
THE BIRDS OF BUKIT TIGAPULUH, SOUTHERN RIAU, SUMATRA

by

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Summary

A study was made of the avifauna of the Bukit Tigapuluh area in Riau and Jambi Provinces, Sumatra in July-September 1991. This is the first major study of the lowland bird fauna of mainland Riau in this century.

A total of 193 bird species was recorded, including 18 species listed as globally threatened. Extensions to known ranges were made for 26 species of which 25 were new to Riau and 3 to Jambi- Data were also provided on 5 species for which there were no recent Sumatran records: Crestless Fireback Pheasant *Lophura erythrophthalma*. Garnet Pitta *Pitta granatina*, Striped Wren-babbler *Kenopia striata*. Large Wren-babbler *Napothera macrodactyla* and Chestnut-capped Thrush *Zoothera interpres*. In addition, information on breeding was provided for 51 species, of which 22 species were not previously documented to breed in Sumatra.

Introduction

Between 26 July and 30 September 1991, under the auspices of the Norwegian Indonesian Rain Forest and Resource Management Project, the authors surveyed the avifauna of Bukit Tiga Puluh, centered on 1°00'S, 102°30'E, in the lowlands of Riau Province, eastern Sumatra. Observations were made in primary forest, logged forests, 'jungle rubber', and plantations, concentrating on six study sites.

From a review of Marle & Voous (1988) it is apparent that few ornithological surveys have been conducted in Riau Province. Towards the end of the last century, the Swiss taxidermist G. Schneider "travelled extensively through the Riau Province" in 1897-99 (Schneider 1906) and the coastal areas were visited by Dr. W.L. Abbott (Made & Voous 1988). It was not until the early 1980's that this part of Sumatra received brief further visits by ornithologists, and in 1991 a one-week survey was conducted around the Kampar and Rokan rivers in the northern part of Riau Province (Balen 1991). Thus the present study constitutes the first major ornithological field effort in the area.

Study area

The study was conducted in Seberida Subdistrict of Riau Province and the adjacent Bungotebo District of Jambi Province (see Figure 1). The dominant natural vegetation of Bukit Tigapuluh is lowland evergreen dipterocarp rain forest (Whitmore & Samsuedin 1991). Peat swamp forest and

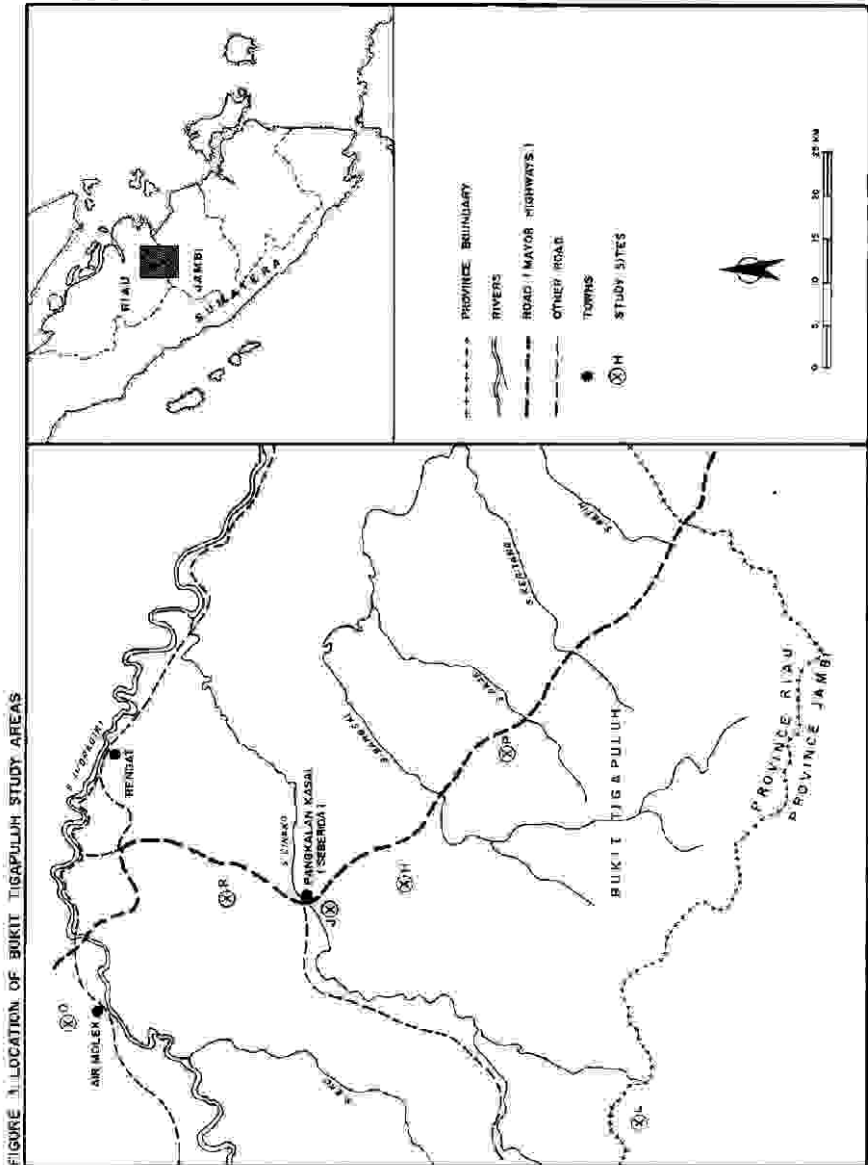


FIGURE 1. LOCATION OF BUKIT TIGAPULUH STUDY AREAS

freshwater swamp forest are found on the plains to the north and east of Bukit Tigapuluh. The area has a rich rainforest flora (Whitmore & Samsuodin 1991), the most prevalent tree families being Euphorbiaceae, Lauraceae, Burseraceae and Dipterocarpaceae (Mirmanto & Schumacher, in prep.). The composition of the tree flora is summarized in Table 1. The species diversity of trees is comparable with that of lowland forest formations in Borneo (Mirmanto & Schumacher, in prep.). However, the number of timber-sized trees is low, and the density of trees is comparatively high.

In primary forest, common species are *Aporusa stellifera*, *Buchanania arborescens*, *Canarium littorale*, *Endiandra* sp., *Neoscortechinia kingii*, *Shorea acuminata*, *S. lepidota*, and *S. multiflora* (Mirmanto & Schumacher, in prep.). In logged and regenerating forest, common species include *Artocarpus elasticus*, *Baccaurea racemosa*, *Elateriospermum tapes*, *Girroniera subaequalis*, *Hopea mengerawan*, *Macaranga gigantea*, *M. triloba*, *M. hypoleuca*, *Parashorea lucida*, *Polyalthia hexandrum*, *Rhodamnia cinerea*, and *Shorea cf. Materialis*.

