

THE BIRDS OF BILLITON ISLAND

by

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The history of Billiton ornithology has been reviewed by Mr. C. BODEN KLOSS in a previous number of „Treubia”¹⁾ wherein there is also a sketch map of the island showing its relation to Sumatra and Borneo.

Dr. A. G. VORDERMAN's report (1891) listed ninety-three species from the island. Of these, a visual record of *Ictinaëtus malayensis* needs confirmation in view of the fact that *Spizaëtus cirrhatus limnaeetus*, which in its dark phase is superficially very like *Ictinaëtus*, occurs on the island; furthermore, *Orthotomus sepium ruficeps* LESS. („cineraceus” auct., nec BLYTH) is listed under two names, *O. borneonensis* and *O. cineraceus*. To the amended list of ninety-one species KLOSS added *Accipiter virgatus gularis*, *Halcyon coromanda minor*, *Hierococcyx fugax nisicolor* (coll., BRAUTIGAM), and *Turdus o. obscurus*. It must also be added that included in a few skins from Billiton in the British Museum (ex. TWEEDDALE coll.), are *Rallus fasciatus* and *Ardea s. sumatrana*.

The collection on which the present paper is based was made by Mr. F. J. KUIPER in 1935-7 and I am grateful to Dr. K. W. DAMMERMAN for the opportunity of studying such a beautiful series of well-made, well-labelled skins from such an interesting locality.

Mr. KUIPER's collection adds no less than seventy species to the list of Billiton birds making a total of one-hundred and sixty-seven for the island and a few adjacent islets.

Twenty-four of the recent additions are sea-fowl and shore-birds, mostly migratory species.

Charadrius, *Squatarola*, *Numenius*, *Limosa*, *Capella*, *Erolia*, *Tringa*, *Glaucopis*, *Sterna*, *Anous*, *Demigretta* and *Fregata*. The following eleven birds are also migrants. — *Pernis apivorus japonicus*, *Falco peregrinus calidus*, *Pandion haliaëtus cristatus*, *Eurystomus orientalis calonyx*, *Merops superciliosus javanicus*, *Chalcites basalis*, *Cuculus m. micropterus*, *Eudynamis s. scolopaceus*, *Geokichla sibirica*, *Matacilla f. simillima* and *Hirundo rustica*. Perhaps the specimens obtained of *Gallicrex*, *Ixobrychus sinensis*, *I. eurhythmus*, *Dupetor*, *Goisakius*, *Halcyon pileata* and *Pitta b. cyanoptera* were also migrants, but this is not certain. Purely resident forms added to the list by Mr. KUIPER's efforts number twenty-six from the viewpoint of the faunist they are the most important of all. — *Rallus striatus gularis*, *Amaurornis phoenicurus javanicus*,

¹⁾ "Some birds of Billiton Island", XIII, 1931, p. 293.

Dendrocygna j. javanica, *Spizaetus nipalensis alboniger*, *Spizaetus cirrhatu*
limnaeetus, *Spilornis cheela natunensis*, *Haliaceetus leucogaster*, *Strix l. leptogrammica*, *Phodilus badius parvus*, *Batrachostomus javensis*, *Alcedo atthis bengalensis*, *Anthracoceros malayanus*, *Cypsiurus batasiensis infumatus*, *Micropus affinis subfurcatus*, *Collocalia francica* subsp., *Collocalia esculenta cyanoptila*, *Hierococcyx f. fugax*, *Centropus bengalensis javanicus*, *Rhinomyias o. olivacea*, *Lalage n. nigra*, *Pycnonotus simplex perplexus*, *Malacocincla abbotti eritora*, *Pachycephala cinerea butaloides*, *Zosterops chloris solombensis*, *Leptocoma jugularis microleuca*, and *Munia punctulata fretensis*. Two last additions, *Geopelia s. striata* and *Padda oryzivora* have, perhaps, been introduced into the island as cage birds: both are, usually, very common wherever they occur, and VORDERMAN'S large collection contained neither species.

It will be noticed that I have dealt with the collection purely as a systematist and zoogeographer, but the collector could certainly contribute some interesting biological observations, judging from various notes he has made, here and there, on the field-labels and from his published articles ¹⁾. In justice to Mr. KUIPER it should also be added that the greater part of his collection was in my hands before my "Handlist of Malaysian Birds" was published in 1935 and that I inserted many new records for Billiton in the page-proofs of the book based entirely on his skins.

From the collection I have ventured to describe six new subspecies: the status of some other forms is doubtful and there is a possibility that a Billiton subspecies of the following species will have to be separated when better material either of the island form or of the races needed for comparison is available. — *Treeron curvirostra*, *Callolophus miniaceus*, *Strix leptogrammica*, *Hypothymus azurea* and *Anaimos thoracicus*.

Two species obtained by VORDERMAN and not represented in the present collection also require re-examination with a view to establishing their subspecies and additional material would therefore serve a very useful purpose: they are *Pycnonotus erythrophthalmos* and *Aethostoma rostratum*. Further specimens of *Cyanoderma*, *Mixornis* und *Collocalia francica* are also needed.

We find that owing to lack of material the exact affinities of four of the one-hundred and sixty-seven Billiton birds are not yet clear and forty are migrants, shore and sea-birds etc. Of the remainder, eighty-two forms are common to Sumatra and Borneo; twenty-three are Sumatran and four Bornean. Three forms are neither Sumatran nor Bornean, but are characteristic of the small islands of the ocean tract separating the Malay Peninsula and Sumatra on the one hand and Borneo on the other; eight forms are peculiar to Billiton itself; two seem like subspecies described from the neighbouring island of Banka and one has spread from other small islands in the Java Sea. Be it noted also that the avifauna of Billiton includes representative of three species found in Sumatra and not in Borneo (*Turnix suscitator*, *Cisticola juncidis*, and *Munia*

¹⁾ See "De Tropische Natuur", 26, 1937, p. 67-68 (*Anous minutus worcesteri*, breeding); *Ibid.*, p. 83-84 (*Cypsiurus batasiensis infumatus*, breeding).

punctulata), but only one (*Anaimos thoracicus*) found in Borneo and not in Sumatra. Mr. KUIPER's collection provides us with a far more exact analysis of the Billiton avifauna than has hitherto been possible. It shows that the majority of Billiton forms are common to the lowlands of Sumatra and Western Borneo; that in the minority the Sumatran element is strongly dominant although the Bornean element is not insignificant; and that local differentiation is stronger than was expected. This analysis gives the result to be expected from a glance at KLOSS' sketch map for although Billiton is situated about half-way between Sumatra and Borneo it is embraced by the off-shore 40-metre line of the former island with which the island of Banka also acts as a connecting link whereas to the east of Billiton the map shows intruding depths of 50 metres before the off-shore 40-metre line of Borneo is reached. It is most unfortunate that no detailed comparison can be made between the birds of Billiton and Banka, but no recent material from the latter island is available for study.

In addition to the main island of Billiton the present collection contains material from the following neighbouring islets. — Kamoedi Island, near Cape Kaloempang on the south coast; Langkoeas Island, one of the Elf Islands, just off the north-west point; Kebatoe, or Schoen Island, sixty kilometres south of Billiton; "Witte Rots" (White Rock), just off Kebatoe; Lima Island, about twenty-two kilometres west of Billiton; Keramiah Island, just off the south coast; and Betang Island, just off the west coast of Billiton.

SYSTEMATIC.

The following four subspecies have already been described as peculiar to Billiton: two are from the KUIPER collection (*Chotorea*, *Pycnonotus*).—

1922 *Malacocincla abbotti eritora* OBERH.

1931 *Eurylaimus javanicus billitonis* KLOSS.

1935 *Chotorea rafflesii billitonis* CHAS.

1935 *Pycnonotus plumosus billitonis* CHAS.

In the following pages four other new forms are diagnosed.—

Turnix suscitator kuiperi subsp. nov.

Phodilus badius parvus subsp. nov.

Chloropsis cochinchinensis billitonis subsp. nov.

Macronus ptilosus sordidus subsp. nov.

PHASIANIDAE.

Rollulus roulroul (SCOP.).

VORDERM., p. 510; KLOSS, p. 293.

3 ♂, 5 ♀. Wings ♂ 139, 139, 140; ♀ 134, 136, 139, 140 mm.

Birds from Sumatra, Borneo and Billiton (*terr. typ.*, Malacca) seem inseparable.

Excalfactoria chinensis palmeri RILEY.*Excalfactoria chinensis*, VORDERM., p. 514.

3 ♂, 2 ♀. Wings ♂ 69, 71, 70; ♀ 71, 72 mm.

These are dark birds very near to *lineatus* of the Philippines, but the males have much slaty blue on the upper parts: one specimen has a patch of red in the wings. Birds from Java (*terr. typ.*), South Sumatra, South Borneo and Billiton seem inseparable, but the material examined is not very large.

TURNICIDAE.

Turnix suscitator kuiperi subsp. nov.*Areoturnix plumbipes*, VORDERM., p. 513; *T. s. suscitator*, KLOSS, p. 293.

Characters. — Both sexes are much darker on the upper parts than in *T. s. suscitator* (GM.), of Java and Sumatra, and *T. s. atrogularis* (EYTON) of the Malay Peninsula, but nearer to the former subspecies on account of the rufous barring on the upper parts, which in females forms an indistinct collar and the less extensive black area on the throat and breast; and the heavier and more extensive barring on the under parts. The wings and under parts are less buffy than in the other Malaysian races.

Type. — Adult female collected on Billiton Island, 9th February, 1936 by Mr. F. J. KUIPER. Zool. Mus., Buitenzorg, Java. Wing, 90 mm. 160

Specimens examined. — Fourteen. Wings, ♂ 82, 83, 83, 83, 81, 82, 82; ♀ 85, 89, 89, 86, 89, 90, —, 85, 90 mm, compared with good series from Java and the Malay States.

Remarks. — This is a very distinct race. If the three Malaysian races are laid out in series, the sexes mixed, and the backs uppermost, the typical form gives a colour impression of brownish buff, or fawn colour, much mixed with rufous: *atrogularis* is colder in tone, basically dull, brownish grey and without the rufous markings. The Billiton form appears dark grey mixed with rufous. The old specimen examined by KLOSS and referred to the typical subspecies was much faded.

COLUMBIDAE.

Treron curvirostra curvirostra (GMEL.).*Treron nasica*, VORDERM., p. 499; *T. c. curvirostra*, KLOSS, p. 294.

1 ♂. Wing 142 mm.

I have only seen two birds from Billiton, both adult males. One is the fresh skin collected by Mr. KUIPER; the other is the old skin collected and discussed by VORDERMAN and later re-examined by KLOSS: two other specimens from Billiton are in the British Museum. In the present paper, owing to the paucity of the material, I have followed KLOSS and placed Billiton birds with the typical subspecies, but it seems possible that they represent an undescribed race.

