

NOTES ON THE ISLAND OF BAWEAN (JAVA SEA)  
WITH SPECIAL REFERENCE TO THE BIRDS

by

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ON THE BIRDS OF BAWEAN ISLAND

In the synopsis published below 202 birds of 36 species are listed together with visual observations of a further 18 species and five, which previously were recorded there but which were not encountered by me. When compared with the 28 species hitherto known this extension need not surprise one because VORDERMAN (loc. cit.) and ABBOTT (OBERHOLSER, loc. cit.) who visited the area 75 and 60 years ago, were only nine days on Bawean. VORDERMAN'S hunter secured 30 birds belonging to 15 species and ABBOTT 35 of 14 species. Dr. W.L. ABBOTT collected there from 19th to 28th November 1907, but the exact date of VORDERMAN'S visit in 1892 is not known to me. Among ABBOTT'S collection were nine species not obtained by VORDERMAN. Including the species recorded but not obtained by the latter author nor in ABBOTT'S collection (*Turnix suscitator*, *Ducula bicolor*, *Collocalia fuciphaga* and *Ploceus manyar*) 28 species in total were listed. Both species of *Micropus* and *Microtarsus* mentioned by VORDERMAN and OBERHOLSER refer to only one species, viz. *Pycnonotus atriceps*, so that the number of species recorded by both these authors should be reduced by one.

Of the species not found by me VORDERMAN obtained *Ardea sumatrana* and *Actitis hypoleucos* and ABBOTT *Cuculus saturatus*, and the first author also found *Ploceus manyar* though he did not secure one.

At the end of the synopsis is given a list of 14 species which have probably occurred and are appended in the hope that future students or collectors will be able to confirm their presence.

Dr. K.W. DAMMERMAN, formerly Head of the Zoological Museum at Bogor visited the island in May 1928; he was accompanied by Mr. P.F. FRANCK, taxidermist, and some Indonesian assistants. On the results of this trip no publication or official report appeared, and so far as can be traced from the collections of that museum only

one species was secured which is not also in my list, *viz. Phylloscopus borealis*. Together with these additions 59 species are listed below among which 31 for the first time.

Both VORDERMAN and ABBOTT were of the opinion that Bawean Island is rather poor in birds and this is perhaps true because about 60 bird species in an area of 200 square kilometers cannot be called large, certainly not when taking into account the immense diversity of habitat extending from sea-level to the summits of the mountains which reach a height of almost 700 m. above sea-level.

Therefore Bawean's isolated position, about 150 km. north of Java and 300 km. south of Borneo may be seen perhaps as the paramount cause for this ornithological poverty. This isolation makes it rather pointless to compare the number of species to be found within similar areas on Java where many localities exist which allow the ornithologist to find an equal number of species or even considerably more during a single day's walk (Hoogerwerf 1948). The largest number recorded during only three hours in Bogor' Botanic Garden, covering an area of only 85 ha., amounted to 45 which clearly demonstrates the unfavourable situation on Bawean in this respect.

This scarcity of birds was daily in evidence on almost all parts of the island and the record of 26 species in a day was reached on one occasion only. Below is a synopsis of the 20 "topics".

date	locality	number of species	date	locality	species
28th June	Muara (south Bawean)	26	23rd June	Batulintang	
25th & 29th June	same place	23		(centr. Bawean)	17
27th June	" "	21	4th June	Kumalasa (south-	
26th June	" "	21		west Bawean)	16
21st May	Sangkapura (s.Bawean)	20	7th June	same locality	16
30th May	Telaga Kastoba (centr. Bawean)	20	17th June	Sekarputih	16
10th June	Sangkapura	20	19th June	" "	16
16th June	Sekarputih (east Bawean)	19	23rd May	Sangkapura	15
2nd July	Muara	19	25th May	Balibakgunung	
11th June	Sangkapura	18		(south Bawean)	14
22nd May	" "	17			
9th June	Muara	17			

Also the density of most species as found by me does not lead to a more favourable conclusion, accentuating, especially in the layman's opinion, Bawean's poverty in birds. But there are apparently certain species which do not differ in this respect from elsewhere. I suppose the under-mentioned belong to this category:

*Gallus varius*, *Streptopelia chinensis*, *Strix seloputo*, *Halcyon chloris*, *Pycnonotus atriceps*, *P. plumosus*, *Trichastoma abbotti*, *Orthotomus sepium*, *Dicaeum trochileum*, *Anthreptes malacensis*, *Nectarinia jugularis*, *Lonchura punctulata* and *Gracula religiosa*.

To give an idea about the density of the 20 most common species during the 40 days of our observations in 1954, the following table was compiled:

name of species	number of days on which it was recorded	name of species	number of days on which it was recorded
<i>Pycnonotus plumosus</i>	34	<i>Eudynamis scolopacea</i>	23
<i>Orthotomus sepium</i>	33	<i>Ardea purpurea</i>	21
<i>Pycnonotus atriceps</i>	32	<i>Strix seloputo</i>	19
<i>Streptopelia chinensis</i>	29	<i>Lonchura punctulata</i>	19
<i>Anthreptes malacensis</i>	28	<i>Spilornis cheela</i>	17
<i>Dicaeum trochileum</i>	27	<i>Gracula religiosa</i>	17
<i>Halcyon chloris</i>	26	<i>Butorides striatus</i>	16
<i>Nectarinia jugularis</i>	25	<i>Oriolus chinensis</i>	15
<i>Gallus varius</i>	25	<i>Ducula aenea</i>	15
<i>Trichastoma abbotti</i>	23	<i>Chalcophaps indica</i>	14

The species indicated by VORDERMAN as the most common on Java but not occurring on Bawean Island, viz. *Copsychus saularis*, *Pycnonotus aurigaster*, *Padda* (*Munia*) *oryzivora*, *Sturnopastor jalla*, *Aethiopsar* (*Acridotheres*) *javanicus*, *Dicrurus macrocercus* (*Buchanga longa*), *Corvus macrorhynchus* and *Corvus enca*, were also not seen by me, except for *Padda oryzivora*, which perhaps was introduced again by man after VORDERMAN visited the island, because he remarked that birds of this species were imported as cage birds from Surabaya

from time to time. As much as half a century prior to VORDERMAN'S visit ALTING SIBERG (loc. cit.) mentioned the Java Sparrow with the remark that in 1802 it was introduced there.

According to our present knowledge the following families and sub-families, which are well represented on Java, are absent on Bawean Island:

*Caprimulgidae, Capitonidae, Picidae, Pittidae, Hirundinidae, Muscicapinae, Campephagidae, Turdinae, Artamidae, Laniidae, Paridae, Alaudidae, Dicruridae* and *Corvidae*.

Some other families may be considered poorly represented which is perhaps the case with: *Phasianidae, Rallidae, Falconidae, Strigidae, Cuculidae, Timaliinae, Pycnonotidae*, and others. This is demonstrated very conspicuously in the diurnal birds of prey of which to date only two species are known, viz. *Spilornis cheela* and *Pandion haliaetus*. Not a single representative of the genus *Accipiter* is recorded from Bawean. And—which may surprise one still more—also *Haliaetus leucogaster* and *Haliastur indus* are not as yet known to occur, though it is hard to believe that these species, common in the coastal regions of so many islands in the Indonesian area, do not live on this island.