Within primary forest, the canopy was three-tiered with a higher stratum from 30 to 38 m, a middle stratum from 21 to 30 m, and a lower stratum from 12 to 21 m (Mirmanto & Schumacher, in prep.). Within logged forest, the canopy was also three-tiered but of lower height, being respectively 26 to 35 m, 18 to 26 m, and 10 to 18 m

The mean annual rain is 2820 mm, with relatively dry months in February and from May to October. Mean annual temperature is 27°C and the mean relative humidity is 84%.

Table 1. Composition of the tree flora recorded in Bukit Tigapuluh (Mirmanto & Schumacher, in prep.).

Family	Genera	Species
Euphorbiaceae	9	18
Lauraceae	7	12
Burseraceae	3	10
Dipterocarpaceae	3	8
Myristicaceae	3	8
Annonaceae	6	10
Meliaceae	4	6
Moraceae	3	6
Rubiaceae	4	4
Sapotaceae	2	4

Trail systems were established in six study areas of similar undulating topography, dissected by numerous small streams. Sites were established at 10-50 km intervals. All plots were located in the middle of an extensive area of a uniform land-use type, except the jungle rubber, which was surrounded by slash-and-bum areas and a large river, and included a patch of grassland.

The logged forest study areas were structurally similar and are assumed to have had an original vegetation structure, habitat range and bird community composition very similar to those of the

undisturbed forest. The two plantation plots were located at lower altitudes (20-70 m) than the forest plots (50-180 m), no plantations having yet been established in the area at the higher altitude.

Site A, the **primary forest site (P** in tables). Situated 10 km south of Seberida, between the granite quarry, Talanglakat and Sungai Akar in Seberida Subdistrict (0°48'S, 102°32'E). The vegetation was 20-35 m tall with emergents reaching 50 m. It was within the *ca.* 160,000 ha of primary forest in the proposed Seberida and Bukit Besar Conservation Area.

Site B, the **lightly logged forest site (L** in tables). Located adjacent to Gelumpang Kecil River, east of the main road between Lubu Kandis and Jambi in Bungotobo District, Jambi province (0°35'S, 102°11'E). It had been lightly logged in 1980-81, using tractors to extract the timber. Timber extraction was 4 trees per hectare. It had the same heights of canopy and emergents as the other primary and heavily logged forest sites, but the density of trees and their basal area per hectare were 35% and 40% lower.

Site C, the **heavily logged forest site (H** in tables). Adjacent to Sekuyam River, 1000 m northwest of the Korindo Km 10 log camp in Seberida District (0°43'S, 102°27'E). It had been logged in 1984, using tractors to extract the timber. Timber extraction was 15 trees per hectare. It was a mosaic of several distinctly different types of vegetation. Approximately half of the area had been severely damaged and contained very few large trees. Those trees that remained were very dense and mostly less than 10 m tall. Such areas resembled gaps within the primary and lightly logged forest plots attributed to tree falls. Vegetation was smothered with creepers and vines. Other areas suffered little or no damage, and contained 20-30 m tall forest with emergents at 45 m. Where logging roads transversed the plot the vegetation was distinct, the verges being dominated by trees of *Macaranga hosei* (Euphorbiaceae).

Site D, the **jungle rubber site** (or rubber fallow, **J** in tables). Located adjacent to Cenako River south-east of Pangkalan Kasai, Seberida District (0°35'S, 102°24'E). After clear-cutting in the mid 1960's, probably for an arable crop, this 500 m broad area along the Cenako River was planted with seedling rubber and left to regrow. An estimated 36% of the trees over 10 cm d.b.h. were rubber, of which 66% were still producing latex. The area was surrounded by slash-and-burn areas and low secondary growth. The height of the canopy was 15-20 m, with emergents reaching 25 m. The undergrowth consisted of 1-2 m tall perennials and thickets of bamboo *Dendrocalamus* sp. This land use type is commonly referred to in Sumatra as "jungle rubber". An open area of two hectares was covered by Alang-alang grass *Imperata cylindrica*.

Site E, the **modern rubber plantation site (R** in tables). Situated near Sibabat Pua, Pasir Penyul District (0°31'S, 102°24'E). The plantation comprised mature rubber trees *Hevea brasiliensis* (Euphorbiaceae), planted in 1982-83 in an area previously covered by rain forest. It was roughly 10,000 ha, and surrounded by agricultural land, the nearest forested area lying 5 km from the plot. Average height of the trees was 15.6 (±1.2) m, and density was 944 (±269) trees per hectare. The undergrowth was regularly cut. It was dominated by *Blechnum* sp. (Polypodiaceae) and *Pisum* sp. (Fabaceae), locally with patches of *Cyperus* sp. and *Imperata cylindrica*, and small bushes of *Melastoma affinis* (Melastomataceae). A pond was surrounded by trees of *Macaranga gigantea*.

Site F, the **oil palm plantation site (O)** in tables). Located near Link, 4 km north of Air Molek, Pasir Penyu District (0°18'S, 102°17'E). The plantation was 10,000 ha (10 x 10 km) and consisted of mature oil palms *Elaeis guineensis* (Palmae). The plantation was surrounded by rubber plantations, the nearest forest lying 6 km from the plot. Average height of the palms was 11.1 (± 0.8) m, and density was 162 trees per hectare. The stems of the palms were densely covered by ferns and small plants. Within 1.5m of the palms an area was kept free of vegetation. Otherwise, there were dead palm leaves and abundant ferns, *Blechnum* sp., between the palms.

For a detailed account of the vegetation, see Danielsen & Heegaard (1995).

Methods

All censuses and netting were made during optimal conditions, between 06.00 and 11.00 hrs in fine, dry weather, using the same techniques in all habitats. A variable-distance line-transect method was used, supplemented by systematic mist-netting. Mist-netting was carried out with 15 to 20 nets (150-250 m), mainly set at 0.5 - 3.0 m height. After three to four consecutive days of netting, nets were moved to a new location. Each bird was banded and released. The effort was 10,200 - 15,500 net-meter hours (NMH) in each of the forest study areas and in the jungle rubber study area, but only 6,200 NMH in the modern rubber plantation and 3,300 NMH in the oil palm plantation study area.

A line-transect survey route of 2000 m was cut in a straight line in each habitat, independent of logging roads, light gaps etc. Easily recognizable markers were put up every 250 m. The route was walked by one person with a speed of 250m per 15 minutes. This speed allowed brief stopovers where vocalizing birds were detected. The route was surveyed four times per day. In each of the four forest study areas the route was surveyed for 40 hours, while in each of the two plantation areas the route was only surveyed for 20 hours.

Nomenclature follows Andrew (1992).