The type locality of *T. c. curvirostra* (GMEL.), is the Malay State of Selangor, and Bornean birds, including topotypes of *Columba nasica* SCHLEG., from the south of the island, seem inseparable. A large series of topotypical *curvirostra* gives a wing-range of 127 - 138 mm: a smaller series of birds from the mainland of Borneo gives 121 - 136 mm. The species seems to be less common in Sumatra than in the Malay Peninsula and Borneo: nine birds from the west and south of the island have wings measuring 125 - 137 mm in length. The four Billiton birds have wings measuring 136, 139 (Brit. Mus., *vide* H. C. ROBINSON, MS.), 140, 142 mm: the average size is, therefore, large. Furthermore, the two specimens before me are both very pale on the forehead and the newer skin has the dark bar on the tail narrower than in any other example of *curvirostra* I have seen except the one bird in the British Museum placed by SALVADORI under *T. nasica* in Cat. Birds, Brit. Mus., XII., p. 38. This bird also resembles the Billiton skin in that it is pale on the forehead and large (wing 141 mm). It is said to have been collected by WALLACE in Sumatra, presumably in Palembang on the mainland opposite to Banka and Billiton: it is, however, peculiar in that the sides of the head are more feathered than in *curvirostra*.

Treron fulvicollis fulvicollis (WAGL.).

VORDERM., p. 501; KLOSS, p. 294.

1 ♂, 1 ♀. Wing: 150 (c), 142 mm.

Birds from Sumatra (*terr. typ.*). South Borneo and Billiton seem inseparable.

Treron vernans griseicapilla SCHLEG.

Treron vernans, VORDERM., p. 501.

4 ♂. Wings —, 145, 145, 148 mm. Also 1 Juv. ♀.

Birds from South Sumatra (*terr. typ.*), most of Borneo, and Billiton seem inseparable: birds from South-east Borneo seem nearer to *T. v. purpurea* of Central and East Java. One of the Billiton males is also very pale on the forehead and throat and could equally well be placed with *purpurea*.

Ducula aenea aenea (LINN.).

Carpophaga aenea, VORDERM., p. 505.

1 ♂, 2 ♀. Wings 229, 223, 226 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Flores).

Myristicivora bicolor bicolor (SCOP.).

Carpophaga bicolor, VORDERM., p. 507.

1 ♂ imm.; 1 ♀ from Kamoedi Island near Cape Kaloempang; 1 ♂ from Billiton. Wings, ♂ 230; ♀ 223 mm.

Birds from Sumatra, Borneo and Billiton are alike (*terr. typ.*, New Guinea).

Geopelia striata striata (LINN.).

1 ♀. Wing 95 mm.

Birds from the Malay Peninsula (*terr. typ.*), Sumatra and Borneo seem inseparable.**Streptopelia chinensis tigrina** (TEMM.).*Spilopelia tigrina*, VORDERM., p. 508.

1 ♀. Wing 148 mm.

Birds from South Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Java).**Chalcophaps indica indica** (LINN.).

VORDERM., p. 508.

2 ♂. Wing —, 140 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Calcutta).

RALLIDAE.

Rallus striatus gularis HORSF.

2 ♂, 2 ♀. Wings ♂ 122, 118; ♀ 113, — mm.

Birds from Sumatra and Billiton seem inseparable from *gularis* of Java which is also probably the form occurring in South Borneo although this is not yet certain as the material examined is poor.**Amaurornis phoenicurus javanicus** (HORSF.).

2 ♂, Wings 147, 150 mm.

The resident birds of Sumatra, Borneo and Billiton seem alike (*terr. typ.*, Java).**Gallicrex cinerea plumbea** (VIEILL.).

1 ♂. Wing 190 mm.

A bird in brown plumage dated 29th December. Birds from Sumatra, Borneo and Billiton seem alike (*terr. typ.*, Java).

CHARADRIIDAE.

Charadrius apricarius fulvus GMEL.

5 ♂, 2 ♀. Migrants dated from 1st October to 30th November.

Charadrius leschenaultii leschenaultii LESS.

1 ♂, 1 ♀. Migrants dated 10th November; also 2 ♂ from Seriboe Island dated 28th September and 2 ♂, 1 ♀ from Betang Island dated 14th December.

Charadrius mongolus atrifrons WAGL.

1 ♀. A migrant dated 10th November.

Charadrius dubius curonicus GMEL.

2 ♀, Migrants dated 14th - 25th November. Wings, 114 - 5, 113 mm.

Charadrius peronii SCHLEG.

2 ♂, 1 ♀. Wings 97, 98, —, 103 mm.

Birds from the Sumatran Province, Borneo (*terr. typ.*) and Billiton seem alike. A resident species.

Squatarola squatarola australis REICH.

2 ♀, Betang Island. Migrants dated 14th December.

SCOLOPACIDAE.

Numenius arquata orientalis BREHM.

1 ♂, Betang Island. A migrant dated 14th December.

Numenius madagascariensis (LINN.).

1 ex. A migrant dated 10th November.

Numenius phaeopus variegatus (SCOP.).

VORDERM., p. 516.

2 ♂, 3 ♀. Migrants dated from 21st September to 30th April.

Limosa lapponica baueri NAUM.

1 ♀. A migrant dated 27th February.

Capella stenura (BP.).

3 ♀. Migrants dated 6th and 21st March and 26th December.

Erolia testacea (PALL.).

1 ♂. A migrant dated 1st October.

Erolia ruficollis (PALL.).

2 ♂, 1 ♀. Migrants dated from 25th September to 25th November.

Tringa totanus eurhinus (OBERH.).

2 ♀. Migrants dated 29th September and 29th October.

Tringa nebularia (GUNN.).

1 ♂. A migrant dated 30th November.

Tringa hypoleucos (LINN.).

1 ♂, 1 ♀. Migrants dated 20th October and 30th November.

GLAREOLIDAE.

Glareola pratincola maldivarum FORST.

1 ♂. A migrant.

LARIDAE.

Sterna bergii cristata STEPH.

1 ♂. Wing 324 mm (from Langkoeas Island, Elf Islands, just off the north-west point of Billiton).

Sterna bengalensis bengalensis LESS.

1 ♂, 2 ♀. Wings ♂ 295; ♀, —, — mm 18th January. The females are from Betang Island.

It is curious that this tern has not yet been recorded from Borneo, although it seems certain that it must occur, at least along the south coast.

Sterna anaethetus anaethetus SCOP.

1 ♂, 1 ♀. Wings 256, 265 mm (from Langkoeas Island, Elf Islands, just off north-west point of Billiton, 24th July, and "Witte Rots" (White Rock), near Kebatoe I., 60 km south of Billiton, 13th July). Widely spread in the Malaysian subregion.

Sterna sumatrana sumatrana RAFFLES.

2 ♂. Wings 233, 217 mm (from Langkoeas Island, Elf Islands, just off north-west point of Billiton, 24th July). Widely spread in Malaysian seas.

Anoüs minutus worcesteri (MC GREG.).

1 ♂, 1 ♀. Wings, 222, 220; tail, 121, 119, tarsus, 21, 21, exposed culmen, 42, 40; bill from gape, 56, 54; middle toe and claw, 37, 37 mm. "Witte Rots" (White Rock), quite near Kebatoe (Schoen Island), about 60 kilometres south of Billiton, 5th June and 13th July). In Malaysia this species, which is easily confused with the much commoner *Anoüs stolidus* but recognized by the much slenderer bill, is only known from the Straits of Malacca, the coast of Sarawak, and the small islands near Billiton. The subspecies *worcesteri* was described from Cavilli Island in the Sulu Sea. The measurements of the present specimens agree very closely with those of the type of *worcesteri*, but no direct comparison has been possible.

Anoüs stolidus pileatus (SCOP.).

1 ♂, Wing, 282 mm (from Kebatoe (or Schoen Island), about 60 kilometres south of Billiton, 5th June).

CICONIIDAE.

Leptoptilos javanicus (HORSF.).

1 ♀. Wing, about 560 mm.

ARDEIDAE.

Demigretta sacra sacra (GMEL.).

3 ♀. Wings 262, 246 (imm.), 261 mm.

One specimen in the white and two in the dark phase. One of the latter is from Lima Island about 21 kilometres west of Billiton: the other is an immature bird.

Widely spread in the same form throughout Malaysia.

Goisakius melanolophus melanolophus (RAFFLES).

2 ♀. Wings 252, 259 mm.

Found in the same form in Sumatra (*terr. typ.*), Borneo and Billiton.

Butorides striatus javanicus (HORSF.).

VORDERM., p. 517.

1 ♂, 3 ♀. Wings ♂, 170; ♀ 167, 167, 178 mm.

The resident birds of Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Java).

Ixobrychus sinensis sinensis (GMEL.).

1 ♀. Wing 129 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, China).

Ixobrychus eurhythmus (SWINH.).

2 ♂, 1 ♀. Wings 149, 144, 140 mm. 10th January, 5th March, 30th April.

This bird is probably only a migrant to Malaysia where it also occurs in Sumatra and Borneo (*terr. typ.*, South China).

Dupetor flavicollis flavicollis (LATH.).

1 ♂. Wing 190 mm. Birds from Borneo, Sumatra and Billiton seem alike (*terr. typ.*, India). Perhaps a migrant (1st January).

FREGATIDAE.

Fregata andrewsi MATH.

Fregata aquila, VORDERM., p. 518.

1 imm. ♀ (from Langkoeas Island, Elf Islands, just off the north-west point of Billiton, 28th July). This species has not yet been recorded from the Straits of Malacca, or from the west coast of Sumatra.

Fregata ariel ariel (G. R. GRAY).

2 ♀. Wings 542, 549 mm (from Langkoeas Island, Elf Islands, just off the north-west point of Billiton, 9th October). An adult and an immature bird. The species is widely spread in Malaysian seas.

ANATIDAE.

Dendrocygna javanica javanica (HORSF.).

2 ♂. Wings, 186, 188 mm. Birds from Sumatra, Borneo and Billiton seem alike (*terr. typ.*, Java).

FALCONIDAE.

Accipiter virgatus gularis (TEMM. and SCHLEG.).

KLOSS, p. 294.

2 ♂, 4 ♀. Wings ♂ 170 (ad.), 167; ♀ 191, 188, 190, 195 mm.

The skins are dated from 22nd October to 17th April (adult).

Spizaëtus cirrhatus limnaeetus HORSF.

1 ♂, 1 ♀. Wing 378, 408 mm.

Birds from Sumatra, Borneo and Billiton seen inseparable (*terr. typ.*, Java).

Spizaëtus nipalensis alboniger (BLYTH).

1 ♂. Wing 289, tail, 217; bill from gape, 33 mm; 1 ♀. Wing 312; tail, 229; bill from gape, 35 mm.

These birds are both very small and it would be interesting to examine adults from Billiton. They are in the plumage usually described as the second, or intermediate stage, that is the plumage succeeding the immature phase and preceding the black and white of the perfect dress. The male has the top of the head, largely black; upper parts, dark brown, darkest on the shoulders and mantle. Sides of head and nape, mostly tawny-buff. Chin, white with a black median stripe; breast and abdomen, tawny-buff, heavily streaked on the breast with black and indistinctly barred with dark brown and white on the abdomen. Lower abdomen, under tail coverts, thighs and tarsi, white, regularly barred with blackish. Tail with three, visible, dark bars. Crest narrow, about 50 mm in length, and black narrowly tipped with white. The feathering of the feet extends to a point half way along the basal joint of the middle toe.