VORDERMAN (loc. cit.) as well as OBERHOLSER (loc. cit.) and F.N. CHASEN (1935) were of the opinion that Bawean's ornithology should be closer related to that of Java than to that of Borneo. The particulars now available do not justify a different conclusion, which is quite logical when looking at Bawean's geographical position; for it is about 300 km. away from Borneo and only half that distance from Java.

Notwithstanding the fact that our visits to Bawean Island and its surroundings took place in May, June and July, a good many migrating *Scolopacidae* were recorded as is evident from our synopsis. Because almost all these migrants showed their winter plumage there is reason to suppose that a fair number of such birds do not leave Tropical winter quarters, as has been evident on many other occasions in Indonesia and New Guinea.

Only ABBOTT visited the island during a period (November) which may be considered very favourable for obtaining northern



5 kilometers

- ▲ 1 - 10 = camping localities and collecting centres
- K = Kali = river
- Mt = Mountain
- P = Pulau = island
- Tg = Tanjung = cape

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migrants but his list only contains one such species, *Cuculus saturatus* (erroneously classified as *canorus* by OBERHOLSER), so that he possibly did not pay attention to migrants, in any case so far as the waders are concerned. My visit to the Karimundjawa Islands, four months after we returned from our Bawean expedition, made it clear that ornithological visits to such islands during autumn can yield remarkable results. In the case of Bawean a collecting trip during that season could raise considerably the number of bird species recorded.

#### List of the Birds of Bawean Island.

Below are mentioned all species which are known to occur on this island according to the present state of our knowledge, including the species not established on Bawean itself, but on some smaller surrounding islands. In this list I have followed the sequence of species used by F.N. Chasen (1935).

When species are recorded of which material is available the results are discussed in comparison with material from other parts of Indonesia. In such cases special attention is given to skins from the Sunda Strait area, from the Karimundjawa Islands and from the Kangean Archipelago, secured by the author in the period 1952-1956. When these results were previously published reference to the relative papers is made and re-discussion of the material is omitted.

All measurements given in this list are in millimetres.

#### Family PHASIANIDAE

1. *GALLUS VARIUS* (SHAW & NODDER) *Green Jungle Fowl*  
*Phasianus varius* SHAW & NODDER, Nat. Misc. 10, tab. 353 (1798-1799); Java

ALTING SIBERG (loc. cit.) reported: "Peacock and the beautiful Jungle Fowl do not occur here", but VORDERMAN (1892) wrote: "In the wilderness from time to time the Jungle Fowl, *Gallus varius* SHAW, is heard" and in 1907 the species was obtained on Bawean by ABBOTT. One cannot exclude that it was introduced to Bawean Island since Siberg's stay there because it is not very probable that this good observer would have overlooked this rather noisy species.

Though the species was encountered by us on rare occasions only, we heard the cock's crowing very often, so that the presence of the Green Jungle Fowl was recorded with certainty on at least 25 days. In the surroundings of almost all our camping places *Gallus varius* was recorded except on Pulau Gili, where perhaps it does not occur.

Bawean's very hilly country must be a paradise for the species. Many slopes are covered with a dense vegetation of shrubs and low trees, offering excellent cover and many pastures, fallow paddy fields and gardens form very suitable feeding grounds.

On 6th June a cock was offered us for sale but because it had no tail and the price was too high, we did not buy the bird. About a month later, on 2nd July, some boys brought us a chicken of approximately 2-3 weeks old, captured in the neighbourhood of Muara, south Bawean. Contrary to the situation in the Kangean Archipelago where representatives of this species are captured for artificially cross-breeding with domesticated fowl, Bawean people are apparently not especially interested in its presence.

#### Family TURNICIDAE

#### 2. *TURNIX SUSCITATOR BAWEANUS* (HOogerwERF)

##### *Bawean's Bustard Quail*

*Turnix suscitator baweanus* HOogerwERF, Ardea, 50, 1962, pp. 199-200: Muara, south Bawean

- Material :** Muara, 2♂ 3♀ 1♀ imm.; 29.6 till 2. 7. 1954
- Measurements :** Previously published (HOogerwERF 1962)
- Weight :** ♂♂ 49, 57; ♀♀ 60, 70, 72; imm. ♀ 62 gr.
- Gonads :** 2♂ Testes 3-10 mm.; 2♀ ovary well developed, egg-follicles 1-6 mm; imm. ♀ ovary small, but well granular.
- Soft parts :** ♂♀ Irides very light grey, almost white; ♂♂ bill dark grey, edges and basal part under mandible olive yellow; ♀♀ olive green with dark tip, under mandible yellow, clear yellow on gape; imm. ♀ dirty olive grey for the greater part, gape and nostrils yellow; feet olive yellow, greyish at articulations.

*Stomach contents* : Dry remains of small seeds, partly of grasslike plants; small pebbles.

*Field notes* : Not earlier than a fortnight after we arrived on this island we found this quail for the first time. It was almost exclusively recorded in the southern part of the island, principally between Tandjung Lajar, some miles east, and Tandjung Ga'ang, six miles west, of Sangkapura, and in the southwest corner of the island. Only once a specimen was seen near Sekarputih close to Bawean's east coast.

The species is perhaps scattered all over the island but certainly not very abundantly. It may be common on Pulau Gili where we encountered it daily, even five together on 15th June. All specimens secured are from the surroundings of Muara, some miles west of Sangkapura. On 1st July a female was captured on its nest, which contained three eggs.

VORDERMAN mentioned its occurrence, but did not obtain one. Habitat and behaviour do not differ from those on Java.

*Discussion* : For taxonomic particulars I refer to a previous paper in which the Bawean population was described under the subspecific name *baweanus* (HOOPER 1962).

### Family COLUMBIDAE

#### 3. *TRERON VERNANS* subsp. *Pink-necked Green Pigeon*

*Material* : 1 ♂ imm. Muara; 28. 6. 1954

*Measurements* : Wing 150; tail 90; culmen 14 mm.

*Weight* : 160 gr.

*Gonads* : Testes very small, long and white

*Soft parts* : Irides light grey, almost white; bill slate, basal part darker; feet light crimson

*Stomach contents* : Fine dry remains of fruits and some small pebbles; crop crammed with small, green fruits and many stones of such fruits.

*Field notes* : There is no doubt that this fruit pigeon is one of the less common bird species here. We found it once on Pulau Gili and



only four times on Bawean itself; without exception in the southern part between Tandjung Alang-alang and Tandjung Ga'ang. In this region this pigeon may have been less rare than everywhere else in Bawean Island, at any rate during our stay there.

This conclusion is not only based on visual records but more on audio records, because as a rule the very typical call of the species most often gives evidence of its presence.

*Discussion* : The semi-adult specimen secured on Bawean Island has previously been discussed (HOOPERWERF 1962). Because of its large wing size this bird shows more resemblance to the population of Karimundjawa, described as *karimuniensis* than to the subspecies *griseicapilla* or *purpurea* known from Java.