Results

A total of 193 species of birds, including three northern hemisphere migrants, was recorded within the Bukit Tigapuluh area (Appendix I). During the survey period, 50 days were spent in the field. Among the more interesting results are the records of 18 globally threatened species of birds (Collar *et al.* 1994) (Table 2). We also added 25 new species for Riau Province and 3 for Jambi Province (*cf.* Marle & Voous 1988). This high total is presumably due to the lack of previous studies in the area. The paucity of knowledge of the Sumatran avifauna can also be seen from the list of breeding records (Table 3). A total of 51 species was found to breed in the survey area, for 22 of which there was no previous documentation of breeding on Sumatra (Marle & Voous 1988).

Table 2. Globally threatened or Bear-threatened species, Bukit Tigaputih, July-September 1991 (Collar *et al* 1994).

SPECIES/ HABITAT	P	L	H	J	R	O
<i>Anhinga melanogaster</i>				+		
<i>Ciconia stormi</i>	X					
<i>Leptoptilus javanicus</i>		+				
<i>Aviceda jerdoni</i>	x					
<i>Cairina scutulata</i>		X				
<i>Melanoperdix nigra</i>		(-^				
<i>Lopfwra erythrothalma</i>	X	x				
<i>Lophura ignita</i>		(+)				
<i>Psittinus cyanurus</i>	x	x	x	X		
<i>Batrachostomus auritus</i>				x		
<i>Rhyticeros corrugatus</i>		x	x	x		
<i>Anthracoceros malayanus</i>	x			x		
<i>Rhinoplax vigil</i>	x	x	x			
<i>Trichastoma rostratum</i>		x				
<i>Trichastoma bicolor</i>	x	x		x		
<i>Malacapteron albogulare</i>		x				
<i>Napothera macrodactyla</i>	x					
<i>Cyornis turcosus</i>	x	x		x		

Notes to Table 2:

X ; Recorded in the surveyed habitat;

+: Recorded outside the surveyed habitat;

(+): Not recorded by the team, but reported by local people

Table 3. Breeding records, Bukit Tigapuluh, Juli-September 1991

SPECIES/HABITAT	P	L	H	J	R	O
<i>Cuculus fugax</i>		M				
<i>Centropus bengalensis</i>						O
<i>Anorrhinus galeritus*</i>			N	O		
<i>Meiglyptes tristis</i>		O	O		O	
<i>Meiglyptes tukki</i>		O				
<i>Calypotomena viridis*</i>	M					
<i>Pitta granatina*</i>		M		M		
<i>Pycnonotus melanoleucos*</i>				M		
<i>Pycnonotus atriceps</i>			FN	O		
<i>Pycnonotus plumosus</i>	M					
<i>Pycnonotus simplex</i>		M	N			
<i>Pycnonotus erythroptalmus</i>	M					
<i>Criniger phaeocephalus</i>	M		O	M		
<i>Hypsipetes criniger*</i>	O					
<i>Aegithina viridissima</i>	O					
<i>Chloropsis sonnerati</i>			N			
<i>Chloropsis cyanopogon*</i>					O	
<i>Irena puella*</i>				O		
<i>Copsychus saularis</i>						M
<i>Copsychus malabaricus</i>			OM	M		
<i>Trichstoma buettikoferi</i>		O				
<i>Trichstoma rostratum*</i>		M				
<i>Trichstoma bicolor*</i>	O					
<i>Malacopteron magnirostre*</i>	Mf		M			
<i>Malacopteron cinereum*</i>	M	N	O			
<i>Malacopteron magnum*</i>	M					
<i>Malacopteron albogulare*</i>		M				
<i>Pomatorhinus montanus*</i>	F					
<i>Stachyris poliocephala</i>			O			
<i>Stachyris maculata*</i>	O					
<i>Stachyris leucotis*</i>			M			
<i>Stachyris erythroptera*</i>				O		
<i>Mocronous gularis</i>						O
<i>Alcippe brunneicauda*</i>			MN			
<i>Prinia flaviventris</i>						OM
<i>Prinia familiaris</i>					O	
<i>Orthotomus atrogularis</i>			O			
<i>Orthotomus ruficeps</i>					OM	O
<i>Orthotomus sericeus</i>				O	M	O
<i>Rhinomyias olivacea</i>		M		M		

SPECIES/HABITAT	P	L	H	J	R	O
<i>Cyornis turcosus</i>		O				
<i>Hypothymis azurea</i>	M	O	OM	OM		
<i>Philetonoma pyrhopterum</i> *			O			
<i>Rhipidura perlata</i>	M					
<i>Prionochilus maculatus</i>	M	M				
<i>Prionochilus percussus</i> *		M		O		
<i>Antheptes simplex</i> *			M			
<i>Arachnothera longirostra</i> *	M		F	O		
<i>Arachnothera affinis</i>	M					
<i>Lonchura striata</i>			M			
<i>Oriolus xanthonotus</i>			O			

Notes to Table 3:

* : First documented breeding record for Sumatra;

M: Juvenile (with yellow/orange side of mouth) mia-netted;

N : Observation of nest or aduh carrying nest material;

O: Juvenile bird observed;

The following list comprises the more significant findings, such as new Sumatran breeding records, new provincial records, and notes on threatened species. The conservation status of the species (Collar *et al* 1994) and the known status in Sumatra (Marle & Voous 1988) are given in the first paragraph.

Anhinga melanogaster **Oriental Darter**

Nonbreeding visitor (but see Holmes & Rusila, this issue), near threatened.

Three observations of single individuals, all outside the survey areas. Twice in a lake near Reingat (0°27'S, 102°2'E) and (me along the road north of Sungai Akar (0°42'S, 102°30'E)). These seem to be the first observations from Riau Province, and represent the northernmost records from Sumatra [but see the Sumatra Bird Report (*Kukila* in prep)].

Ciconia stormi **Storm's Stork**

Endangered. Resident, found only in riverine and swampy lowland forests. One observation of an immature bird in primary forest, Sungai Akar, 20 September.

Leptoptilos javanicus **Laser Adjutant**

Vulnerable. Common resident in wetlands. One observation of a single bird, 28 July, soaring over agricultural land in a swampy area outside the surveyed localities (0°45'S, 102°15'E).

Aviceda jerdoni **Jerdon's Baza**

Near-threatened. Possible resident. *See* records from Sumatra.

One observation of ft angle bird on 20 September a primary forest is the first record for Riau Province.

Macheiramphus alcinus **Bat Hawk**

Resident throughout the mainland, but rather few recent records (DA Holmes, pers. Comm.) One record on 15 September of a bird in flight along a logging road in primary forest .

Cairina scutulata **White-winged Duck**

Endangered. Uncommon resident, confined to swamps and rivers in lowland forests. One individual was seen and heard flying over the camp area three mornings and four evenings (approx. 06.15 and 18.15 hrs) during the fieldwork at Gelumpang, lightly logged forest in the period from 28 July to 7 August.