Birds from Sumatra and Borneo seem alike: the Javan race (*bartelsi*) seems never to attain the black and white plumage seen in old birds of *alboniger*.

Spilornis cheela natunensis CHAS.

Spilornis cheela natunensis CHASEN, Bull. Raff. Mus., IX, 1934, p. 93. (Bunguran Island, North Natuna Islands).

3 ♂, 1 ♀, 1 ex. Wings ♂ 311, 312, 312; ♀ 308; sex? 304 mm.

This very plastic serpent-eagle has developed subspecies on almost all the

Malaysian islands, large and small, on which it is found and it is no surprise to find that the Billiton race is neither the Sumatran nor the Bornean subspecies. I cannot, however, separate the small Billiton series from three topotypes of *natunensis*: all specimens from the two localities are comparatively small and grey.

Haliaeetus leucogaster (GMEL.).

1 imm. ex. Wing 545 mm; 1 ♂, Wing 538 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Java).

Haliastur indus intermedius GURNEY.

1 ♂. Wing 391 mm.

Pernis apivorus japonicus KURODA.

1 ♂. Wing 446 mm.

A migrant dated 23rd January.

Falco peregrinus calidus LATH.

1 ♀. Wing 314 mm.

An immature migrant dated 28th March and, if correctly sexed, very small.

PANDIONIDAE.

Pandion haliaetus cristatus (VIEILL.).

1 ♂. Wing 395 mm.

A migrant from Lima Island about 21 kilometres west of Billiton.

STRIGIDAE.

Bubo ketupu ketupu (HORSF.).

Ketupa javanensis, VORDERM., p. 418.

1 ♂. Wing 327 mm; 1 juv. ♀, 7th October.

Birds from Sumatra, West Borneo and Billiton seem inseparable (*terr. typ.*, Java).

Strix leptogrammica leptogrammica TEMM.

2 ♂, 2 ♀; 1 nestling. Wings ♂ 314, 303; ♀ 294, 310 mm.

It is possible that these beautifully prepared skins represent an undescribed race peculiar to Billiton. They are very richly coloured and have broad, conspicuous, bright reddish orange nuchal collars: they stand much closer to typical *leptogrammica* of Borneo, as represented by specimens from Sarawak, than to the duller *S. l. myrtha* of Sumatra. Unfortunately, I have seen very few skins of true *leptogrammica*: two specimens from British North Borneo are less rufous in general tone and whiter, less buffy, on the bellies than three rather old skins from Sarawak. The Billiton birds have darker caps and are

even more rufous than the Sarawak examples, but this owl is so variable wherever it is found that pending examination of better topotypical material I attempt no further separation. The nestling, dated 15th June, is mostly in down but with the quills half-grown. The down is pale rufous-buff in colour.

Phodilus badius parvus subsp. nov.

Like *P. b. badius* (HORSF.) of Java, but smaller. Wings 172 - 180 against 180 - 196 mm in topotypes from Java.

Type. — Adult female, collected on Billiton Island, on 5th November, 1935 by F. J. KUIPER. Zool. Mus., Buitenzorg, Java.

Specimens examined. — Eight, including the type. Wings ♂ 171; ♀ 172, 176 (type) 175, 179, 180, 180 mm.

Remarks. — The late H. C. ROBINSON commented on the small size of a Billiton example of this owl in Bull. Brit. Orn. Club, xlvii, 1927, p. 121. The specimens in the Raffles Museum add little to the measurements of series from various localities given by this author except to run up the wing-range of Bornean birds to 193 mm. I can also supply measurements for a few recently acquired Sumatran birds. — 3 ♂, 182 - 190; 1 ♀ 197 mm, and Dr. MAX BARTELS has very kindly given me the following measurements of the Javan birds in his collection. — ♂ 180, 181, 185, 186, 186, 188, 190; ♀ 180, 182, 184, 184, 185, 186, 191, 191, 192, 196 mm. The small feet and short bills of the Billiton birds also stand out when series are compared. Birds from Sumatra and Borneo seem inseparable.

PSITTACIDAE.

Psittacula longicauda defontainei CHAS.

Palaeornis longicauda, VORDERM., p. 418; KLOSS, p. 294.

5 ♂, 1 ♀. Wings ♂ —, 162, 155, 164, 165; ♀ — mm.

Billiton birds run large and are best placed with *defontainei* (*terr. typ.*, Bunguran, North Natuna Islands), which is found on the small islands of the ocean tract separating the Malay Peninsula, Sumatra and Borneo on the one hand and Borneo on the other. Birds from Sumatra and Borneo seem inseparable.

Loriculus galgulus galgulus (LINN.).

VORDERM., p. 421.

6 ♂. Wings 85, 82, 82, 83, 88, 85 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Malacca).

PODARGIDAE.

Batrachostomus javensis (HORSF.).

1 ♂, 1 ♀. Wings 132, 129 mm; 1 juv. 2nd May.

The nestling, which is referred to this species purely by association, is in an advanced coat of down with less than half-grown wings and tail of teleop-

tiles. The upper parts are pale brown, faintly rufous; the under parts are whitish: both upper and under parts are barred with dusky. The lores and supercilia are broadly white and there is a white patch on the scapulars. I have referred these Billiton specimens to the species usually known as *javensis*, but I am now not certain that the name has been rightly applied in the case of non-Javan specimens.

CORACIIDAE.

Eurystomus orientalis orientalis (LINN.).

VORDERM., p. 441, KLOSS, p. 294.

1 ♂. Wing —.

An example of the resident race dated 29th April. Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Java).

Eurystomus orientalis calonyx SHARPE.

1 ♂. Wing 182 mm.

A brightly coloured example of the migratory race dated 29th April.

ALCEDINIDAE.

Ramphalcyon capensis cyanopteryx OBERH.

Pelargopsis leucocephala, VORDERM., p. 436.

3 ♀. Wing 140, 149, 150 mm.

The Sumatran, not the Bornean, subspecies.

Ceyx rufidorsus STRICKL.

Ceyx innominata, VORDERM., p. 436.

2 ♂, 1 ♀, 1 ex. Wings ♂ 57, 55; ♀ 55; sex? 53 (imm.) mm. The collection also includes two juveniles dated 6th April.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Malacca).

Alcedo meninting verrauxii DE LA BERGE.

VORDERM., p. 434.

1 ♂, 2 ♀. Wings 62, 63, 64 mm; 1 ex. 63 mm: 1 imm.

Birds from Borneo (*terr. typ.*), Sumatra and Billiton seem inseparable.

Alcedo atthis bengalensis (GMEL.).

1 ex. Pulau Seriboe; 1 ♀ Billiton. Wings, 72, 72 mm. Birds from Sumatra, Borneo and Billiton seem alike (*terr. typ.*, Bengal).

Halcyon coromanda minor TEMM. and SCHLEG.

KLOSS, p. 294.

1 ♂, Wing 100 mm.

Birds from South Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Malacca).

Halcyon saneta sancta VIG. and HORSF.*Sauropatis sancta*, VORDERM., p. 440.

2 ♂, 1 ♀. Wings —, 88, 95 mm.

Migrants dated 2nd June and 23rd August.

Halcyon chloris cyanescens (OBERH.).*Sauropatis chloris*, VORDERM., p. 439.

1 ♂, 2 ♀. Wings 112, 117, 113 mm.

Birds from South Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Taya Island, South-east Sumatra).**Halcyon concreta concreta** (TEMME.).*Caridagrus concretus*, VORDERM., p. 437; *Halcyon c. concreta*, KLOSS, p. 294.

1 ♂, 2 ♀. Wings ♂ 107; ♀ 113, 112 (c) mm.

The Sumatra and Bornean races are very much alike, but the latter is slightly larger. On the available scanty material (Kloss records a male with a wing-length of 110 mm) Billiton birds are best placed with the typical (Sumatran) form.

Halcyon pileata (BODD.).

1 ♂, 29th October. Wing 130 mm.

Birds from Sumatra, Borneo and Billiton seem alike (*terr. typ.*, China).

BUCEROTIDAE.

Anthracoceros malayanus (RAFFLES).1 ♂. Wing 327 mm; bill from gape, 143 (c); length of casque (straight), 145 mm. Casque and superciliary stripes, white. The collection also includes two immature birds, one of each sex. In both, the casque and superciliary stripes are white. Birds from Sumatra (*terr. typ.*), Borneo and Billiton seem inseparable.

MEROPIDAE.

Merops viridis viridis LINN.*Merops bicolor*, VORDERM., p. 434.

4 ♂, 1 ♀. Wings ♂ 115, 111, 110, —; ♀ 107 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Java).**Merops superciliosus javanicus** HORSF.

2 ♀. Wings 126, 126 mm. Migrants dated 18th February.

CAPRIMULGIDAE.

Caprimulgus concretus concretus BP.

VORDERM., p. 448.

3 ♂, 3 ♀. Wings ♂ 162, 164, 164; ♀ 166, 161, 165 mm.

Birds from Sumatra, Borneo (*terr. typ.*) and Billiton seem inseparable.

Caprimulgus affinis affinis HORSF.

VORDERM., p. 448.

2 ♂, 2 ♀. Wings 165, 165; ♀ 158, 159 mm.

Birds from Sumatra, Billiton and Borneo seem inseparable (*terr. typ.*, Java).

MICROPODIDAE.

Hemiprocne longipennis harterti STRES.*Dendrochelidon longipennis*, VORDERM., p. 450.3 ♂, 2 ♀, 1 juv. (30th July). Wings ♂ 152, —, 158; ♀ 162, 157 mm. Birds from Sumatra (*terr. typ.*), Borneo and Billiton seem inseparable.**Cypsiurus batasiensis infumatus** (SCLAT.).

2 ♀. Wings 111, 115 mm.

Birds from Sumatra, Borneo (*terr. typ.*) and Billiton seem inseparable.**Micropus affinis subfurcatus** (BLYTH).

1 ♂, 4 ♀. Wings ♂ 138; ♀ 138, 142, 139, 132 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Penang).**Collocalia esculenta cyanoptila** OBERH.

7 ♂, 3 ♀, 4 ex.; 3 ♂, 1 ♀, young birds. Wings ♂, 102, 103, 106, 99, 105, 103, 102; ♀, 102, 105, 107; unsexed, 104, 104, 102 mm.

One adult has a large white patch on the breast. (I have seen examples of *Collocalia vestita maratua* and *C. francica germani* in which the blackish body plumage is much mixed with white). Birds from East Sumatra, Borneo and Billiton seem alike.**Collocalia vestita vestita** (LESS.).? *Collocalia fuciphaga*, VORDERM., p. 450.

1 ♂, Wing 112 mm.