4. *DUCULA AENEAE POLIA* (OBERHOLSER) *Green Imperial Pigeon*  
*Muscadivores aeneus polius* OBERHOLSER, Bull. U.S. Nat. Museum  
98, 1917, p. 18 : Siantan Island, Anamba Islands

*Material* : 2♂ 1♀ Muara; 26. 6. 1954; 1♀ Telaga Kastoba,  
29. 5. 1954

*Measurements & weight* : Previously published (HOOPERWERF 1963a)

*Gonads* : ♂♂ Testes small, 4-5 mm. and large, 13 & 16  
mm; ♀♀ ovary small and well granular, 5  
egg-follicles 3-5 mm.

*Soft parts* : ♂♀ Irides and eyelid red, naked skin around  
eyes slate; ♂♂ bill dark slate and red, tip half  
light grey, under mandible dark grey, light  
grey on tip and edges; feet dark crimson, soles  
ochreous; ♀♀ bill slate, base upper mandible  
reddish; feet dark purple red, soles ochreous

*Stomach contents* : Dark blue fruits, some small fruitstones and  
a large pebble.

*Field notes* : Though we should not like to call this pigeon common on Bawean we found it in the vicinity of almost all our camping localities, perhaps most abundantly near Telaga Kastoba, a crater lake in the northern half of the island. But in the neighbourhood of Muara, along the south coast, the species was also certainly not rare.



Fig. 1. Frigate Bird, *Fregata minor*, a semi-adult bird in flight.



Fig. 2. Frigate Bird, *Fregata minor*, a juvenile bird at a nest on an island in the Banda Sea.



Fig. 3. Purple Heron, *Ardea purpurea*, at nets.



Fig. 4. Night Heron, *Nycticorax nycticorax*, at nest.



Fig. 5. Little Egret, *Egretta garzetta*, photographed in Java.



Fig. 6. Large Egret, *Egretta alba*, at nest elsewhere in Indonesia.

Once in the well forested hills surrounding Telaga Kastoba about 15 frightened specimens left a fruit bearing forest giant and on 25th June ten were flushed from a similar tree quite close to a village near Bawean's south coast. In that area the species was repeatedly observed on coconut palms, which is rather unusual in our experience.

*Discussion* : The Bawean material of this species was discussed earlier (HOOGERWERF 1963a). Bawean's population of this pigeon resembles the birds living on the Kangean Islands, which can barely be included in the subspecies *polia* known from Java. For the time being we unite the Bawean birds with this latter race, though this does not quite satisfy us.

5. *DUCULA ROSACEA ZAMYDRUS* (OBERHOLSER)

*Island Imperial Pigeon*

*Muscadivores rosaceus zamydrus* OBERHOLSER, Proc. U.S. Nat. Museum, 54, 1917 p. 179 : Solombo Besar and Arends, Java Sea (East)

*Material* : 1 ♀ Pulau Gili, 13. 6. 1954

*Measurements* : Previously published (HOOGERWERF 1963b)

*Weight* : 370 gr.

*Gonads* : Ovary well granular, 1 egg-follicle 14 mm.

*Soft parts* : Irides and eyelid red, naked skin around eyes slate; bill slate, dark tipped, basal part upper mandible dark red; feet clear crimson, soles light grey.

*Stomach contents* : Small green fruits

*Field notes* : We did not find this pigeon on Bawean itself but on 13th June a solitary bird was seen and secured from a high tree on Pulau Gili, after it drew our attention by its "booming" notes.

As is sufficiently known and is evident also from its English name, this pigeon is almost exclusively confined to smaller islands, and is not or exceptionally found on larger ones. Unlike the Pied Imperial Pigeon it does not usually congregate in large flocks and is certainly more sedentary.

*Discussion* : For taxonomic particulars the reader may refer to a previous paper in which this bird is discussed together with representatives of the species from the Karimundjawa and Kangean Islands (HOGERWERF 1963b).

6. *DUCULA BICOLOR* (SCOP.) *Pied Imperial Pigeon*  
*Columba bicolor* SCOPOLI, Del Flor. et Fauna Insubr. 2, 1786, p. 94 :  
 New Guinea.

*Material* : 2♂ 2♀ Pulau Gili, 13 & 14. 6. 1954

*Measurements* : See below

*Weight* : ♂♂ 480, 510; ♀♀ 435, 460 gr.

*Gonads* : ♂♂ Testes very large, 15-20 mm; ♀♀ ovary hardly granular; well granular, egg-follicles 3-14 mm.

*Soft parts* : ♂♀ Irides dark brown, naked skin around the eyes light slate; bill clear slate, tip almost black; feet slate, soles light grey or chamois

*Stomach contents* : Small fruits of *Ficus* 10-20 mm and remains thereof and one fruitstone of *Sterculia foetida*, 22 mm.

*Field notes* : Though on Pulau Gili we daily observed this pigeon, we have only three records from Bawean itself, and the first one was secured not earlier than ten days after our arrival on the island.

Once we saw this beautiful and striking bird between Martalaja and Kumalasa near the west coast and twice near Sekarputih, which is not far from the east coast. On 13th June we found a nest on Pulau Gili; it was in a young mango tree on the border of a small section of teakwood. It contained one egg which was heavily incubated; during transport the pullus hatched and we kept it alive for several days. This egg measured 42.3 × 29.9 mm. At that same time some juveniles were in the hands of the local population, we bought two specimens which were kept in captivity for years.

During our stay on Pulau Gili the "booming" notes of these pigeons were heard very regularly; we noted their loud call as "oo-oo-oo" or "oo-roo", "koo-koorrrr" and also as "woo-oo" or "dooroo" (oo as in boom). Some of these notes are also uttered by the female, which is distinctly smaller than the male.

On Pulau Gili these pigeons increased in numbers in the late afternoon, apparently because of individuals coming from Bawean to roost. In the early mornings many were still there but at about 7 o'clock their numbers would have decreased to perhaps only a small sedentary population. A similar situation was reported by ALTING SIBERG (1846); he wrote: "the white forest pigeon (*koedawa*) unites in hundreds on high kapoc trees, leaving for Bawean as soon as the sun rises above the horizon". Also VORDERMAN (1892) wrote: "Also the sea pigeon (*Myristicivora bicolor*) is present on Pulau Gili in large numbers".

*Discussion*: The most striking difference between birds of the same origin is caused by the varying degree of fat or dirt on the feathers; an almost pure white plumage seems rather exceptional, it is more often yellowish. Besides, there is some individual variation in the extent of white and black on the under tail and in certain individuals there is some black on belly and undertail coverts. This is rather obvious in a male (very small gonads) obtained in June on Trouwersisland (Indian Ocean, five miles off Java's south coast) and—to a smaller degree and restricted to the tips of the longest undertail coverts—in male birds from Bawean (testes 16-20 mm), Kangean (test. 14-20 mm), Udjung Kulon (west Java), Enggano (off Sumatra's west coast) and in two females from Krakatau Island (Sunda Strait, west Java). Though the Trouwersisland male shows rather a lot of black on those lower parts, there is even not a shadow of such markings in a male and a female from nearby Klapperisland in which the gonads showed the same picture. Several specimens have no black on the under side of the outermost tail feathers, but they may be semi-adults; the same is the case with a distinct juvenile from Billiton Island.