Melanoperdix nigra **Black Partridge**

Near-threatened- Resident, but few records; inhabits primary lowland and peat swamp forest. Not observed but interviewed Kubus from Gelumpang reported that the species occurs in the area.

Lophura erythrophthalma **Crestless Fireback**

Vulnerable. A bird of primary forest; resident, but only few specimens obtained, no recent records never reported to have been observed alive in Sumatra.

A pair seen in lightly logged forest, Gelumpang on 3 August and two birds, probably both females, observed on a transect in primary forest, Sungai Akar on 16 September. The birds were very secretive and silent: only seen in glimpses, and impossible to follow in the dense undergrowth, where they quickly disappeared.

Lophura ignita **Crested Fireback**

Vulnerable. Resident and formerly locally common in primary forest.

Not observed but interviewed Kubus from Gelumpang reported that the species occurs in the area.

Psittinus cyanurus **Blue-rumped Parrot**

Near-threatened- Resident in primary and *secondary* forests and in fruiting trees in cultivated areas and plantations

We found the species to be common in primary forests and uncommon in the logged forests and in jungle rubber.

Batrachostomus auritus **Large Frogmouth**

Threatened status: data deficient. Resident in forested lowland, little known and only few records. An adult bird which was mist-netted on 27 September in the jungle rubber next to Fangkalan Kasai constitutes the eighth record for Sumatra, and the first for Riau Province Marle & Voous (1988) mention six records (mostly collected specimens) and a single bird was observed near Ketambe Gunung Leuser National Park in July 1988 (Reinemo & Ditlevsen *in litt.*).

Hirundapus giganteus **Brown-hacked Needletail**

Presumable resident, though some may be migrants. Common over forest at all attitudes.

Two birds were seen flying above the heavily logged forest, Sekuyam. Several observations of single birds and small flocks in the area around Pangkalan Kasai. These are the first records from Riau Province.

Cypsiurus balasiensis **Asian Palm-swift**

Rather common resident in open country, although not previously recorded in Riau.

Found in lightly logged forest, modern rubber plantation and oil palm plantation, Sungai Sago.

Harpactes orrhophaeus **Cinnamon-rumped Trogon**

Rare resident in primary and logged forests, with only few scattered records.

An adult bird observed on 17 September in primary forest is the first for Riau Province.

Bereniconus comatus **White-crowned Hornbill**

Resident but few records, A single bird seen in lightly logged forest (Jambi Province).

Anorrhinus galeritus **Bushy-crested Hornbill**

Resident in forests up to 1200 m.

An adult bird seen flying with nest material in the heavily logged forest at Sekuyam, and juvenile birds observed in the rubber fallow. Pangkalan Kasai are the first breeding records of the species from Sumatra.

Rhyticeros corrugatus **Wrinkled Hornbill**

Vulnerable. Resident in primary lowland forest, especially near the coast.

Observed in lightly and heavily logged forests and in the jungle rubber, but more often in lightly logged forest.

Anthracoceros malayanus **Black Hornbill**

Near-threatened. Resident in lowland forests.

The species was found uncommonly in primary forest and jungle rubber. It was also sighted in secondary forest along Sungai Akar, south of the primary forest site.

Rhinoplax vigil **Helmeted Hornbill**

Near-threatened- Not uncommon resident in undisturbed forest up to 1000 m.

The species is very vocal and easily identified- We found this hornbill to be very common in all three forest types which were surveyed, but we had no records in the plantations.

Dinopium rafflesii **Olive-backed Woodpecker**

Uncommon resident in most forest types, but only few recent records.

Single birds in Sekuyam, heavily logged forest and Gehimpang, lightly logged forest

Calypptomena viridis **Green Broadbill**

Resident, primary and old secondary forest up to 1700m.

Few observations, mostly of single birds, in lightly and heavily logged forests. Found commonly in primary forest, Sungai Akar. One bird was mist-netted at Sekayum, seven in Sungai Akar, of which at least one was a juvenile bird in heavily logged forest on 15 and 16 August.

Pitta guajana **Banded Pitta**

Resident throughout the mainland, but recent records are rather localized (D.A- Hotmes, pers comm.). Two birds observed in heavily logged forest on 15 mid 16 August

Pitta grannatina **Garney Pitta**

Rare resident in primary forest up to ca- 500m. No recent records.

Single individuals of a family group were observed several times in heavily logged forest, Sekayum, where a juvenile was caught. We had no observations at other sites, but a juvenile was netted in the primary forest, Sungai Akar. These are the first records for Sumatra since the beginning of this century, the first for Riau Province and the first breeding records for Sumatra.

Pycnonotus melanoleucos **Black-and-white Bulbul**

Resident in primary and dense secondary forest up to 1200m, only few records and poorly known. Found in several places, including two birds in logged forest 8 km south of Pangkalan Kasai- One observation on the transect in heavily logged forest, Sekuyam, where also a single adult bird was taken in a mist-net. Fairly common on the transect in primary forest, where nine birds were caught. A juvenile mist-netted in the rubber fallow, Pangkalan Kasai constitutes the first breeding record for Sumatra. The species has not been recorded previously in Riau Province.

Hypsipetes criniger **Hairy-backed Bulbul**

Resident in primary and secondary forests up to 1000m.

Juvenile birds observed in primary forest, Sungai Akar are the first breeding records from Sumatra

Chloropsis cyanopogon **Lesser Green Leafbird**

Formerly common resident., found in primary and tall secondary forests.

Juvenile birds were seen being fed by an adult bird in the modern rubber plantation, Sibabat. This is the first breeding record for Sumatra.

Irena puelia **Asian Fairy Bluebird**

Common resident, found in primary, tall secondary and fresh water swamp forests up to 1000m.

A female seen feeding her young, in jungle rubber, is the first record of breeding in Sumatra.

Luscinia cyane **Siberian Blue Robin**

Rare winter visitor, but probably overlooked since it is common in Peninsular Malaysia during migration and the northern and winter.

A female or a juvenile male, mist-netted in the rubber fallow on 26 Sept at Pangkalan Kasai is the fifth record for Sumatra (Marle & Voous 1988) and the first from Riau Province. Measurements; wing 72 mm, tail 47 mm, bill 11.6 mm, tarsus 26.3 mm.

Copsychus pyrropygus **Rufous-tailed Shama**

Uncommon in dark understorey of primary forest up to 1000 m

Three individuals of this species were surprisingly recorded in the modern rubber plantation, where the undergrowth was quite open. The vegetation consisted mainly of up to one meter high herbs and small bushes. Some old logs and stumps from the former forest were still present. The identification was confirmed from a tape-recording (DA- Holmes *in litt.*, and S. van Balen *in litt.*).