C. v. vestita occurs also in Sumatra. The Bornean form is very slightly different.**Collocalia francica** subsp.Three half-grown juveniles appear to represent a form of this species but unfortunately the collection contains no adult bird. The rump is very distinctly lighter than the back and there are a few small feathers on the tarsi. No form of *C. francica* has yet been recorded from Sumatra but two forms are known from the coastal islands of Borneo.

TROGONIDAE.

Harpactes duvaucelii (TEMM.).*Pyrotrogon duvaucelii*, VORDERM., p. 421.

5 ♂, 3 ♀. Wings ♂ 103, 105, 106, 108, 109; ♀ 107, 109, 109 mm.

Birds from Sumatra (*terr. typ.*), Borneo and Billiton seem inseparable.

CUCULIDAE.

Chalcites basalis (HORSF.).

2 ♀. Wings 98, 102 mm.

Migrants dated 2nd and 4th June.

Cuculus micropterus micropterus GOULD.

1 ♂. Wing 216 mm. A very large example dated 25th February: probably a migrant.

Hierococcyx fugax fugax (HORSF.).

1 juv. ♀ (12th July).

The resident birds of Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Java).

Eudynamys scolopaceus scolopaceus (LINN.).

1 ♀. Wing 198 mm.

A migrant dated 23rd January. For the moment I regard all whitish females of this species found in Malaysia as belonging to the typical race (Bengal), but some are large and perhaps referable to *chinensis*. The species needs further revision.

Centropus bengalensis javanicus (DUM.).

5 ♀. Wings 158, 152, 157, 163, 152 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Java).

Rhopodytes sumatranus (RAFFLES).

VORDERM., p. 432; KLOSS, p. 294.

2 ♂, 2 ♀, 1 ex. Wings ♂, 145, 147; ♀ 143, 142; 140 mm.

Birds from Sumatra (*terr. typ.*), Borneo and Billiton seem inseparable.

CAPITONIDAE.

Chotorea rafflesii billitonis CHAS.

Chotorea versicolor, VORDERM., p. 423; *C. rafflesii* subsp., KLOSS, p. 295.

Chotorea rafflesii billitonis CHASEN, Ornith. Monatsber., xliii, 1935, p. 149 (Billiton Island).

5 ♂, 2 ♀. Wings 127, 127, 120, 124, 123; ♀ 125, 120 mm.

This race is nearest to *C. r. borneensis* BLAS., of Sarawak, but it is larger, the wings of seven specimens measuring 120 - 127 mm (average, 123.7 mm) against 110 - 120 mm (average, 116 mm) in sixteen examples of *borneensis*. In both these forms the blue on the head averages slightly paler than in typical *rafflesii* of Sumatra.

PICIDAE.

Callolophus miniaceus malaccensis (LATH.).*Callolophus malaccensis*, VORDERM., p. 425.

2 ♂, 3 ♀. Wings ♂ 135, —; ♀ 130, 130, 130 mm.

These birds differ from *C. miniaceus malaccensis* of the Malay Peninsula (*terr. typ.*) and Sumatra and the smaller *C. m. dayak* of West Borneo in the paler chestnut colour of the throat and breast, but in all the specimens the plumage is rather worn and I am not certain that the difference is racial.

With a wing range of 130 - 135 mm for four birds it seems likely that the Billiton bird will prove to be even larger than *malaccensis* of which a large series in the Raffles Museum has the wings measuring 123 - 132 mm with the maximum measurement rare. It is possible that more material would justify the separation of a Billiton subspecies. *C. m. malaccensis* also occurs in North-west Borneo.

Dryobates moluccensis moluccensis (GMEL.).*Iyngipicus fusco-albidus*, VORDERM., p. 425.

5 ♀. Wings 74, 77, 79, 78, 77 mm.

One bird is abnormal in that on each wing it has a white patch on the inner greater secondary coverts, larger on one side than on the other.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Malacca).

Meiglyptes tukki tukki (LESS.).

VORDERM., p. 427; KLOSS, p. 295.

2 ♂, 1 ♀. Wings 98, 95; 94 mm.

Birds from Sumatra (*terr. typ.*), Borneo and Billiton seem inseparable.

Micropternus brachyurus badius (RAFFLES).

VORDERM., p. 429; KLOSS, p. 295.

1 ♂, 3 ♀. Wings ♂ 112; ♀ 113, 114, 110 mm.

Billiton birds belong to the Sumatran form and not to the brighter Bornean race (*badiusus*).

EURYLAIMIDAE.

Eurylaimus javanicus billitonis KLOSS.*Eurylaimus javanicus*, VORDERM., p. 441.*Eurylaimus javanicus billitonis* KLOSS, Treubia, XIII, 1931, p. 295 (Billiton Island).

5 ♂, 3 ♀. Wings ♂ 104, 105, 106, 105, 104; ♀ 108, 103, 105 mm.

Both sexes are very slightly pinker and less leaden on the under parts, especially on the throat, than *E. j. harterti* of Sumatra.

The Billiton race is intermediate between the Sumatran and Bornean (*brookei*) forms, but more closely resembles the former: in a very large series one or two skins from Sumatra are exactly like Billiton birds.

Eurylaimus ochromalus ochromalus RAFFLES.

VORDERM., p. 444; KLOSS, p. 295.

2 ♂, 5 ♀. Wings ♂ 79, 78; ♀ 78, 76, 75, 11, 80 mm.

The Sumatran and Bornean subspecies only differ in the slightly larger average size of the latter: specimens from Billiton agree with the former race (*terr. typ.*, Singapore).

Cymbirhynchus macrorhynchus malaccensis SALVAD.

VORDERM., p. 445.

2 ♂, 5 ♀. Wings ♂ 79, 78; ♀ 78, 76, 75, 77, 80 mm.

One male dated 8th June is a juvenile. Birds from East and South Sumatra and Billiton agree with Malayan topotypes of *malaccensis* in having more white in the tail than is usual in the Bornean (typical) race. All the present examples have white patches on the inner webs of the outer three, four, or five pairs of tail feathers. The Billiton skins are peculiar in that the yellow wash on the axillaries and wing-lining is stronger than in specimens of this species from elsewhere, but, at the moment, I am uncertain as to how much this character is affected by rapid, post-mortem fading.

PITTIDAE.

Pitta sordida bangkana SCHLEG.*Pitta cucullata*, VORDERM., p. 488.

5 ♂, 1 ♀, 3 juv. (28th May, 15th August). Wings ♂ 106, 106, 108, 105, 109; ♀ 100 mm.

These specimens are of particular interest because they establish, quite clearly, the status of *bangkana* as a valid, resident, race on Billiton.

Although *P. s. cucullata* may breed in the northern part of the Malay Peninsula it is, I think, only a visitor to the southern parts of its Malaysian range where, in season, it is found in the territory of the resident form, *P. s. mülleri* (authentic specimens of both *cucullata* and *mülleri* have recently been examined from Palembang in Sumatra). Further division of *mülleri* into yet other subspecies seems to me unjustifiable and the report of its occurrence on Banka needs confirmation. Furthermore, I find on investigation, that there is some doubt about the exact provenance of the old specimen of *bangkana* recorded from "Palembang" (Treubia, XIII, 1931, p. 331).

In *cucullata* the crown is usually chestnut, but there is often a dark median stripe: in *mülleri* the entire head is black. The six adult birds from Billiton are very variable in the colour of the crown. Three are indistinguishable in pattern from those *cucullata* with a dark coronal stripe, but the chestnut ground colour is darker: a third example has the crown much mixed with black, but in general appearance it is still nearer to *cucullata* than *mülleri*; the remaining two skins have the crown more black than brown and are nearer to *mülleri* than to *cucullata*.

***Pitta brachyura cyanoptera* TEMM.**

1 ♀, 23rd October. Wing, 125 mm.

Birds occurring in Sumatra (*terr. typ.*), Borneo and Billiton seem alike.

HIRUNDINIDAE.

***Hirundo rustica gutturalis* SCOP.**

1 ♀. Wing 116 mm (imm.). A migrant dated 14th January.

Hirundo tahitica abbotti* (OBERH.).Hirundo javanica*, VORDERM., p. 451.

1 ♀. Wing 103 mm.

Birds from East Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Anamba Islands).

MUSCICAPIDAE.

***Hypothymis azurea prophata* OBERH.**

VORDERM., p. 452.

3 ♂, 1 ♀. Wings ♂ 67, 67, 67 mm.

In one male the black gorget is less pronounced than in most males of *prophata*: the other two birds are immature. The female is slightly bluer on the tail than is usual in *prophata*: there is a suggestion therefore that the Billiton bird is verging towards *H. a. karamatensis* of the Karimata Islands, West Borneo and it would be interesting to examine more material from Billiton.

H. a. prophata is found in both Sumatra and Borneo (*terr. typ.*, Karimons Islands).

Rhipidura javanica longicauda* WALL.Leucocerca javanica*, VORDERM., p. 452.

3 ♂. Wings 80, 80, — mm. 1 ex. imm.

Birds from Sumatra (*terr. typ.*), Borneo and Billiton seem inseparable.***Terpsiphone paradisi australis* CHAS.***Terpsiphone affinis*, VORDERM., p. 453.

3 ♂, 1 ♀. Wings ♂ 94, 93, 93; ♀ 97 mm.

The males are in the white phase but one is without streamers: the others in the possession of relatively long tails measuring 350 and 360 mm resemble the Bornean race *T. p. borneensis*, but although their bills can be matched in a long series of *borneensis* they are shorter and narrower than is usual in that race.

Judging from its dull crown the female is not adult. On the upper parts it is so dull that it needs no comparison with *indochinensis* or *affinis*, but it can be exactly matched by some *borneensis* from which, however, it differs in having no buff wash on the under parts and again in having a smaller bill

than the majority of females of that race. It is paler on the back than a female from West Java, but taken together the range of colour shewn by the two birds is still not quite so great as that shewn by series of *borneensis*.

T. p. australis is now known from the Lampongs in South Sumatra, Billiton Island, and West Java: it may be reasonably expected to occur in the extreme south of Borneo.

Rhinomyias olivacea olivacea (HUME).

1 ♂ imm.

This specimen is too young for subspecific examination, but it no doubt belongs to the typical race which is found in Sumatra and Borneo (*terr. typ.*, Tenasserim).

CAMPEPHAGIDAE.

Lalage nigra nigra (FORST.).

1 ♂. Wing 86 mm.

This race is also found in Sumatra (*terr. typ.*, Singapore): the Bornean form is separable (*schisticeps*).

Pericrocotus igneus igneus BLYTH.

Pericrocotus ardens, VORDERM., p. 456; KLOSS, p. 296.

5 ♂. Wings 71, 73, 73, 73, 73; 1 ♂ ?, wing, 70 mm.

The two smallest of these birds are exactly like adult females of this species from other localities, but in one case the field-label bears a drawing of two very small testes and the bird is marked as a male by the collector: the other bird is marked as a male with a query. The specimens in this collection have been so carefully sexed by the collector that I cannot suggest that he is wrong in this particular case.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Malacca).