The individual variation in the extent of the black portions on the tail is small: in the 30 birds studied this black area—averaging about 60 mm. wide—varies only about 10 mm.

Variations in bill, wing and tail measurements are rather important, even between birds from the same locality, but females average smaller in all their measurements.

## Measurements of the material examined :

**MALES***Wing :*

Indonesia : 225, 227, 231, 233, 237, average 230.60

Sunda Strait : 213, 224, av. 218.50

Karimundjawa Islands : 212, 225, 230, 232, 233, av. 226.40

Bawean Island : 231, 236, av. 233.50

Kangean Island : 233, 234, av. 233.50

*Tail :*

Indonesia : 126, 126, 129, 130, 135, av. 129.20

Sunda Strait : 122, 125, av. 123.50

Karimundjawa : 118, 122, 122, 124, 125, av. 122.20

Bawean : 124, 130, av. 127

Kangean : 130, 134, av. 132

*Bill (exposed culmen) :*

Indonesian : 20, 21, 21.1, 21.9, 22, av. 21.20

Sunda Strait : 20.6, 24.2, av. 22.40

Karimundjawa : 22.8, 23.2, 23.5, 23.8, 25.8, av. 23.82

Bawean : 21.5, 23, av. 22.25

Kangean : 21, 22, av. 21.50

**FEMALES***Wing :*

Indonesia : 218, 220, 221, 225, 238, av. 224.40

Sunda Strait : 228

Karimundjawa : 208, 211, av. 209.50

Bawean : 219, 231, av. 225

Kangean : 219, 225, av. 222

*Tail :*

Indonesia : 117, 120, 120, 120, 128, av. 121

Sunda Strait : 115

Karimundjawa : 108, 110, av. 109

Bawean : 124, 128, av. 126

Kangean : 117, 120, av. 118.50

*Bill (exposed culmen) :*

Indonesia : 20, 21, 21.9, 23.3, 24.2, av. 22.08

Sunda Strait : 22.1

Karimundjawa : 24, 25, av. 24.50

Bawean : 21.2, 21.9, av. 21.55

Kangean : 21.5, 22.9, av. 22.20

7. *STREPTOPELIA CHINENSIS TIGRINA* (TEMME.) *Spotted Dove*  
*Columba Tigrina* TEMMINCK in TEMMINCK AND KNIP, Pigeons,  
 1, 1811, p. 94, tab. 43 : Java

*Material* : 2♂ 1♀ Tandjung Ga'ang, 6. 6. 1954; 1♂ Muara, 9.  
 6. 1954; 2♂ Kampung Tandjung, 10. 6. 1954; 2♀  
 Sangkapura, 11. 6. 1954; 2♂ Batulintang, 23. 6. 1954

*Measurements* : See below

*Weight* : ♂♂ 125, 130, 132, 149, 150; juv. 89, 110; ♀♀ 130;  
 juv. 90, 105 gr.

*Gonads* : ♂♂ Testes moderate to large, 5-20 mm.; ♀♀ ova-  
 ries well granular; ♂♀ gonads badly developed

*Soft parts* : ♂♀ Irides light to warm yellow, naked skin around  
 eyes light blue or slate; bill black or almost black,  
 tip lighter in juveniles; feet light crimson, soles  
 almost white, juv. brownish fleshy

*Stomach contents* : Remains of small seeds, sometimes mixed with rice  
 grains; in one case crop full of such grains

*Field notes* : As indicated at the beginning of this paper the Spotted  
 Dove is among the most common bird species of Bawean Island,  
 according to my experience.

We found it in the vicinity of almost all our camping places  
 including Pulau Gili, but we did not observe it around Telaga Kastoba,  
 one of the most densely forested areas of Bawean. However, our  
 experience points to the possibility that its distribution is rather pre-  
 carious and may fluctuate in accordance with the availability of con-  
 sumable rice and other seeds.

According to ALTING SIBERG (loc. cit.) this dove may have  
 been introduced on Bawean Island in 1802 by the first Prefect of the  
 island, Mr. HENDRIK FREDERIKS, together with *Geopelia striata* and  
*Padda oryzivora*. According to that author the Spotted Dove has  
 multiplied very well but both the latter species to a smaller degree,  
 which still seems to be so.



*Discussion* : There is not much variation in coloration of the under parts in birds originating from different localities, nor alterations as a consequence of long storage, but there may be some discoloring as a consequence of preservation in alcohol or formalin. Some of our skins preserved in formalin, originating from Komodo, Bawean and Kangean, almost completely lost the vinaceous tint on the under surface.

Also, when looking upon the remaining parts of the plumage there are no differences other than individual ones, but many skins preserved in formalin average darker above than those preserved dry. On the other hand, skins obtained a long time ago become lighter and may average more vinaceous on occiput and neck, because in our series not a single freshly secured skin shows this tint so distinctly as some old ones.

From the measurements given below it is evident that birds from Kangean, Bawean and the Sunda Strait area fit well in size in the series from Java and other islands, though the Sunda Strait material averages somewhat smaller. There are not enough skins at my disposal on which to base a conclusion, but C. BODEN KLOSS (1931) mentioned 138-150 mm. as the wing size for birds from Sumatra, south of the equator and from Java agreeing rather well with our experience. If there is really a population of this dove, living in the northern part of Sumatra, with a wing of 138 mm. or less, it seems justifiable to separate such birds, for which the name *minor* (PARROT) is available, but it is doubtful if such a population really does exist.

Measurements of the material examined :

#### MALES

##### *Wing* :

Java : 143, 143, 145, 147, 149, average 145.40

Sunda Strait : 137, 138, 145, 145, av. 141.25

Bawean Island : 143, 143, 143, 144, 146, av. 143.80

Kangean Islands : 143, 143, 148, 149, 149, av. 146.40

##### *Tail* :

Java : 136, 137, 137, 144, 144, av. 139.60

Sunda Strait : 128, 133, 135, 135, av. 132.75

Bawean Island : 140, 145, 150, 150, 150, av. 147

Kangean Islands : 138, 140, 142, 144, 150, av. 142.80

*Bill* (exposed culmen) :

Java : 15, 15.5, 16.1, 16.6, 17.3, av. 16.10

Sunda Strait : 14.7, 15.2, 17.7, 17.8, av. 16.35

Bawean Island : 14.5, 14.8, 15.5, 16, 16.5, av. 15.46

Kangean Islands : 15.2, 15.2, 15.7, 17, av. 15.78

## FEMALES

*Wing* :

Java : 137, 138, 139, 143, 148, av. 141

Sunda Strait : 135, 135, 137, 144, av. 137.75

Bawean Island : 138, 140, av. 139

Kangean Islands : 144

Komodo Island : 142

*Tail* :