Enicurus leschenaulti **White-crowned Forktail**

Uncommon resident along streams in dry forests up to 1400 m.

Quite commonly observed at the transect in lightly logged forest, Gelumpang. A single bird netted in primary forest, Sungai Akar, is the first record for Riau Province.

Zoothera interpres **Chestnut-capped Thrush**

Resident in primary forest. No recent records, probably due to its skulking habits.

On 15 July an adult bird was observed on the ground in dense undergrowth of the jungle rubber, Pangkalan Kasai. This is only the second record of the species on mainland Sumatra (Made & Voous 1988), and the first for Riau Province.

Eupetes macrocerus **Rail Babbler**

Resident of primary forest up to 900 m.

One record of two birds on the transect in primary forest, Sungai Akar, is the first observation from Riau.

Trichastoma buettikoferi **Buttikofer's Babbler**

Uncommon and local resident in edges of primary forests, few records only and poorly known.

Observed in small numbers at the transects in primary, lightly and heavily logged forests. Three individuals were netted in Gelumpang. First records from Riau Province. The second breeding record of this species is provided by two adults feeding two juveniles in lightly logged forest on 5 Aug.

Trichastoma rostratum **White-chested Babbler**

Near-threatened. Uncommon resident in mangrove swamps and lowland forests along rivers.

A juvenile was caught in the lightly logged forest, Gelumpang, where the species was found to be very common. This is the first breeding record for Sumatra.

Trichastoma bicolor **Ferruginous Babbler**

Near-threatened. Not uncommon resident in closed-canopy lowland forests.

Found commonly in primary forest, less so in lightly logged forest. Four, two and one bird caught in primary forest, lightly logged forest and rubber fallow respectively. New to Riau Province. Observation of juveniles being fed by adults in primary forest is the first breeding record for Sumatra.

Malacopteron magnirostre **Moustached Babbler**

Rather common resident, found in primary and regenerating forests. Juveniles caught in primary and heavily logged forests constitute the first breeding records for Sumatra.

Malacopteron cinereum **Scaly-crowned Babbler**

Locally common resident, mainly in primary forest.

Juveniles observed in Sekuyam and caught in primary forest, Sungai Akar, constitute the first breeding records for Sumatra.

Malacopteron magnum **Rufous-crowned Babbler**

Resident in primary and disturbed forests, less common than Scaly-crowned Babbler.

A juvenile bird caught in primary forest is the first breeding record for Sumatra.

Malacopteron albogulare **Grey-breasted Babbler**

Near-threatened. Resident in lowland primary forest and possibly also peat swamp forest. Few records, but probably overlooked.

Not being familiar with the voice, the only records were of four birds netted in lightly logged forest, Gelumpang. One was a juvenile, providing the first evidence of breeding on Sumatra.

Pomathorins montanus **Chestnut-backed Scimitar-babbler**

Common resident of primary and disturbed forest up to 1200m.

One bird observed carrying food at Korindo km 30 on 14 July and in the primary forest on 17 Sept provide the first evidence of breeding on Sumatra. An adult bird jumped around the nest in the lightly logged forest, Gelumpang. Two records of three birds on the transect in primary forest. No previous records in Riau Province.

Kenopia striata **Striped Wren-babbler**

Resident in primary forest below 200 m, but probably overlooked in the eastern lowlands; few record, none of them recent (but see Sumatra Bird Report. In prep).

One and two birds observed at the transect in lightly logged forest, Gelumpang. First recent record, new to Jambi Province.

Napothera macrodactyla **Large Wren-babbler**

Near-threatened. Resident in lowland forest, but known definitely only from seven old specimens collected in North Sumatra.

Two birds, most likely a pair since one of them was singing, were seen for three minutes on a slope primary forest, Sungai Akar. The song was recorded and was confirmed by D.A. Holmes (*in litt.*) and S. van Balen (*in litt.*). This is the first observation of the species from Riau, and it is the first confirmed record from Sumatra in recent decade.

Stachyris rufifrons **Rufous-fronted Babbler**

Resident in primary and secondary up to 900 m. Probably with an affinity for bamboo, but few Records.

The species was recorded twice in the lightly logged forest, Sekuyam. where three birds were also mist-netted. These are the first observations from Riau Province.

Stachyris maculata **Chestnut-rumped Babbler**

Common resident of primary and regenerating forests.

An observation of juveniles in primary forest, Sungai Akar. constitute the first breeding record for Sumatra.

Stachyris leucotis **White-necked Babbler**

Resident in primary forest up to 800 m. Rare and local

One observation of a single individual on the transect and three birds mist-netted together in the heavily logged forest, Sekuyam. One bird was a juvenile, and constitutes the first breeding record for Sumatra. Not previously recorded in Riau Province.

Stachyris nigricollis **Black-throated Babbler**

Presumably uncommon resident in primary and secondary forest.

During the survey the species was recorded at four localities: we found it common in jungle rubber, Pangkalan Kasai and lightly logged forest, Gelumpang, and very common in heavily logged forest, Sekuyam and primary forest, Sungai Akar.

A single bird was mist-netted in Gelumpang. No previous records from Riau Province.

Stachyris erythroptera **Chestnut-winged Babbler**

Common resident of primary and tall secondary forest up to 700 m.

An observation of juvenile birds in rubber fallow is the first breeding record from Sumatra.

Alcippe brunneicauda **Brown Fulvetta**

Uncommon resident in primary and secondary habitats, found up to 1000 m.

Juveniles caught in lightly logged forest, Sekuyam, provide the first breeding record from Sumatra.

Rhinomyias umbratilis **Grey-chested Rhinomyias**

Resident of primary and secondary forests, mainly in lowland, but only few records.

Two observations of single birds on the transect in primary forest, Sungai Akar. A total of five birds was caught: two, two and one bird in primary, lightly and heavily logged forests, respectively. The species is not previously recorded from Riau Province. There appears to be sympatry between this species and Fulvous-chested Rhinomyias *R. olivacea* which was also netted in heavily logged forest and rubber fallow.

Eumyias thalassina **Verditer Flycatcher**

Resident up to over 1000m, especially in the hills (D.A. Holmes pers. Coram.).

One collected in lightly logged forest represents an uncommon lowland record (preserved at the Zoological Museum, Bogor).

Cyornis turcosus **Malaysian Blue Flycatcher**

Near-threatened. Resident along rivers and streams in forests, usually below 100m. The species was uncommon in primary and lightly logged forests and in jungle rubber. One was mist-netted in the primary forest and five in lightly logged forest, where we also observed two juveniles.

Philentoma pyrhopterum **Rufous-winged Philentoma**

Resident in forest, secondary growth and plantations, especially in the lowlands.

Few records from the three surveyed forests. A juvenile bird being fed by adults in heavily logged forest is the first record of breeding in Sumatra.