In my "Handlist of Malaysian Birds" (1935) I included *Pericrocotus flammeus xanthogaster* in the avifauna of Billiton on the strength of VORDERMAN's record of "*P. ardens*", but although *ardens* is properly a synonym of *xanthogaster*, KLOSS has shewn that VORDERMAN's bird is really *P. igneus*. *P. f. xanthogaster* must therefore be expunged from the Billiton list.

PYCNONOTIDAE.

Aegithina viridissima viridissima (BP.).

Iora viridissima, VORDERM., p. 470; KLOSS, p. 296.

7 ♂, 1 ♀. Wings ♂ 58, 58, 59, 60, 60, 61, 62; ♀ 63 mm.

Three of the birds sexed by the collector as males are exactly like the female in plumage. Although full-grown they are, no doubt, immature.

Chloropsis cochinchinensis billitonis* subsp. nov.Phyllornis icterocephala*, VORDERM., p. 473; KLOSS, p. 296.

Male like *C. cochinchinensis icterocephala* LESS., of Sumatra and the Malay Peninsula, but the golden wash on the nape less extensive and intense, and the posterior part of the crown olivaceous, not yellow, or golden. Adult female rather less golden on the nape than the female of *icterocephala*.

Type. — Adult male collected on Billiton Island, on 24th December 1935 by F. J. KUIPER. Zool. Mus., Buitenzorg, Java. Wing, 80 mm.

Specimens examined. — Five males, two adult females, and three immature birds, compared with very large series of *C. c. icterocephala*. Wings. — ♂ 80, 81, 82, 83, 83; ♀ 77, 78; imm. 75, 75, 80 mm.

Remarks. — In plumage this new subspecies stands between *icterocephala* of Sumatra and *viridinucha* SHARPE, of Borneo in which latter form the hinder part of the crown is grass-green and there is no golden wash on the nape. In the majority of fully adult males of *icterocephala* the yellow of the forehead passes into the golden colour just behind a line drawn between the eyes and there is rarely any green on the crown. Two in more than fifty skins of *icterocephala* are like *billitonis*. Males of *icterocephala* have a wing-range of 78 to 86 mm, but the average is high, 84 mm: the Billiton birds with a wing-range of 80 to 83 mm are, therefore, on the small side.

Chloropsis sonnerati zosterops* VIG.Phyllornis sonneratii*, VORDERM., p. 472; KLOSS, p. 296.

1 ♀. Wing 89 mm.

The bill is very small, but the specimen is immature. Birds from Sumatra (*terr. typ.*), Borneo and Billiton seem inseparable.

Irena puella criniger* SHARPE.Irene cyanea*, VORDERM., p. 458.

4 ♂, 1 ♀. Wings ♂ 122, 121, 121, 123; ♀ 118 mm.

Birds from Sumatra, Borneo (*terr. typ.*), and Billiton seem inseparable.

***Iole olivacea olivacea* BLYTH.**

VORDERM., p. 477.

1 ♂, 1 ♀. Wings 89, — mm.

Birds from Sumatra and Billiton seem inseparable (*terr. typ.*, Singapore): the Bornean form is separable (*charlottae*).

Brachypodius atriceps atriceps* (TEMME).Brachypodius melanocephalus*, VORDERM., p. 479.

5 ♂, 1 ♀. Wings ♂ 78, 77, 75, 75, 78; ♀ 77 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Java).

Alophoixus phaeocephalus phaeocephalus* (HARTL.).Criniger phaeocephalus*, VORDERM., p. 480; KLOSS, p. 296.

1 ♀. The tail is missing and the wings are moulting: a detailed examination

is, therefore, not possible and I follow KLOSS who identified an old skin collected by VORDERMAN as *A. p. phaeocephalus* which occurs in Sumatra, but not in Borneo.

***Pycnonotus goiavier personatus* (HUME).**

Pycnonotus analis, VORDERM., p. 475.

1 ♂, 1 ♀. Wings 80, 81 mm.

Birds from Sumatra (*terr. typ.*), and Billiton seem alike: those from Borneo are very slightly different (*gourdini*).

***Pycnonotus plumosus billitonis* CHAS.**

Pycnonotus plumosus, VORDERM., p. 475; *P. plumosus* subsp., KLOSS, p. 296.

Pycnonotus plumosus billitonis CHASEN, Ornith. Monatsber., 1935, p. 148: Billiton Island.

3 ♂, 1 ♀. Wings ♂ 83, 83, 86 (type); ♀ 80 mm.

In this race the under parts are rather paler and greyer than in the typical form and the brown wash on the sides of the breast and abdomen is reduced. The under tail coverts are bright as in *P. p. plumosus* and not dull as in *P. p. insularis* of Borneo. Two of the four skins examined have the ear coverts paler than in any example in long series of the two above mentioned races. According to the collector the irides of the Billiton race are red.

***Pycnonotus simplex perplexus* CHAS. and KLOSS.**

Pycnonotus simplex perplexus CHASEN and KLOSS, Jour. f. Orn., 1929, Bd. 2, p. 116: Balambangan Island, North Borneo.

6 ♂, 3 ♀, 1 ex. Wings ♂ 82, 83, 85, 77, 76; ♀ 75, 75, 79 mm; sex? 80 mm.

On seven of these specimens the collector has marked the irides as "red"; on one, "red-brown"; and on two, "yellowish white". Of these last mentioned birds one is little more than a juvenile: the other bird I am not quite sure about, but I think it is immature.

P. s. perplexus which occurs in Borneo only differs from the typical race found in Sumatra in having red instead of white irides in the adult.

TIMALIIDAE.

***Pellorneum capistratus nigrocapitatum* (EYTON).**

Drymocapthus nigricapitatus, VORDERM., p. 485; *P. capistratum nigrocapitatum* KLOSS, p. 296.

1 ♂, 1 ♀. Wings 68, 69 mm. 1 juv. dated 11th June.

These birds seem absolutely inseparable from *nigrocapitatum* of the Malay Peninsula from which the Bornean races (*capistratoides* and *morrelli*) are quite distinct. The Banka bird has been named *nyctilampe* OBERH.: I have never seen totypes of this race and although in a previous publication I used the name for Sumatran birds on the strength of one or two comparatively dark skins examined from that island, I now doubt if a Sumatran race is really separable.

Malacocincla abbotti eritora OBERH.

Malacocincla abbotti eritora OBERHOLSER, Smiths. Misc. Coll. lxxiv, 2, 1922, p. 11 (Billiton Island).

1 ♂. Wing —.

This dull coloured bird needs no comparison with the more brightly coloured race found in Sumatra (*olivaceus*), but judging from the very limited material at my disposal it is extremely close to *M. a. büttikoferi* of Borneo. Compared with an example of *büttikoferi* the Billiton skin has a smaller bill (measured from the gape, 21.7 against 24 mm); the tail is more rufous (a character probably depending on the age of the feathers); the lores and supercilium are slightly greyer and less whitish; and the under parts are, perhaps, very slightly whiter.

Anuropsis malaccensis saturata ROB. and KLOSS.

Brachypteryx malaccensis, VORDERM., p. 487; *A. malaccensis* subsp., KLOSS, p. 297.

Anuropsis malaccensis saturata ROBINSON and KLOSS, Bull. Brit. Orn. Club, xl, 1920, p. 68 (Baram, Sarawak).

4 ♂. Wing 66, 66, 67, 67 mm.

These skins are exactly like some topotypes of *saturata* from Sarawak which also occurs in West Borneo. Sumatra is inhabited by the much duller typical race. A subspecies has been named from Banka (*docima* OBERH.), but no specimens are available for comparison.

Cyanoderma erythroptera apega OBERH.

Cyanoderma erythroptera VORDERM., p. 483; *C. e. (?) apega*, KLOSS, p. 297.

Cyanoderma erythroptera apega OBERHOLZER, Smiths. Misc. Coll., lxxiv, 1922, p. 8 (Banka Island).

1 ♂. Wing 58 mm.

Because of its bright upper parts this specimen agrees more closely with the Bornean than the Sumatran race. In detail it agrees precisely with the description given for the Banka form which seems to be a well-marked race.

Mixornis gularis? ruficoma OBERH.

Mixornis gularis, VORDERM., p. 481.

Mixornis bornensis ruficoma OBERHOLSER, Smiths. Misc. Coll., lxxiv, 1922, p. 6 (Banka Island).

2 ♂. Wings 64, 65 mm.

These two skins are so dissimilar that taken together it is difficult to compare them with neighbouring races of the species although they clearly belong to the *bornensis* group of subspecies and not to the *gularis* section which inhabits Sumatra.

One bird is not unlike typical *bornensis*: it has the under parts very heavily streaked and the upper parts rufous-brown, with the crown only very slightly more richly coloured than the mantle. It differs from *bornensis* in

is, therefore, not possible and I follow KLOSS who identified an old skin collected by VORDERMAN as *A. p. phaeocephalus* which occurs in Sumatra, but not in Borneo.

***Pycnonotus goiavier personatus* (HUME).**

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1 ♂, 1 ♀. Wings 80, 81 mm.

Birds from Sumatra (*terr. typ.*), and Billiton seem alike: those from Borneo are very slightly different (*gourdini*).

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Pycnonotus plumosus billitonis CHASEN, Ornith. Monatsber., 1935, p. 148: Billiton Island.

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On seven of these specimens the collector has marked the irides as "red"; on one, "red-brown"; and on two, "yellowish white". Of these last mentioned birds one is little more than a juvenile: the other bird I am not quite sure about, but I think it is immature.

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***Pellorneum capistratus nigrocapitatum* (EYTON).**

Drymocapthus nigricapitatus, VORDERM., p. 485; *P. capistratum nigrocapitatum* KLOSS, p. 296.

1 ♂, 1 ♀. Wings 68, 69 mm. 1 juv. dated 11th June.

These birds seem absolutely inseparable from *nigrocapitatum* of the Malay Peninsula from which the Bornean races (*capistratoides* and *morrelli*) are quite distinct. The Banka bird has been named *nyctilampe* OBERH.: I have never seen topotypes of this race and although in a previous publication I used the name for Sumatran birds on the strength of one or two comparatively dark skins examined from that island, I now doubt if a Sumatran race is really separable.

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Malacocincla abbotti eritora OBERHOLSER, Smiths. Misc. Coll. lxxiv, 2, 1922, p. 11 (Billiton Island).

1 ♂. Wing —.

This dull coloured bird needs no comparison with the more brightly coloured race found in Sumatra (*olivaceus*), but judging from the very limited material at my disposal it is extremely close to *M. a. büttikoferi* of Borneo. Compared with an example of *büttikoferi* the Billiton skin has a smaller bill (measured from the gape, 21.7 against 24 mm); the tail is more rufous (a character probably depending on the age of the feathers); the lores and supercilium are slightly greyer and less whitish; and the under parts are, perhaps, very slightly whiter.

Anuropsis malaccensis saturata ROB. and KLOSS.

Brachypteryx malaccensis, VORDERM., p. 487; *A. malaccensis* subsp., KLOSS, p. 297.