Java : 128, 129, 131, 144, 145, av. 135.40

Sunda Strait : 131, 133, 134, 136, av. 133.50

Bawean Island : 133, 140, av. 136.50

Kangean Islands : not measured

Komodo Island : 134

*Bill* (exposed culmen) :

Java : 14.1, 14.8, 15.9, 16, 16, av. 15.36

Sunda Strait : 15.5, 15.9, 16, 16.7, av. 16.03

Bawean Island : 15.5, 16.1, av. 15.8

Kangean Islands : 16.2

Komodo Island : 16

8. *GEOPELIA STRIATA STRIATA* (LINN.) *Barred Ground Dove**Columba striata* LINNAEUS, Syst. Nat. 12th ed., 1, 1766, p. 282:

"East Indies" = Malacca

*Material* : 2 ♀ Kampung Tandjung, 10.6.1954*Measurements* : See below*Weight* : 55, 55 gr.*Gonads* : Ovaries well granular*Soft parts* : Very narrow irides white, naked skin around eyes light green; bill dark, sometimes greenish grey, base and under mandible blue or slate; feet dark crimson*Stomach contents* : Remains of dry seeds, crop full of grass seeds and those of larger weeds, 3 mm.

*Field notes* : This lovely little ground dove is certainly not a common bird on Bawean Island, with the exception perhaps of some localities not far away from the south coast between Tandjung Lajar and Tdj. Alang-alang.

Not earlier than on 10th June, after being present on this island for almost three weeks, the first specimen came to our notice and according to my diary the presence of this species was noted only eight times in total. Except for one observation near the village of Gelam along the west coast, all observations are from the area indicated above and we did not encounter this dove on Pulau Gili.

According to ALTING SIBERG this bird, which is a cage bird in many parts of Indonesia, may have been introduced here from Java in 1802 by the first Prefect of Bawean, Mr. H. FREDERIKS, who is also said to have brought *Streptopelia chinensis* and *Padda oryzivora* to this island.

ALTING SIBERG got the impression that both these species had propagated less intensively than *Streptopelia chinensis*, which perhaps is true. In any case there is a remarkable difference in population density between these three species on the island of Bawean.

*Discussion* : In the extent of the dark and light areas the under parts may vary considerably in birds from the same locality, but Bawean and Kangean skins average darker on those parts and have less white when compared with material from Java. Kangean birds, moreover, have the grey on throat and chin duller, less bluish. Birds obtained from the Karimundjawa Islands show the opposite effect : they have the lightest under surface with much white, especially on the under tail, and throat and chin are clear bluish grey as in many Javan birds.

On account of the considerable white below and the very contrasting markings on breast and sides of the body, birds from the Karimundjawa Archipelago show some resemblance to *maugeus* and *audacis*. Representatives of these races, however, have those markings on the chest distinctly uninterrupted which is not the case in the Karimundjawa material, which also differs in having the chestnut area on the innerwing much smaller, in this respect too agreeing with typical *striata*. There are no colour differences on the upper parts

when comparing fresh material from Karimundjawa with similar skins from the Sunda Strait area, but birds from Kangean and Bawean are duller and the markings show distinctly less contrast.

*Geopelia* from Komodo Island (Lesser Sunda Islands) resembles *maugeus* from Sumba and Flores but the markings on the nuchal region are more intensive and the chestnut on the innerwing is darker, resembling the dark maroon on the undertail-coverts of *Ducula aenea problematica* (HOOPERWERF 1963a). We have only two skins from Komodo which, moreover, were preserved in formalin, which might have affected the plumage.

The differences described in fresh skins from the localities indicated above, have no subspecific significance if no large series confirm them, so that it seems right to include representatives of this species from the Sunda Strait area, Karimundjawa, Bawean and Kangean in the nominate subspecies.

Measurements of the material examined :

#### MALES

##### *Wing* :

Java : 94, 98, 98, 99, 102, 102, average 98.83

Sunda Strait : 98, 101, av. 99.50

Karimundjawa Islands : 97, 98, 101, 101, 101, 102, 104, av. 100.57

Kangean Islands : 100, 101, 103, 103, 103, 103, av. 102.17

Komodo Island : 100

##### *Tail* :

Java : 92, 97, 97, 98, 100, 102, av. 97.67

Sunda Strait : 93, 94, av. 93.50

Kangean Islands : 100, 105, 108, 111, 113, av. 107.40

Karimundjawa Islands : 96, 97, 98, 99, 102, 105, 106, av. 100.43

Komodo Island : 112

##### *Bill* (exposed culmen) :

Java : 13.5, 13.5, 13.7, 13.9, 14, 15, av. 13.93

Sunda Strait : 13.9, 14.2, av. 14.05

Karimundjawa Islands : 13.7, 13.7, 13.9, 14, 14.8, 15.1, 15.4, av. 14.37

Kangean Islands : 12, 13.3, 13.8, 13.9, 14, 14.3, av. 13.55

Komodo Island : 13.8

## FEMALES

*Wing :*

Java : 92, 96, 97, 98, av. 95.75

Sunda Strait : 98, 98, 102, av. 99.33

Karimundjawa : 93, 96, 97, 97, 98, 99, av. 96.67

Bawean : 95, 96, av. 95.50

Kangean : 97, 97, av. 97

*Tail :*

Java : 89, 91, 93, 95, av. 92

Sunda Strait : 90, 95, 97, av. 94

Karimundjawa : 94, 95, 96, 98, 98, 98, av. 96.50

Bawean : 88, 90, av. 89

Kangean : 98, 100, av. 99

*Bill (exposed culmen) :*

Java : 12.5, 13.3, 13.8, 13.9, 14, av. 13.50

Sunda Strait : 12.3, 12.9, 13.1, av. 12.77

Karimundjawa : 12.2, 13.3, 14, 14.1, av. 13.52

Bawean : 13.3, 14, av. 13.65

Kangean : 12.2, 12.8, av. 12.50

9. *CHALCOPHAPS INDICA* (LINN.)*Emerald Dove*

*Columba indica* LINNAEUS, Syst. Nat., 10th ed. 1758, p. 164 : Calcutta (Baker 1928)

*Material :* 1♂ Muara, 2. 7. 1954

*Measurements :* See below

*Weight :* 110 gr.

*Gonads :* Testes moderate, 8 mm.

*Soft parts :* Irides dark brown, eyelid dark red, naked skin around eyes dark grey; bill vermilion, base crimson to purple red; feet dark crimson

*Stomach contents :* Dry remains of fruits and some pebbles; crop contained three species of hard fruits

*Field notes :* Taking into account the fact that usually visual observations of this dense shrubwood loving bird, are not common, the fairly frequent times we saw it may from an indication that it certainly cannot be called rare. In the surroundings of almost all our camping localities, inclusive of Pulau Gili, representatives of the species were

recorded though most often on account of their peculiar call. Most observations are from the neighbourhood of Sekarputih (east coast) and Muara (south Bawean). Usually it was not much more than very quickly flying birds, most often in shady places, or the gloomy, grumbling call betraying their presence.