Rhipidura perlata **Spotted Fantail**

Resident in primary and old secondary forests up to 1500 m, but only few scattered records.

The species was recorded as uncommon in primary, lightly and heavily logged forests. Three birds were

netted in Sungai Akar, primary forest, once an adult and a juvenile bird together.

Prionochilus maculatus **Yellow-breasted Flowerpecker**

Resident, found in forest habitats and cultivation.

Recorded as uncommon in rubber fallow, lightly and heavily logged forests and common in primary forest. Birds netted in Sungai Akar (3), Gelumpang (3), Sekuyam (2) and Pangkalan Kasai (1). The species has not previously been recorded from Riau Province.

Prionochilus percussus **Crimson-breasted Flowerpecker**

Resident in forest habitats and second growth.

Found uncommonly on the transect in rubber fallow, Pangkalan Kasai Mist-netted birds from Gelumpang (2), Sekuyam (4) and Pangkalan Kasai (1). The birds caught in the lightly logged forest were juveniles, and a juvenile bird was observed in the rubber fallow. These are the first breeding records for Sumatra. The species has not previously been recorded from Riau Province.

Anthreptes simplex **Plain Sunbird**

Resident in disturbed habitats up to at least 1000 m.

Three observations of single birds at the transects in primary, lightly and heavily logged forests. Two birds netted at both Gelumpang and Sekuyam; at the latter site one of these was a juvenile, constituting the first evidence of breeding from Sumatra. Not previously recorded from Jambi and Riau Provinces.

Arachnothera longirostris **Little Spiderhunter**

Common resident in most habitats up to 2000 m

Juvenile birds caught in primary forest constitute the first breeding records from Sumatra.

Lonchura leucogastra **White-bellied Munia**

Presumably resident but very few authenticated records and status uncertain.

Recorded in jungle rubber where one was netted. There were nine observations, totalling some 32 birds in groups of 2 to 6, in edge habitats (grassland, scrub, bamboo, arable plots).

Corvus macrorhynchos **Large-billed Crow**

Common resident in cultivated areas, but status uncertain.

Eight birds recorded in rubber fallow are presumably the first records from Riau Province.

Discussion

Most previous breeding records of Sumatran birds are from January to June (G.W.H. Davison in Marle & Voous 1988), and only few species have been recorded to breed from July to September, which was the period of our survey. However, Davison defined a breeding record as a record of nest-building, nests, eggs, fledglings or young being fed, while most of our breeding records are

based on capture or observations of juvenile birds with yellow/orange sides to the mouth. More work is needed to clarify the seasonality of breeding among Sumatran birds.

Importance to conservation

All the globally threatened species of birds occurring in Bukit Tigapuluh were recorded in forest habitats only, including the jungle rubber, see Table 2 (Danielsen & Heegaard, 1995 and in prep.). More than three-quarters of the bird species in Bukit Tigapuluh were only recorded in forest and not in plantations or open land habitats. A total of 16% of the bird species was exclusively found in primary, unlogged forest.

Many species of birds are used by the local communities. At least six species of wild birds are used for medicinal or magical/ritual purposes by communities of Malay and Kubu (Maryanto *et al.* 1994). In addition, 23 species taxa of wild birds are used for food.

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Appendix 1. Systematic list of birds occurring in Bukit Tigapuluh, Sumatra

Nomenclature follows Andrew (1992).

* indicates that the species is classified as threatened or near-threatened (Collar *et al.* 1994).

^m indicates that the species is a non-breeding migrant to Sumatra (Marle & Voous 1988).

^k identified by indigenous Kubu people.

P : primary forest, Sungai Akar

L : lightly logged forest, Gelumpang Kecil

H : heavily logged forest, Sekuyam

J : jungle rubber, Pangkalan Kasai

R : modern rubber plantation, Sibabat Dua

O : oil palm plantation, Air Molek

		P	L	H	J	R	O
Storm's Stork*	<i>Ciconia stormi</i>	P					
Jerdon's Baza*	<i>Aviceda jerdoni</i>	P					
Oriental Honey-buzzard	<i>Pernis ptilorhynchus</i>			H			
Bat Hawk	<i>Macheiramphus alcinus</i>	P					
Crested Serpent-eagle	<i>Spilorms cheela</i>	P	L	H			
Crested Goshawk	<i>Accipiter trivirgatus</i>		L				
Black-thighed Falconet	<i>Microhierax fringillarius</i>	P	L				
Lesser Whistling-duck	<i>Dendrocygna javanica</i>					R	
White-winged Duck*	<i>Cairina scutulala</i>		L				
Black Partridge*	<i>Melanoperdix nigra</i>		L				
Blue-breasted Quail	<i>Cotumix chinensis</i>						O
Crested Partridge	<i>Rollulus rouloul</i>		L				
Crestless Fireback*	<i>Lophura erythrophthalma</i>	P	L				
Crested Fireback**	<i>Lophura ignita</i>		L				
Great Argus	<i>Argusianus argus</i>	P	L	H			
Barred Button-quail	<i>Tumix suscitator</i>					R	
White-breasted Waterhen	<i>Amaurornis phoenicurus</i>					R	O
Thick-billed Green Pigeon	<i>Treron curvirostra</i>	P		H			
Little Green Pigeon	<i>Treron olax</i>	P	L	H			
Pink-necked Green Pigeon	<i>Treron vemans</i>					R	
Jambu Fruit-dove	<i>Ptilinopus jambu</i>	P			J		
Green Imperial Pigeon	<i>Ducula aenea</i>		L				
Spotted Dove	<i>Streptopelia chinensis</i>				J	R	O
Emerald Dove	<i>Chalcophaps indica</i>	P		H	J		
Long-tailed Parakeet	<i>Psittacula longicauda</i>	P	L	H	J	R	O
Blue-rumped Parrot*	<i>Psittinus cyanurus</i>	P	L	H	J		
Blue-crowned Hanging-parrot	<i>Loriculus galgulus</i>	P	L	H	J		
Hodgson's Hawk-cuckoo	<i>Cuculus fugax</i>		L				
Plaintive Cuckoo	<i>Cacomantis merulirus</i>				J	R	O
Drongo Cuckoo	<i>Surniculus lugubris</i>		L				
Black-bellied Malkoha	<i>Rhopodytes diardi</i>		L				
Chestnut-bellied Malkoha	<i>Rhopodytes sumatranus</i>					R	
Raffles' Malkoha	<i>Rhinortha chlorophaea</i>		L	H	J		
Red-billed Malkoha	<i>Zanlostomus javanicus</i>	P					
Chestnut-breasted Mallkoha	<i>Rhamphococcyx curvirostris</i>	P					
Greater Coucal	<i>Centropus sinensis</i>			H	J	R	
Lesser Coucal	<i>Centropus bengalensis</i>				J	R	O
Reddish Scopsowl	<i>Otus rufescens</i>		L				
Collared Scopsowl	<i>Otus lempiji</i>			H			