Anuropsis malaccensis saturata ROBINSON and KLOSS, Bull. Brit. Orn. Club, xl, 1920, p. 68 (Baram, Sarawak).

4 ♂. Wing 66, 66, 67, 67 mm.

These skins are exactly like some topotypes of *saturata* from Sarawak which also occurs in West Borneo. Sumatra is inhabited by the much duller typical race. A subspecies has been named from Banka (*docima* OBERH.), but no specimens are available for comparison.

Cyanoderma erythroptera apega OBERH.

Cyanoderma erythroptera VORDERM., p. 483; *C. e. (?) apega*, KLOSS, p. 297.

Cyanoderma erythroptera apega OBERHOLZER, Smiths. Misc. Coll., lxxiv, 1922, p. 8 (Banka Island).

1 ♂. Wing 58 mm.

Because of its bright upper parts this specimen agrees more closely with the Bornean than the Sumatran race. In detail it agrees precisely with the description given for the Banka form which seems to be a well-marked race.

Mixornis gularis? ruficoma OBERH.

Mixornis gularis, VORDERM., p. 481.

Mixornis bornensis ruficoma OBERHOLSER, Smiths. Misc. Coll., lxxiv, 1922, p. 6 (Banka Island).

2 ♂. Wings 64, 65 mm.

These two skins are so dissimilar that taken together it is difficult to compare them with neighbouring races of the species although they clearly belong to the *bornensis* group of subspecies and not to the *gularis* section which inhabits Sumatra.

One bird is not unlike typical *bornensis*: it has the under parts very heavily streaked and the upper parts rufous-brown, with the crown only very slightly more richly coloured than the mantle. It differs from *bornensis* in

having no yellow wash on the abdomen. The other bird has the under parts much more lightly streaked and washed with yellow on the abdomen: the upper parts are paler than in the first specimen with a more richly coloured crown fairly sharply defined. As this latter bird agrees with the description given for the Banka race the Billiton birds are tentatively referred to it, but it is evident that more material is required before any sound conclusion can be reached.

Macronus ptilosus sordidus subsp. nov.

Intermediate in characters between the typical race of Malacca, which also inhabits Sumatra, and *M. p. reclusus* HART. of Borneo.

It resembles the former in the comparatively dark chestnut colour of the crown and the latter in the absence of a grey patch on the abdomen. It differs from both races in the paler, less orange washed under parts, the absence of colour being particularly noticeable on the breast.

Type. — Adult female collected on Billiton Island, 26th January 1937 by F. J. KUIPER, Zool. Mus., Buitenzorg, Java. Wing, 68 mm. 8553

Specimens examined. — Three females compared with large series of the two related races. Wings. — ♀, 68, 68, 69 mm.

TURDIDAE.

Copsychus saularis musicus (RAFFLES).

Copsychus mindanensis, VORDERM., p. 497.

1 ♂. Wing 101 mm. Also one imm. ♀ from the islet of Keramiah, off the south coast of Billiton. One immature bird from Billiton is dated 12th May.

The male has the under wing coverts and axillaries just tipped with white. The type locality of *musicus* is Sumatra: Borneo is inhabited by other races. A subspecies (*nesiotes* OBERH.) has been described from Banka but I have no material from that island.

Kittacincla malabarica tricolor (VIEILL.).

Kittacincla macroura, VORDERM., p. 496.

6 ♂, 2 juv. Wings 91, 90, 90, 90, 98, 95 mm.

These males do not differ appreciably from males of *tricolor* from West Java (*terr. typ.*), and Sumatra: the Bornean races are distinct. Dr. H. C. OBERHOLSER has associated birds from Billiton with *K. m. abbotti* OBERH., described from Banka (Smiths. Misc. Coll., 76, No. 6, 1923, p. 5). Even in its type locality *tricolor* is very variable in the colour of the under parts.

Geokichla sibirica sibirica (PALL.).

1 ♂. A migrant dated 30th March, Wing, 122 mm.

SYLVIIDAE.

Orthotomus sericeus hesperius OBERH.*Orthotomus ruficeps*, VORDERM., p. 493.

1 imm. ♂.

An old specimen, once mounted, from Billiton was also sent for examination with the present collection. The wing measures 50 mm in length. Birds from Sumatra (*terr. typ.*, Lingga Island) and Billiton seem inseparable and just separable from the Bornean *sericeus* by reason of very slightly less clear grey upper parts.

Orthotomus sepium ruficeps (LESS.).*Orthotomus borneoensis* and *O. cineraceus*, VORDERM., pp. 491, 492.

1 ♀ imm.

Exactly like birds in a similar state of plumage from Sumatra (*terr. typ.*): a Bornean race (*borneonensis*) seems just separable.

Orthotomus atrogularis atrogularis TEMM.*Orthotomus flavoviridis*, VORDERM., p. 494; *O. atrogularis*, KLOSS, p. 297.

1 ♀, Wing 43 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Malacca). The Banka race has been described as *eumelas* OBERH.: I have no material for comparison.

Cisticola juncidis malaya LYNES.*Cisticola cursitans*, VORDERM., p. 496.

3 ♂, 1 ♀. Wings ♂ 50, 51; ♀ 47 mm.

Birds from Sumatra (*terr. typ.*, Malay Peninsula) and Billiton seem inseparable. The species does not occur in Borneo.

ARTAMIDAE.

Artamus leucorhynchus amydrus OBERH.

VORDERM., p. 455.

2 ♂, 1 ♀. Wings ♂ 135 (imm.), 135; ♀ 131 mm.

Birds from Sumatra and Billiton seem alike (*terr. typ.*, Solombo Besar Island, Java Sea). Bornean birds are best placed under the typical race described from the Philippine Islands.

LANIIDAE.

Hemipus hirundinaceus (TEMM.).*Myiolestes obscurus*, VORDERM., p. 460.

2 ♂, 1 ♀ 3 ex., Wings ♂ 60, 62; ♀ 66; sex? 62, 62, 63 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Java).

Pachycephala cinerea butaloides STRES.

1 ♂. Wing 81 mm.

Birds from Sumatra, South Borneo and Billiton seem inseparable (*terr. typ.*, Java).

ZOSTEROPIDAE.

Zosterops chloris solombensis OBERH.

Zosterops solombensis OBERHOLSER, Proc. U. S. Nat. Mus., 54, 1917, p. 188 (Solombo Besar Island, East Java Sea).

1 ♂, 2 ♀. Wings ♂ 54; ♀ 54, 55 mm. Islet of Keramiah, off the south coast of Billiton.

These specimens are strikingly less yellow and more olive green above than *Z. c. maxi* and clearly belong to another race. They agree well with the colour description of *solombensis* the type of which, however, with a wing length of 58 mm is slightly larger than the Billiton specimens. Except for the presence of *maxi* in the Karimata group it would seem, therefore, that a bright form of *Z. chloris* has infiltrated along the southern islands of the Java Sea and that this duller form has spread along the northern islands.

DICAIEIDAE.

Dicaeum trigonostigmum trigonostigmum (SCOP.).

VORDERM., p. 463; KLOSS, p. 298.

3 ♂. Wings 47, 48, 50 mm.

Birds from Sumatra and Billiton are alike (*terr. typ.*, Malacca): the Bornean race is separable (*dayakanum*).

Anaimos percussus ignicapillus (EYTON).

Prionochilus percussus, VORDERM., p. 461; *P. p. ignicapillus*, KLOSS, p. 298.

1 ♂. Wing 53 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Malacca).

Anaimos thoracicus (TEMME.).

Prionochilus thoracicus, VORDERM., p. 461; KLOSS, p. 298.

3 ♂. Wing 55, 57.5, — mm.

These birds from Billiton are very slightly brighter on the mantle than a small series from Borneo and the Malay Peninsula and one specimen has minute white tips to the tail feathers, a character not present in my specimens from elsewhere. The series examined, however, are too small to justify any separation of this rather uncommon flower-pecker into subspecies. The species is not recorded from Sumatra.

Anaimos maculatus maculatus (TEMME.).

Prionochilus maculatus, VORDERM., p. 462; KLOSS, p. 298.

3 ♂. Wings 52, 52, 53 mm.

Birds from Sumatra, Borneo (*terr. typ.*), and Billiton seem inseparable.

NECTARINIIDAE.

Chalcostetha calcostetha calcostetha (JARD.).*Chalcostetha insignis*, VORDERM., p. 466; KLOSS, p. 297.

3 ♂. Wings 61, 60, 59 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Java).**Aethopyga siparaja siparaja** (RAFFLES).

VORDERM., p. 446; KLOSS, p. 297.

2 ♂. Wings 51, 51 mm.

Birds from Sumatra (*terr. typ.*), Borneo and Billiton seem inseparable.**Leptocoma brasiliانا brasilianna** (GMEL.).*Nectarophila hasseltii*, VORDERM., p. 466; *L. brasilianna*, KLOSS, p. 298.

3 ♂. Wings 46, 48, 49 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Java).**Leptocoma jugularis microleuca** (OBERH.).

1 ♂, 1 ♀. Wing ♀ 54 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Taya Island, south-east Sumatra).The Banka bird has been described as *Cinnyris ornata heliozeteta* OBERH.: I have no material from the island for comparison.**Anthreptes malacensis malacensis** (SCOP.).

VORDERM., p. 468.

4 ♂, 2 imm. ♂, 3 ♀ from Billiton; 1 ♀ from Lima Island about 21 kilometres west of Billiton. Wings ♂ 65, 67, 64, 65; ♀ 61, 61, 62, 62 mm.

Birds from Sumatra, Billiton and West Borneo seem inseparable.

Chalcoparia singalensis sumatrana KLOSS.*Chalcoparia singalensis*, VORDERM., p. 298; *C. singalensis sumatrana*, KLOSS p. 298.

2 ♂, 1 ♀. Wings 54, 54, 53 mm.

Birds from Sumatra (*terr. typ.*) and Billiton seem alike: a Bornean subspecies (*borneana*) is distinct, but I am not yet sure that specimens from West Borneo should be referred to *borneana*.**Arachnothera longirostris longirostris** (LATH.).

VORDERM., p. 470.

1 ♂, 2 ♀. Wings, 64, 59, 64 mm.

Referable to the typical form to which the Sumatran race belongs. The Bornean subspecies (*büttikoferi*) is distinct.

MOTACILLIDAE.

Motacilla flava simillima HART.

1 ♂, 3 ♀. Wings ♂ 81; ♀ 75, 76, 78 mm.

Of these migrants, one female (2nd May) is in almost full plumage; the

male (1st October) is immature with whitish under parts; the second female (8th October) is also immature, but has the under parts tinged with yellow. An adult female dated 4th July is in worn plumage.

PLOCEIDAE.

***Padda oryzivora oryzivora* (LINN.).**

1 ♂, 1 ♀. Wings 68, 69 mm.

Birds from Sumatra, Borneo and Billiton are alike (*terr. typ.*, Java), but the species has now such an artificial geographic range that it does not lend itself to a discussion on faunas.