As is the case with some other bird species, e.g. *Gallus varius*, *Trichastoma abbotti* and *Orthotomus sepium*, which show a preference for a similar habitat, the frequency of the Emerald Dove need not surprise one. On the other hand one may wonder that such species as *Copsychus malabaricus*, *Macronus gularis*, *M. flavicollis*, etc., almost exclusively known from a similar habitat, do not occur at all on Bawean.

*Discussion* : There is some variation in the purplish vinaceous of the under surface of the males : in very beautiful birds this colour covers almost the entire under surface, whereas it is confined to certain parts in other skins. There is also some variation in the intensity of the ashy grey on the under tail-coverts. Both these differences occur in material of both sexes.

There is perhaps more variation in coloration of the under surface in the females, running from vinaceous brown to clear light brown. The striking difference in this respect between a specimen secured in 1921 on Sebesi Island (Sunda Strait) and a second one obtained there in 1955, seems justifiably attributed to long storage.

Though in the males the upper parts are rather uniformly coloured, the tint and extent of the white and bluish-grey on the occiput and neck may vary considerably. The same holds good for the brown area on neck and upper mantle, whereas there is also some individual variation in the coloration of back and upper tail-coverts.

In two male birds from Flores (Lesser Sunda Islands) and Tjibodas (west Java) the grey of the neck runs through the brown nuchal collar to the green mantle feathering. There is apparently not much difference in this respect between fresh and old material, but fresh skins may average darker on the upper surface. Comparing fresh material with old from Sebesi Island it is evident that the brown on head and neck fades significantly in old skins.

Juveniles are more bronzed on those parts, whereas the brown on occiput and neck is more greyish and the lower back and upper tail-coverts average darker.

Also in the females there is some variation in the brown colour of head, neck and upper mantle and in the tint of back and upper tail, usually brown below the grey collar on the lower back, but sometimes almost black. Maybe birds showing the latter character are always immatures.

As is evident from the measurements published below, size variations are small: a male from Flores shows almost the same measurements as a male from Krakatau Island and two males from west Java and Sumatra have almost exactly the same wing size as two male birds secured on the Karimundjawa Islands. The Bawean male does not differ in size from specimens from the latter islands and from the Sunda Strait area.

Measurements of the material examined :

#### MALES

##### *Wing :*

Indonesia : 143, 144, 147, 150, 151, average 147

Sunda Strait : 143, 145, 151, av. 146.33

Karimundjawa Islands : 144, 147, av. 145.50

Bawean Island : 143

##### *Tail :*

Indonesia : 85, 85, 87, 87, 90, av. 86.80

Sunda Strait : 86, 88, 88, av. 87.33

Karimundjawa : 87, 95, av. 91

Bawean : 84

##### *Bill (exposed culmen) :*

Indonesia : 17, 17.3, 17.5, 17.6, 18.5, av. 17.58

Sunda Strait : 15, 17.4, 18.1, av. 16.83

Karimundjawa : 16.9, 17.2, av. 17.05

Bawean : 16.6

#### FEMALES

##### *Wing :*

Indonesia : 134, 140, 140, 145, 147, av. 141.20

Sunda Strait : 138, 139, 143, 143, av. 140.75

*Tail* :

Indonesia : 74, 77, 77, 81, 89, av. 79.60

Sunda Strait : 84, 84, 84, 87, av. 84.75

*Bill* (exposed culmen) :

Indonesia : 15.2, 15.2, 15.4, 18, 18.2, av. 16.40

Sunda Strait : 15.9, 17.7, 17.8, 18, av. 17.35

## Family RALLIDAE

10. *AMAURORNIS PHOENICURUS JAVANICA* (HORSF.)*White-breasted Waterhen**Gallinula javanica* HORSFIELD, Trans. Linn. Soc., XIII, 1821, p. 196:

Java

*Field notes* : On 29th and 30th May 1939 this bird was unmistakably recorded on Pulau Gili where representatives of the species were repeatedly heard from within dense shrubs, the favourite habitat of this waterhen.

However, during our stay on this island from 12th-15th June 1954 we failed to repeat those observations and on Bawean Island we did not find it either !

## Family CHARADRIIDAE

11. *PLUVIALIS SQUATAROLA* (LINN.)*Grey Plover**Tringa squatarola* LINNAEUS, Syst. Nat., 10th ed., 1, 1758, p. 149:

Sweden

*Material* : 1 ♀ Muara, 28. 6. 1954*Measurements* : See below*Weight* : 200 gr.*Gonads* : Ovary small but well granular*Soft parts* : Irides dark brown, almost black; bill almost black; feet ochreous slate*Stomach contents* : Stomach empty, some small snails in gullet

*Field notes* : Only once observed which, of course, is no proof that it is of rare occurrence on this island because the periods we visited Bawean and surrounding islands did not coincide with the time migrating Scolopacidae visit the Tropics most abundantly.



The only specimen observed was the one we obtained.

Because all specimens present in Bogor's museum, including four recently collected ones from the small islands surrounding Java, are females, perhaps both sexes do not visit the same winter quarters, in any case not in the same numbers.

The Grey Plover is a fairly common winter visitor to the Indo-Australian area though certainly less common than most other representatives of the plover family.

*Discussion* : There is not a single male bird in Bogor's museum, and our recently secured birds from Karimundjawa, Bawean and Kangean are also females. They all show complete or almost complete winter plumage : very light under parts with greyish brown markings on chest and foreneck. A female from Billiton Island has still some traces of summer dress : a few dark brownish spots on the chest.

A female from the Kangean Archipelago is rather dark on the upper surface, especially on the pileum but a second skin agrees almost exactly with our old material, though it is a trifle greyer, perhaps because it is fresh.

As is evident from the figures given below, the Bawean bird is rather small in all its dimensions but the examined series was too small to attach much value to this difference.

#### Measurements of the material examined :

##### FEMALES

##### *Wing* :

Indonesia : 193, 196, 196, 197, 200, average 196.40

Karimundjawa : 197

Bawean : 179

Kangean : 179, 197, av. 188

##### *Tail* :

Indonesia : 74, 74, 76, 78, 79, av. 76.20

Karimundjawa : 78

Bawean : 72

Kangean : 72, 78, av. 75

##### *Bill* (exposed culmen) :

Indonesia : 27, 27, 29.9, 30.5, 32.5, av. 29.38

Karimundjawa : 31.8

Bawean : 29.9

Kangean : 29.9, 31.8, av. 30.85

12. *PLUVIALIS DOMINICA FULVA* (GMEL.)      *Golden Plover*  
*Charadrius fulvus* GMELIN, Syst. Nat., 1, pt. 2, 1789, p. 687: Tahiti

*Material* :      2 ♀ Muara, 29. 6. 1954

*Measurements* :      See below

*Weight* :      122, 130 gr.

*Gonads* :      Ovaries small, but well granular

*Soft parts* :      Iris dark brown; bill almost black, under mandible lighter; feet light slate

*Stomach contents* : Very fine brownish animal remains

*Field notes* :      On the shore of Pulau Gili as well as along Bawean's south coast the Golden Plover was observed on several occasions. On 13th June there were eight together on the beach of Pulau Gili and the following day about the same number, mixed with *Charadrius leschenaultii*. But they certainly were not the same individuals, for in the first case the birds showed a very variable plumage and in the second flock all members were in perfect winter dress.