		P	L	H	J	R	O
Brown Boobook	<i>Ninox scutulata</i>	P				J	R
Large Frogmouth*	<i>Batrachostomus auritus</i>				J		
Malaysian Eared Nightjar	<i>Eurostopodus temminckii</i>	P	L	H	J	R	
Large-tailed Nightjar	<i>Cepirmulgus macrurus</i>			H		R	
Savanna Nightjar	<i>Caprimulgus affinis</i>						O
Brown-backed Needletail	<i>Hirundapus giganteus</i>			H	J		
Silver-rumped Swift	<i>Rhaphidura leucopygialis</i>	P	L	H			
Asian Palm-swift	<i>Cypsiurus balasiensis</i>		L			R	O
Grey-rumped Tree-swift	<i>Hemiprocne longipennis</i>	P	L	H			
Whiskered Tree-swift	<i>Hemiprocne comata</i>	P	L	H			
Diard's Trogon	<i>Harpactes diardii</i>	P	L	H			
Cinnamon-rumped Trogon	<i>Harpactes orrhophaeus</i>	P					
Scarlet-rumped Trogon	<i>Harpactes duvaucelii</i>	P	L	H	J		
Blue-eared Kingfisher	<i>Alcedo meninting</i>		L	H		R	
Blue-banded Kingfisher	<i>Alcedo euryzona</i>	P					
Oriental Dwarf Kingfisher	<i>Ceyx erithacus</i>		L	H	J		
Stork-billed Kingfisher	<i>Pelargopsis capensis</i>				J		
White-throated Kingfisher	<i>Halcyon smyrnensis</i>					R	O
Collared Kingfisher	<i>Halcyon chloris</i>				J		
Rufous-collared Kingfisher	<i>Actenoides concretus</i>	P	L	H			
Red-bearded Bee-eater	<i>Nyctornis anictus</i>		L	H	J		
White-crowned Hornbill	<i>Berenicornis comatus</i>		L				
Bushy-crested Hornbill	<i>Anorrhinus galeritus</i>	P	L	H	J		
Wrinkled Hornbill*	<i>Rhyticeros corrugatus</i>		L	H	J		
Wreathed Hornbill	<i>Rhyticeroa undulatus</i>	P		H	J		
Black Hornbill*	<i>Anthracoceros malayanus</i>	P			J		
Rhinoceros Hornbill*	<i>Buceros rhinoceros</i>	P	L	H			
Helmeted Hornbill	<i>Rhinoplax vigil</i>	P	L	H			
Gold-whiskered Barbet	<i>Megalaima chrysopogon</i>	P	L	H	J		
Red-throated Barbet	<i>Megalaima mystacophanos</i>		L	H			
Yellow-crowned Barbet	<i>Megalaima henricii</i>	P	L	H	J		
Blue-eared Barbet	<i>Megalaima australis</i>	P		H			
Brown Barbet	<i>Calorhamphus fuliginosus</i>	P		H	J		
Rufous Piculet	<i>Sasia abnormis</i>	P	L	H	J	R	
Rufous Woodpecker	<i>Celeus brachyurus</i>	P	L	H	J		
Checker-throated Yellownappe	<i>Picus mentalis</i>			H			
Crimson-winged Yellownappe	<i>Picus puniceus</i>		L	H			
Banded Woodpecker	<i>Picus miniaceus</i>			H			

P L H J R O

Common Goldenback	<i>Dinopium jceivanense</i>					R	
Olive-backed Woodpecker	<i>Dinopium rafflesii</i>		L	H			
Buff-rumped Woodpecker	<i>Meiglyptes tristis</i>	P	L	H	J	R	
Buff-necked Woodpecker	<i>Meiglyptes tukki</i>	P	L	H	J		
White-bellied Woodpecker	<i>Dryocopus javensis</i>	P		H			
Brown-capped Woodpecker	<i>Dendrocopus moluccensis</i>					R	
Grey-and-buff Woodpecker	<i>Hemicircus concretus</i>				J		
-Maroon Woodpecker	<i>Bfythipicus rubiginosus</i>	P	L				
Orange-backed Woodpecker	<i>Reinwardtipictis validus</i>	P		H			
Black-and-red Broadbill	<i>Cymbirhynchus macrorhynchus</i>		L				
Banded Broadbill	<i>Eurylaimus javanicus</i>	P		H			
Black-and-yellow Broadbill	<i>Eurylaimus ochromalus</i>	P	L	H	J	R	
Green Broadbill	<i>Calyptomena viridis</i>	P	L	H			
Banded Pitta	<i>Pitta guajana</i>			H			
Garnet Pitta	<i>Pitta granatina</i>	P		H			
Barn Swallow"	<i>Hirundo rustica</i>				J	R	0
Richard's Pipit	<i>Anthus novaeseelandiae</i>						0
Lesser Cuckoo-shrike	<i>Coracina fimbriata</i>		L				
Fiery Minivet	<i>Pericrocotus ignens</i>					R	
Scarlet Minivet	<i>Pericrocotus flammeus</i>		L	H			
Black-winged Hemipus	<i>Hemipus hirundinaceus</i>		L			R	
Large Wood-shrike	<i>Tephrodornis gularis</i>			H			
Black-and-white Bulbul	<i>Pycnonotus melanoleucus</i>	P		H	J		
Black-headed Bulbul	<i>Pycnonotus atriceps</i>	P		H	J		
Black-crested Bulbul	<i>Pycnonotus melanicterus</i>				J		
Grey-bellied Bulbul	<i>Pycnonotus cyanivenfris</i>	P	L	H			
Puff-backed Bulbul	<i>Pycnonotus eutilotus</i>		L	H			
Yellow-vented Bulbul	<i>Pycnonotus goiavier</i>			H	J	R	0
Olive-winged Bulbul	<i>Pycnonotus plumosus</i>	P	L	H	J	R	
Cream-vented Bulbul	<i>Pycnonotus simplex</i>	P	L	H	J		
Red-eyerBulbuT	<i>Pycnonotus brunneus</i>	P	L	H	J		
Spectacled Bulbul	<i>Pycnonotus erythrophthalmos</i>	P	L	H			
Grey-cheeked Bulbul	<i>Criniger bres</i>			H	J		
Yellow-bellied Bulbul	<i>Criniger phaeocephalus</i>	P	L	H	J		
Buff-vented Bulbul	<i>Hypsipetes charlottae</i>		L	H			
Hairy-backed Bulbul	<i>Hypsipetes Criniger</i>	P	L	H			
Common Streaked Bulbul	<i>Hypsipetes malaccensis</i>			H			

