i>	Nectariniidae
42	Olive-backed Sunbird	<i>Cinnyris jugularis</i>	Nectariniidae
43	Plain Sunbird	<i>Anthreptes simplex</i>	Nectariniidae
44	Purple-naped Sunbird	<i>Kurochkinogramma hypogrammicum</i>	Nectariniidae
45	Dark-throated Oriole	<i>Oriolus xanthonotus</i>	Oriolidae
46	Eurasian Tree-sparrow	<i>Passer montanus</i>	Passeridae
47	Black-throated Wren-babbler	<i>Napothera atrigularis</i>	Pellorneidae
48	Ferruginous Babbler	<i>Napothera atrigularis</i>	Pellorneidae
49	Rufous-crowned Babbler	<i>Malacopteron magnum</i>	Pellorneidae
50	Short-tailed Babbler	<i>Pellorneum malaccense</i>	Pellorneidae
51	Sooty-capped Babbler	<i>Malacopteron affine</i>	Pellorneidae
52	Bornean Necklaced Partridge	<i>Tropicoperdix charltonii*</i>	Phasianidae

53	Great Argus	<i>Argusianus argus</i>	Phasianidae
54	Buff-necked Woodpecker	<i>Meiglyptes tukki</i>	Picidae
55	Rufous Piculet	<i>Sasia abnormis</i>	Picidae
56	Black-crowned Pitta	<i>Erythropitta ussheri*</i>	Pittidae
57	Blue-headed Pitta	<i>Hydrornis baudii</i>	Pittidae
58	Blue-crowned Hanging Parrot	<i>Loriculus galgulus</i>	Psittaculidae
59	Buff-vented Bulbul	<i>Iole crypta</i>	Pycnonotidae
60	Hairy-backed Bulbul	<i>Tricholestes criniger</i>	Pycnonotidae
61	Olive-winged Bulbul	<i>Pycnonotus plumosus</i>	Pycnonotidae
62	Puff-backed Bulbul	<i>Euptilotus eutilotus</i>	Pycnonotidae
63	Red-eyed Bulbul	<i>Pycnonotus brunneus</i>	Pycnonotidae
64	Spectacled Bulbul	<i>Ixodia erythrophthalmos</i>	Pycnonotidae
65	Yellow-vented Bulbul	<i>Pycnonotus goiavier</i>	Pycnonotidae
66	Pied Fantail	<i>Rhipidura javanica</i>	Rhipiduridae
67	Spotted Fantail	<i>Rhipidura perlata</i>	Rhipiduridae
68	White-throated Fantail	<i>Rhipidura perlata</i>	Rhipiduridae
69	Hill Myna	<i>Gracula religiosa</i>	Sturnidae
70	Black-throated Babbler	<i>Stachyris nigricollis</i>	Timaliidae
71	Bold-striped Tit-babbler	<i>Macronus bornensis</i>	Timaliidae
72	Chestnut-winged Babbler	<i>Cyanoderma erythropteryum</i>	Timaliidae
73	Fluffy-backed Tit-babbler	<i>Macronus ptilosus</i>	Timaliidae
74	Diard's Trogon	<i>Harpactes diardii</i>	Trogonidae
75	Rufous-winged Philentoma	<i>Philentoma pyrhoptera</i>	Vangidae

*Bornean endemics