As is the case with all other migrating Scolopacidae, the occurrence on Bawean Island during summer of the Northern Hemisphere is worth mention, though it is certainly not a novelty. In such cases perhaps they are non-breeding birds staying in the Tropics the whole year round.

This plover may be called a common winter visitor within the Indo-Australian area, found in coastal regions as well as far inland.

*Discussion* :      The plumage of the under parts may vary considerably in specimens wintering in the Indo-Australian region. Besides specimens showing whitish under parts and a brownish throat, foreneck and chest, there are others which are strikingly striped on these parts and show intensively barred flanks, other birds show many black markings as parts of their summer dress. Only one individual among the fresh material has almost black under parts, a female shot on Kangean in August. A November female secured on Karimundjawa also presents some remains of the summer plumage, but the two birds from Bawean obtained on 29th June are in perfect winter plumage

without even a single trace of dark spots on the under surface. Among the material present in Bogor, individuals with much black below are from March, April, September and October.

When in full winter plumage the upper surface varies less considerably than the under parts but there is some proportional variation in the blackish and golden brownish markings. Birds still with much black below may look like perfect winter birds on the upper parts, though others with much black below show also distinct traces of the summer dress on the upper surface. This is so with an August female from Kangean which shows the superciliary stripe whiter, the crown darker, whereas the markings on the upper body are distinctly mixed with golden brown.

There is perhaps not much discolouring as a consequence of long storage. The variation in bill and wing size is rather important, but females average smaller.

Measurements of the material examined :

#### MALES

*Wing :*

Indonesia : 155, 163, 163, 164, 167, average 162.40

Karimundjawa : 167

*Tail :*

Indonesia : 59, 60, 60, 62, 62, av. 60.60

Karimundjawa : 69

*Bill (exposed culmen) :*

Indonesia : 22, 23.5, 23.6, 24.5, 24.6, av. 23.64

Karimundjawa : 23.90

#### FEMALES

*Wing :*

Indonesia : 159, 165, 168, 168, 172, av. 166.40

Karimundjawa : 162, 167, 169, 169, av. 166.75

Bawean : 165, 170, av. 167.50

Kangean : 169

*Tail :*

Indonesia : 59, 60, 61, 62, 63, av. 61

Karimundjawa : 62, 62, 63, 64, av. 62.75

Bawean : 59, 61, av. 60

Kangean : 59

*Bill* (exposed culmen) :

Indonesia : 22.5, 22.5, 23, 23.6, 24, av. 23.12

Karimundjawa : 22.4, 23, 24, 24.9, av. 23.58

Bawean : 23.6, 25, av. 24.3

Kangean : 21.1

13. *CHARADRIUS L. LESCHENAULTII* LESS. *Great Sand-Plover*  
*Charadrius Leschenaultii* LESSON, Dict. Sci. Nat., éd. Levrault, 42,  
 1826, p. 36 : India

*Material* : 1♂ 2♀, Muara, 28 & 30-6-1954*Measurements* : See below*Weight* : ♂ 70, ♀ ♀ 70, 72 gr.*Gonads* : ♂ Testes very small, black; ♀ ♀ ovaries small, but well granular*Soft parts* : ♂ ♀ Iris dark brown; bill black; feet olivegrey, toes almost black*Stomach contents* : Small remains of Crustacea or of crabs

*Field notes* : On five different occasions this small plover was found on Bawean Island, without exception along its south coast or on Pulau Gili. Sometimes, f.i. on 9th June, there were quite large flocks, perhaps mixed with the smaller *Charadrius mongolus* between Muara and Sangkapura. On 28th June we obtained with one shot four specimens from such a flock.

The many representatives of this migrant during this season showing winter plumage, made it once more evident that the number of "summer guests" of the Scolopacidae in the Tropics, is not so small as is often assumed.

This plover is one of the most common winter visitors in the Indo-Australian region, sometimes present in very large flocks. According to our experience visits to localities which are far away from coastal regions are not common in this species.

*Discussion* : Almost all examined specimens, including four birds secured in June on Bawean Island and Komodo (Lesser Sunda Islands) are in perfect winter plumage; they are white or almost white below with traces of a grey band on the flanks, sometimes extending to the

central part of the chest. In our material this is the case in birds obtained in February, June, August and September.

The only specimen in the Bogor collection with remains of summer dress is a female secured in May on the Kei Islands (Moluccas). It shows a russet tint in the indistinct chest band.

There is little individual variation in the greyish of the upper surface, but fresh skins average a trifle purer grey when compared with old material, which is not only lighter but also a trifle more brownish.

The individual variation in bill and wing measurements is rather important and there are perhaps no sexual differences in size.

Measurements of the material examined :

#### MALES

*Wing :*

Indonesia : 123, 137, 138, 140, 142, average 136

Bawean : 132

Kangean : 138

*Tail :*

Indonesia : 50, 51, 55, 55, 56, av. 53.40

Bawean : 51

Kangean : 53

*Bill (exposed culmen) :*

Indonesia : 20, 20.5, 22.9, 24.2, 24.5, av. 22.42

Bawean : 23

Kangean : 23.1

#### FEMALES

*Wing :*

Indonesia : 135, 137, 139, 141, 144, av. 139.20

Karimundjawa : 137, 143, av. 140

Bawean : 135, 138, av. 136.50

Kangean : 131

Komodo : 139

*Tail :*

Indonesia : 52, 53, 54, 56, 57, av. 54.40

Karimundjawa : 50, 51, av. 50.50

Bawean : 52, 54, av. 53

Kangean : 50

Komodo : 52

*Bill* (exposed culmen) :

Indonesia : 21.7, 22.1, 22.5, 22.8, 22.8, av. 22.38

Karimundjawa : 22.6, 22.9, av. 22.75

Bawean : 23, 23.2, av. 23.1

Kangean : 22.8

Komodo : 22

## Family SCOLOPACIDAE

14. *NUMENIUS ARQUATA ORIENTALIS* BREHM *Curlew**Numenius orientalis* C.L. BREHM, Handb. Naturg. Vög. Deutschl. 1831, p. 610: East Indies

*Field notes* : The only observation of the species is from Pulau Gili where—on 13th June—we saw a solitary bird on a stone bank along the beach, at the foot of the hill. We classified the bird as belonging to this species because of its very light, almost white back which is very distinct in the flying bird as compared to *Numenius madagascariensis*, and on account of its much larger size compared with *N. phaeopus*, which may be considered the most common curlew visiting the Indo-Australian region. *N. madagascariensis* is perhaps the rarest one except in New Guinea where *Numenius arquata* is not yet known and *N. madagascariensis* cannot be called rare.

Both representatives of this genus prefer the coastal regions when in winter quarters.