		P	L	H	J	R	O
Common lora	<i>Aegithina tiphia</i>	P					
Green lora	<i>Aegifhina viridissima</i>	P	L	H		R	
Greater Green Leafbird	<i>Chloropsis sonnerati</i>			H			
Lesser Green Leafbird	<i>Chloropsis cyanopogon</i>		L	H		R	
Blue-winged Leafbird	<i>Chloropsis cochinchinensis</i>	P					
Asian Fairy Bluebird	<i>Irena puella</i>	P	L	H	J		
Brown Shrike"	<i>Lanius cristatus</i>	P			J		
Siberian Blue Robin""	<i>Luscinia cyane</i>				J		
Oriental Magpie-robin'	<i>Copsychus saularis</i>					R	0
White-rumped Shama	<i>Copsychus malabaricus</i>	P	L	H	J	R	
Rufous-tailed Shama	<i>Copsychus pyrrropygus</i>					R	
White-crowned Forktail	<i>Enicurus leschenauilli</i>	P	L				
Chestnut-capped Thrush	<i>Zoothera interpres</i>				J		
Rail Babbler	<i>Eupetes macrocerus</i>	P					
Black-capped Babbler	<i>Pellorneum capistratum</i>	P	L	H	J		
Buttikofer's Babbler	<i>Trichastoma buettikoferi</i>	P	L	H			
Short-tailed Babbler	<i>Trichastoma malaccense</i>	P	L	H	J		
White-chested Babbler*	<i>Trichastoma rostratum</i>		L				
Ferruginous Babbler*	<i>Trichastoma bicolor</i>	P	L		J		
Moustached Babbler	<i>Malacopteron mognirostre</i>	P	L	H			
Sooty-capped Babbler	<i>Malacopteron affine</i>		L				
Scaly-crowned Babbler	<i>Malacopteron cinereum</i>	P	L	H	J		
Rufous-crowned Babbler	<i>Malacopteron magnum</i>	P	L	H			
Grey-breasted Babbler*	<i>Malacopteron albogulare</i>		L				
Chestnut-backed Scimitar-babbler	<i>Pomatorhinus montanus</i>	P	L				
Striped Wren-babbler	<i>Kenopia striata</i>		L				
Large Wren-babbler*	<i>Napothera macrodactyla</i>	P					
Rufous-fronted Babbler	<i>Stachyris rufifrons</i>			H			
Grey-headed Babbler	<i>Stachyris poliocephala</i>	P	L	H	J		
Chestnut-rumped Babbler	<i>Stachyris maculata</i>	P	L	H	J		
White-necked Babbler	<i>Stachyris leucotis</i>			H			
Black-throated Babbler	<i>Stachyris mgnecollis</i>	P	L	H	J		
Chestnut-winged Babbler	<i>Stachyris erythroptera</i>	P	L	H	J		
Striped Tit-babbler	<i>Macronous gularis</i>	P	L	H	J	R	0
Fluffy-backed Tit-babbler	<i>Macronous ptilosus</i>	P	L	H	J		
Brown Fulvetta	<i>Alcippe brunneicauda</i>	P	L	H			
Bar-winged Prinia	<i>Prinia familiaris</i>					R	0
Yellow-bellied Prinia	<i>Prinia flaviventris</i>		L			R	0

		P	L	H	J	R	O
Dark-necked Tailorbird	<i>Orthotomus atrogularis</i>		L	H			
Rufous-tailed Tailorbird	<i>Orthotomus sericeus</i>		L		J	R	0
Ashy Tailorbird	<i>Orthotomus ruficeps</i>		L		J	R	0
Fulvous-cheated Rhinomyias	<i>Rhinomyias olivacea</i>			H	J		
Grey-chested Rhinomyias	<i>Rhinomyias umbratilis</i>	P	L	H			
Verditer Fiveateher .	<i>Eumyias thalassina</i>		L				
Malaysian Blue Flycatcher*	<i>Cyornis turcosus</i>	P	L		J		
Rufous-winged Philentoma	<i>Philentoma pyrhopterum</i>	P	L	H			
Maroon-breasted Philentoma	<i>Philentoma velatum</i>	P					
Black-naped Monarch	<i>Hypothymis azurea</i>	P	L	H	J		
Asian Paradise-flycatcher	<i>Terpsiphone paradisi</i>	P	L	H	J		
Pied Fantail	<i>Rhipidura javanica</i>						0
Spotted Fantail	<i>Rhipidura perlata</i>	P	L	H			
Velvet-fronted Nuthatch	<i>Sitta frontalis</i>			H			
Yellow-breasted Flowerpecker	<i>Prionochilus maculatus</i>	P	L	H	J		
Crimson-breasted Flowerpecker	<i>Prionochilus percussus</i>		L	H	J	R	
.-Buff-bellied Flowerpecker	<i>Dicaeum ignipectus</i>				J		
Scarlet-backed Flowerpecker	<i>Dicaeum cruentatum</i>				J		
Plain Sunbird	<i>Anthreptes simplex</i>	P	L	H			
Brown-throated Sunbird	<i>Anthreptes malacensis</i>		L		J		
Ruby-cheeked Sunbird	<i>Anthreptes singalensis</i>	P	L	H		R	
Purple-naped Sunbird	<i>Hypoframma hypogrammicum</i>	P	L	H	J		
Crimson Sunbird	<i>Aethopyga siparaja</i>				J		
Little Spiderhunter	<i>Arachnothera longirostra</i>	P	L	H	J	R	
Spectacled Spiderhunter	<i>Arachnothera flavieaster</i>			H			
Yellow-eared Spiderhunter	<i>Arachnothera chrysogenys</i>	P					
Grey-breasted Spiderhunter	<i>Arachnothera affinis</i>	P		H	J		
White-rumped Munia	<i>Lonchura striata</i>	P	L	H	J	R	0
Scaly-breasted Munia	<i>Lonchura punctulata</i>						0
White-bellied Munia	<i>Lonchura leucogastra</i>				J		
White-headed Munia	<i>Lonchura maja</i>						0
Tree Sparrow	<i>Passer montanus</i>						0
HfilMyna	<i>Gracula religiosa</i>	P	L		J	R	
Dark-throated Oriole	<i>Oriolus xanthonotus</i>	P	L	H	J		
Black-naped Oriole	<i>Oriolus chinensis</i>				J	R	
Bronzed Drongo	<i>Dicrurus aeneus</i>	P	L	H			
Greater Racquet-tailed Drongo	<i>Dicrurus paradiseus</i>	P	L	H	J	R	
White-breasted Wood-swallow	<i>Artamus leucorhynchus</i>						0
Crested Jay	<i>Platylophus galericulatus</i>	P					
Slender-billed Crow	<i>Corvus enca</i>	P	L	H		R	0
Large-billed Crow	<i>Corvus macrorhynchus</i>				J		