***Munia punctulata fretensis* KLOSS.**

1 ♂, 2 ♀. Wings ♂ 50; ♀ 51, 51 mm.

Birds from Sumatra and Billiton seem alike (*terr. typ.*, Malay Peninsula): the species does not occur in Borneo.

GRACULIDAE.

***Gracula religiosa prasiocara* OBERH.**

Gracula javanensis, VORDERM., p. 498.

3 ♂, 1 ♀. Wings ♂ 192, 175, —; ♀ 178 (c) mm. The collection also contains two juveniles dated 9th April.

Birds from Sumatra and Borneo seem inseparable, but one of the Billiton males is so large that the island race is best referred to the rather ill-defined subspecies, characterized by large average size, inhabiting the islands of the ocean tract separating Borneo from the Malay Peninsula and Sumatra, eg., the Anamba, Tambelan and Tioman Islands.

***Aplonis panayensis strigatus* (HORSF.).**

Calornis chalybaea, VORDERM., p. 497.

3 ♂, 4 ♀. Wings ♂ 98, 101, 102; ♀ 98, 98, 97, 100 mm.

Birds from Sumatra, Borneo and Billiton seem inseparable (*terr. typ.*, Java).

ORIOOLIDAE.

***Oriolus chinensis maculatus* VIEILL.**

Oriolus indicus, VORDERM., p. 499.

4 ♂, Wings —, —, 139, 141 mm 1 ♀ imm. Wing, 141 mm.

Birds from Sumatra and Billiton seem alike (*terr. typ.*, Java): the same subspecies also occurs in Borneo, but I have never examined specimens from that island where the bird seems curiously rare for a resident.

A List of the Birds of Billiton.

The letters after the names indicate the collectors, VORDERMAN, BRAUTIGAM, *ex.*
Mus. Tweedale, and KUIPER.

Species.	Common to Sumatra and Borneo.	Found in Sumatra but not Borneo.	Found in Borneo but not Sumatra.	Affinities with China Sea Islands.	Affinities elsewhere.	Peculiar to Billiton.	Migrants, shore-birds etc.
<i>Phasianidae.</i>							
<i>Rollulus rouloul</i> (SCOP.). V. K.	×						
<i>Excalfactoria chinensis palmeri</i> RILEY. V. K. ...	×						
<i>Turnicidae.</i>							
<i>Turnix suscitator kuiperi</i> CHAS. V. K.						×	
<i>Columbidae.</i>							
<i>Treron curvirostra curvirostra</i> (GMEL.). V. K. ...	×						
<i>Treron fulvicollis fulvicollis</i> (WAGL.). V. K. ...	×						
<i>Treron vernans griseicapilla</i> SCHLEG. V. K.	×						
<i>Ptilinopus jambu</i> (GMEL.). V.	×						
<i>Ducula aenea aenea</i> (LINN.). V. K.	×						
<i>Myristicivora bicolor bicolor</i> (SCOP.). V. K.	×						
<i>Geopelia striata striata</i> (LINN.). K.	×						
<i>Streptopelia chinensis tigrina</i> (TEMM.). V. K. ...	×						
<i>Chalcophaps indica indica</i> (LINN.). V. K.	×						
<i>Caloenas nicobarica nicobarica</i> (LINN.). V.	×						
<i>Rallidae.</i>							
<i>Rallina fasciatus</i> RAFFLES. T.	×						
<i>Rallus striatus gularis</i> HORSF. K.		×					
<i>Amaurornis phoenicurus javanicus</i> (HORSF.). K.	×						
<i>Gallicrex cinerea plumbea</i> (VIEILL.). K.	×						
<i>Charadriidae.</i>							
<i>Charadrius apricarius fulvus</i> GMEL. K.							×
<i>Charadrius leschenaulti leschenaulti</i> LESS. K. ...							×
<i>Charadrius mongolus atrifrons</i> WAGL. K.							×
<i>Charadrius peronii</i> SCHLEG. K.	×						
<i>Charadrius dubius curonicus</i> GMEL. K.							×
<i>Squatarola squatarola australis</i> REICH. K.							×
<i>Scolopacidae.</i>							
<i>Numenius madagascariensis</i> (LINN.). K.							×
<i>Numenius arquata orientalis</i> BHEHM. K.							×
<i>Numenius phaeopus variegatus</i> (SCOP.) V. K. ...							×
<i>Limosa lapponica baueri</i> NAUM. K.							×
<i>Capella stenura</i> (BP.). K.							×

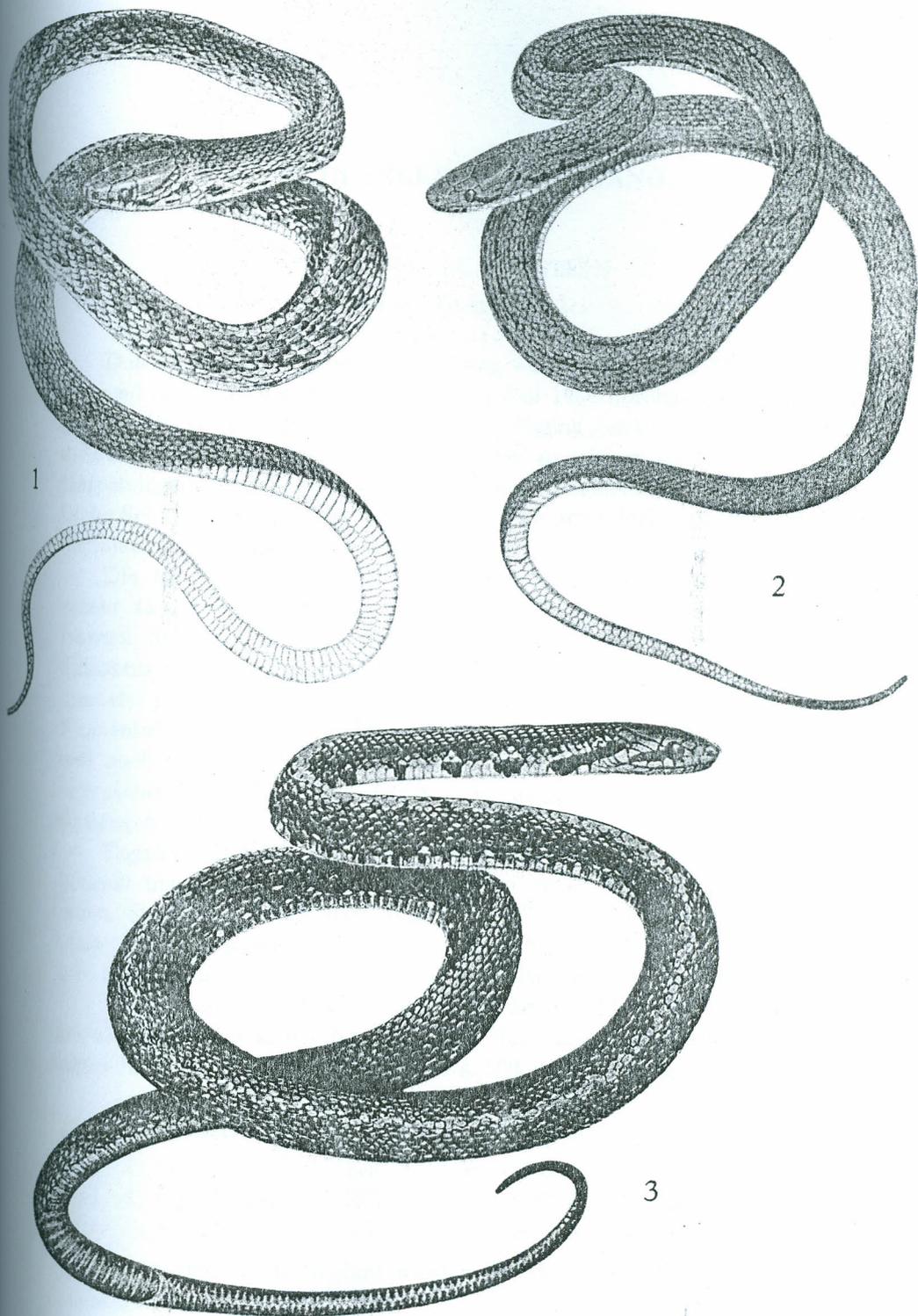
Species.	Common to Sumatra and Borneo.	Found in Sumatra but not Borneo.	Found in Borneo but not Sumatra.	Affinities with China Sea Islands.	Affinities elsewhere.	Peculiar to Billiton.	Migrants, shore-birds etc.
<i>Erolia testacea</i> (PALL.), K.							×
<i>Erolia ruficollis</i> (PALL.), K.							×
<i>Tringa totanus eurhinus</i> (OBERN.), K.							×
<i>Tringa nebularia</i> (GUNN.), K.							×
<i>Tringa hypoleucos</i> (LINN.), K.							×
<i>Glareolidae.</i>							
<i>Glareola isabella</i> VIEILL. V.							×
<i>Glareola pratincola maldivarum</i> FORST. K.							×
<i>Laridae.</i>							
<i>Sterna bergii cristata</i> STEPH. K.							×
<i>Sterna bengalensis bengalensis</i> LESS. K.							×
<i>Sterna anaethetus anaethetus</i> SCOP. K.							×
<i>Sterna sumatrana sumatrana</i> RAFFLES. K.							×
<i>Anoüs minutus worcesteri</i> (MCGREG.), K.							×
<i>Anoüs stolidus pileatus</i> (SCOP.), K.							×
<i>Ardeidae.</i>							
<i>Egretta intermedia intermedia</i> (WAGL.), V.	×						
<i>Demigretta sacra sacra</i> (GMEL.), K.	×						
<i>Ardea sumatrana sumatrana</i> RAFFLES. T.	×						
<i>Goisakius melanolophus melanolophus</i> (RAFFLES), K.	×						
<i>Dupetor flavicollis flavicollis</i> (LATH.), K.	×						
<i>Butorides striatus javanicus</i> (HORSF.), V. K. ...	×						
<i>Ixobrychus sinensis sinensis</i> (GMEL.), K.	×						
<i>Ixobrychus eurhythmus</i> (SWINH.), K.	×						
<i>Leptoptilos javanicus</i> (HORSF.), V.	×						
<i>Fregatidae.</i>							
<i>Fregata andrewsi</i> MATH. V. K.							×
<i>Fregata ariel ariel</i> (G. R. GRAY), K.							×
<i>Anatidae.</i>							
<i>Dendrocygna javanica javanica</i> (HORSF.) K. ...	×						
<i>Falconidae.</i>							
<i>Accipiter virgatus gularis</i> (TEMM. & SCHLEG.), B. K.							×
<i>Spizaëtus cirrhatus limnaetus</i> HORSF. K.	×						
<i>Spizaëtus nïpalensis alboniger</i> (BLYTH), K.	×						
<i>Spilornis cheela natunensis</i> CHAS. K.				×			
<i>Haliaeetus leucogaster</i> (GMEL.), K.	×						
<i>Haliastur indus intermedius</i> GURN. V. K.	×						

Species.	Common to Sumatra and Borneo.	Found in Sumatra but not Borneo.	Found in Borneo but not Sumatra.	Affinities with China Sea Islands.	Affinities elsewhere.	Peculiar to Billiton.	Migrants, shore-birds etc.
<i>Pernis apivorus japonicus</i> KURODA. K.							×
<i>Falco peregrinus calidus</i> LATH. K.							×
<i>Pandionidae.</i>							
<i>Pandion haliaetus cristatus</i> (VIEILL.). K.							×
<i>Strigidae.</i>							
<i>Otus bakkamoena lempiji</i> (HORSF.). V.	×						
<i>Bubo ketupa ketupa</i> (HORSF.). V. K.	×						
<i>Strix leptogrammica leptogrammica</i> TEMM. K.			×				
<i>Phodilus badius parvus</i> CHAS. K.						×	
<i>Psittacidae.</i>							
<i>Psittacula longicauda defontainei</i> CHAS. V. K. ...				×			
<i>Loriculus galgulus galgulus</i> (LINN.). V. K.	×						
<i>Podargidae.</i>							
<i>Batrachostomus javensis</i> (HORSF.). K.	×						
<i>Coraciidae.</i>							
<i>Eurystomus orientalis orientalis</i> (LINN.). V. K.	×						
<i>Eurystomus orientalis calonyx</i> SHARPE. K.							×
<i>Alcedinidae.</i>							
<i>Ramphalcyon capensis cyanopteryx</i> OBERH. V. K.		×					
<i>Ceyx rufidorsus</i> STRICKL. V. K.	×						
<i>Alcedo meninting verreauxii</i> DE LA BERGE. V. K.	×						
<i>Alcedo atthis bengalensis</i> GMEL. K.	×						
<i>Halcyon sancta sancta</i> VIG. and HORSF. V. K. ...							×
<i>Halcyon chloris cyanescens</i> (OBERH.). V. K.	×						
<i>Halcyon coromanda minor</i> TEMM. and SCHLEG. B.K.	×						
<i>Halcyon concreta concreta</i> (TEMM.). V. K.		×					
<i>Halcyon pileata</i> (BODD.). K.	×						
<i>Bucerotidae.</i>							
<i>Anthracoceros malayanus</i> (RAFFLES). K.	×						
<i>Meropidae.</i>							
<i>Merops viridis viridis</i> LINN. V. K.	×						
<i>Merops superciliosus javanicus</i> HORSF. K.							×
<i>Caprimulgidae.</i>							
<i>Caprimulgus concretus concretus</i> BP. V. K.	×						
<i>Caprimulgus affinis affinis</i> HORSF. V. K.	×						

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<i>Micropodidae.</i>							
<i>Collocalia vestita vestita</i> (LESS.), V.		×					
<i>Collocalia esculenta cyanoptila</i> OBERH. K.	×						
<i>Collocalia francica</i> subsp. K.			?				
<i>Hemiprocne longipennis harterti</i> (STRES.), V. K.	×						
<i>Cypsiurus batasiensis infumatus</i> (SCLAT.) K. ...	×						
<i>Micropus affinis subfurcatus</i> (BLYTH), K.	×						
<i>Trogonidae.</i>							
<i>Harpactes duvauceli</i> (TEMM.), V. K.	×						
<i>Cuculidae.</i>							
<i>Cuculus micropterus micropterus</i> GOULD. K. ...							×
<i>Hierococyx fugax nasicolor</i> (HODGS.), B.							×
<i>Hierococyx fugax fugax</i> (HORSF.), K.	×						
<i>Chalcites basalis</i> (HORSF.), K.							×
<i>Cacomantis variolosus sepulcralis</i> (S. MJLL.), V.	×						
<i>Eudynamis scolopaceus scolopaceus</i> (LINN.), K.							×
<i>Centropus bengalensis javanicus</i> (DUM.), K. ...	×						
<i>Rhopodytes sumatranus</i> (RAFFL.), V. K.	×						
<i>Capitonidae.</i>							
<i>Chotorea rafflesii billitonis</i> CHAS. V. K.						×	
<i>Picidae.</i>							
<i>Callolophus miniaceus malaccensis</i> (LATH.), V. K.	×						
<i>Dryobates moluccensis moluccensis</i> (GMEL.) V. K.	×						
<i>Meiglyptes tukki tukki</i> (LESS.), V. K.	×						
<i>Micropternis brachyurus badius</i> (RAFFL.) V. K.		×					
<i>Sasia abnormis abnormis</i> (TEMM.), V.	×						
<i>Eurylaimidae.</i>							
<i>Eurylaimus javanicus billitonis</i> KLOSS. V. K. ...						×	
<i>Eurylaimus ochromalus ochromalus</i> (RAFFL.) V. K.		×					
<i>Cymbirhynchus macrorhynchus malaccensis</i> SALVAD. V. K.		×					
<i>Pittidae.</i>							
<i>Pitta sordida bangkana</i> SCHLEG. V. K.					×		
<i>Pitta brachyura cyanoptera</i> TEMM. K.	×						
<i>Hirundinidae.</i>							
<i>Hirundo rustica gutturalis</i> SCOP. K.							×
<i>Hirundo tahitica abbotti</i> (OBERH.), V. K.	×						

Species.	Common to Sumatra and Borneo.	Found in Sumatra but not Borneo.	Found in Borneo but not Sumatra.	Affinities with China Sea Islands.	Affinities elsewhere.	Peculiar to Billiton.	Migrants, shore-birds etc.
<i>Muscicapidae.</i>							
<i>Hypothymis azurea prophata</i> OBERH. V. K.	×						
<i>Rhipidura javanica longicauda</i> WALL. V. K. ...	×						
<i>Tersiphone paradisi australis</i> CHAS. V. K.		×					
<i>Rhinomyias olivacea olivacea</i> (HUME), K.	×						
<i>Rhinomyias umbratilis umbratilis</i> (STRICK.), V.	×						
<i>Campephagidae.</i>							
<i>Lalage nigra nigra</i> (FORST.), K.		×					
<i>Pericrocotus igneus igneus</i> (BLYTH.), V. K.	×						
<i>Pycnonotidae.</i>							
<i>Aegithina viridissima viridissima</i> (BP.), V. K.	×						
<i>Chloropsis cochinchinensis billitonis</i> CHAS. V. K.						×	
<i>Chloropsis sonnerati zosterops</i> VIG. V. K.	×						
<i>Irena puella criniger</i> SHARPE. V. K.	×						
<i>Iole olivacea olivacea</i> BLYTH. V. K.		×					
<i>Brachypodius atriceps atriceps</i> (TEMM.), V. K.	×						
<i>Alophoixus phaeocephalus phaeocephalus</i> (HARTL. V. K.		×					
<i>Pycnonotus goiavier personatus</i> (HUME), V. K.		×					
<i>Pycnonotus plumosus billitonis</i> CHAS. V. K.						×	
<i>Pycnonotus simplex perplexus</i> CHAS. & KLOSS. K.			×				
<i>Pycnonotus erythrophthalmos subsp.</i> V.	?						
<i>Timaliidae.</i>							
<i>Pellorneum capistratum nigrocapitatum</i> (EYTON), V. K.		×					
<i>Malacocincla abbotti eritora</i> OBERH.-K.						×	
<i>Aethostoma rostratum subsp.</i> V.	?						
<i>Anuropsis malaccensis saturata</i> (ROB. & KLOSS), V. K.			×				
<i>Cyanoderma erythroptera apega</i> OBERH. V. K.					×		
<i>Mixornis gularis? ruficoma</i> OBERH. V. K.					?		
<i>Macronus ptilosus sordidus</i> CHAS. V. K.						×	
<i>Turdidae.</i>							
<i>Turdus obscurus obscurus</i> (GM).						×	
<i>Geokichla sibirica sibirica</i> (PALL.), K.						×	
<i>Copsychus saularis musicus</i> (RAFFLES), V. K. ...		×					
<i>Kittacincla malabarica tricolor</i> (VIEILL.), V. K.		×					
<i>Sylviidae.</i>							
<i>Orthotomus sericeus hesperius</i> OBERH. V. K. ...		×					

Species.	Common to Sumatra and Borneo.	Found in Sumatra but not Borneo.	Found in Borneo but not Sumatra.	Affinities with China Sea Islands.	Affinities elsewhere.	Peculiar to Billiton.	Migrants, shore-birds etc.
<i>Orthotomus sepium ruficeps</i> (LESS.). V. K.		×					
<i>Orthotomus atrogularis atrogularis</i> TEMM. V. K.	×						
<i>Cisticola juncidis malaya</i> LYNES. V. K.		×					
<i>Artamidae.</i>							
<i>Artamus leucorhynchus amydrus</i> OBERH. V. K.		×					
<i>Laniidae.</i>							
<i>Hemipus hirundinaceus</i> (TEMM.). V. K.	×						
<i>Pachycephala cinerea butaloides</i> Stres. K.	×						
<i>Zosteropidae.</i>							
<i>Zosterops chloris solombensis</i> OBERH. K.					×		
<i>Dicaeidae.</i>							
<i>Dicaeum trigonostigmum trigostigmum</i> (SCOP.).		×					
<i>Anaimos percussus ignicapillus</i> (EYTON). V. K.	×						
<i>Anaimos thoracicus</i> (TEMM.). V. K.			×				
<i>Anaimos maculatus maculatus</i> (TEMM.). V. K. ...	×						
<i>Nectariniidae</i>							
<i>Chalcostetha calcostetha calcostetha</i> (JARD.)							
V. K.	×						
<i>Aethopyga siparaja siparaja</i> (RAFFLES). V. K.	×						
<i>Leptocoma brasiliانا brasiliانا</i> (GMEL.). V. K.	×						
<i>Leptocoma jugularis microleuca</i> (OBERH.). K. ...	×						
<i>Anthreptes malacensis malacensis</i> (SCOP.). V. K.	×						
<i>Chalcopygia singalensis sumatrana</i> (KLOSS).							
V. K.		×					
<i>Arachnothera longirostris longirostris</i> (LATH.)							
V. K.		×					
<i>Motacillidae.</i>							
<i>Motacilla flava simillima</i> HART. K.							×
<i>Ploceidae.</i>							
<i>Padda oryzivora oryzivora</i> (LINN.). K.	×						
<i>Munia punctulata fretensis</i> KLOSS. K.		×					
<i>Graculidae.</i>							
<i>Gracula religiosa prasiocara</i> OBERH. V. K.				×			
<i>Aplonis panayensis strigatus</i> (HORSF.). V. K. ...	×						
<i>Oriolidae.</i>							
<i>Oriolus chinensis maculatus</i> VIELL. V. K.	×						



F. KOPSTEIN: Schlangen von Enggano.

Fig. 1. *Elaphe enganensis* VINCIGUERRA. — Fig. 2. *Elaphe subradiata* (SCHLEGEL). — Fig. 3. *Elaphe flavolineata* (SCHLEGEL).