15. *NUMENIUS PHAEOPUS VARIEGATUS* (SCOP.) *Whimbrel**Tantalus variegatus* SCOPOLI, Del. Flor. et Faun., Insubr. 2, 1786, p. 92: Luzon, Philippine Islands.*Material* : 2♂ 1♀ Muara, 9.6.1954*Measurements* : See below*Weight* : ♂♂ 388, 377, ♀ 390 gr.*Gonads* : ♂♂ Testes very small, ♀ ovary small, but granular*Soft parts* : ♂♀ Iris dark brown; bill almost black, under mandible fleshy; feet grey*Stomach contents* : Stinking animal remains

*Field notes* : As was the case at many other localities in the Indo-Australian area we have visited, encounters with this Whimbrel outside the winter months of the temperate zones, were more common than in any other representative of the Scolopacidae, except perhaps the Common Sandpiper, *Actitis hypoleucos* (which, however, was not seen by me on Bawean Island).

On the same day that quite a lot of *Charadrius leschenaultii* were present and also some *Heteroscelus incanus*, we saw about 12 Whimbrels along the beach between Sangkapura and Muara. On 28th June there was one calling from a high tree close to Muara !

The species is one of the most common winter visitors in the Indo-Australian region. Though this bird too shows a preference for coastal areas, encounters with it far inland can certainly not be called rare, especially in territories where muddy rivers penetrate far inland.

*Discussion* : The under surface of the birds examined is very uniform but the extent of the white area varies, sometimes reaching the central part of the chest, but more often confined to the belly.

Usually fresh skins average purer white and show more contrast in the markings than old material, but a bird collected 20 years ago on Billiton Island does not differ in this respect from certain freshly obtained ones.

There is also some variation in the colour of the crown from light to very dark brownish grey and old skins average lighter and also more brownish than fresh material.

The individual size differences are large but in my series they are accentuated by the fact that freshly moulted birds were mixed with those showing a worn plumage. There is apparently little sexual size difference.

Measurements of the material examined :

#### MALES

*Wing* :

Indonesia : 217, 225, 227, 238, 256, average 232.60

Karimundjawa : 232

Bawean : 216, 234, av. 225

*Tail :*

Indonesia : 95, 98, 100, 102, 106, av. 100.20

Karimundjawa : 98

Bawean : 96, 99, av. 97.50

*Bill (exposed culmen) :*

Indonesia : 73, 75.8, 77, 82, 84.5, av. 78.46

Karimundjawa : 79.5

Bawean : 81.2, 87.2, av. 84.2

**FEMALES***Wing :*

Indonesia : 225, 234, 236, 243, 245, av. 236.60

Karimundjawa : 254

Bawean : 223

Kangean : 241

*Tail :*

Indonesia : 90, 100, 101, 102, 104, av. 99.40

Karimundjawa : 102

Bawean : 95

Kangean : 99

*Bill (exposed culmen) :*

Indonesia : 83, 85, 87.5, 88.1, 92.2, av. 87.16

Karimundjawa : 94.1

Bawean : 87.2

Kangean : 77.9

16. *ARENARIA INTERPRES INTERPRES* (LINN.) *Turnstone*  
*Tringa Interpres* LINNAEUS, Syst. Nat., 10th ed., 1758, p. 148 :  
 Sweden

*Field notes :* We only once found the species, *viz.* a solitary bird, on 31st May 1939, along the shore of the coral island Pulau Nusa off Bawean's west coast.

When in its winter quarters the species seems to prefer stony beaches and coral reefs which are usually visited in small flocks of 5-10 individuals. Encounters in the interior are rare so far as our experience goes.

17. *TRINGA TOTANUS EURHINUS* (OBERH.) *Redshank*  
*Totanus totanus eurhinus* OBERHOLSER, Proc. U.S. Nat. Mus. XXII,  
 1900, p. 207 : Ladak



*Field notes:* On 7th June there were some representatives of this species, together with a couple of Greenshanks, *Tringa nebularia*, feeding on dry mud-banks along the south coast between Sangkapura and Muara. On 25th June a solitary bird was seen in an area of fishponds near the latter village and three days later there were again two in the shadow of a high *Sonneratia* tree along the same beach. Especially in this case the birds were approached to close range, making it possible to establish their identity with certainty.

On 29th June four were present on a dry sand-bank quite close to Muara.

The Redshank is a common winter visitor to Java and surrounding islands, though perhaps very rare in New Guinea.

18. *HETEROSCELUS INCANUS BREVIPES* (VIEILLOT)

*Grey-rumped Tattler*

*Totanus brevipes* VIEILLOT, Nouv. Dict. Hist. Nat., nouv. éd, 6, 1816, p. 410: Timor

*Material:* 1 ♀ Muara, 9. 6. 1954

*Measurements:* See below

*Weight:* 93 gr.

*Gonads:* Ovary well granular

*Soft parts:* Iris dark brown; bill almost black, base under mandible lighter; feet warm ochreous yellow

*Stomach contents:* Stomach empty

*Field notes:* In my experience this is one of the less common winter visitor to Indonesia and New Guinea. During our travelling on Bawean Island we found the species only twice which, of course, cannot be evidence as to the frequency with which these birds may occur here during the winter months of the temperate zones.

On 9th June there were about ten on coral-banks along the beach between Sangkapura and Muara, of which one was secured and on 29th June there were three in the same place.

The species, when in its winter quarters, prefers sandy or pebble beaches and coral-banks to muddy territory.

*Discussion*: Though all birds examined are almost similar, there is a certain degree of variation in the greyish tint on foreneck, chest and flanks and in the colour of the white of the remaining under parts. Both females from Kangean, however, which were obtained in September, show intensive dark markings on foreneck, throat, chin and flanks, bearing more resemblance in this respect to *Tringa totanus eurhinus* than to the 16 individuals of the same species present in Bogor's museum, except one which shows the same markings. This bird was secured in August 1910 in New Guinea (Biak), whereas three or four old skins in the Bogor collection and all six fresh October skins from the Karimundjawa Islands still have remnants of those bars on their flanks and partly also on the chest.

Notwithstanding the similarity in collecting period the plumage differences between the latter specimens and both Kangean skins are very striking. These Kangean birds show long wings too, measuring 170 and 177 mm. against only two specimens with wings of 166 and 169 mm. as maxima among all 17 other specimens examined by me. For the time being I include these Kangean birds as *brevipes*. Vaurie (1965) treats *brevipes* and *incanus* as separate species. This material is no longer with me and I cannot restudy the possibility of these birds being *incanus*, still unknown from the Indonesian area, except New Guinea, nor express an opinion on whether the two are separate species.

A bird collected in June on Bawean Island has the perfect winter plumage without any trace of bars below.

The plumage of the upper surface is very uniform in our series, but certain specimens show only a very few bars on the upper tail-coverts and in some individuals they are absent altogether. Both Kangean birds are a trifle darker above than the others; one is distinctly barred on the upper tail-coverts, the second one faintly.

Fresh skins are darker and purer grey than old, which also average somewhat browner.

There is some considerable variation in bill and wing measurements, for in the eight recently collected birds from the Karimundjawa, Bawean and Kangean Islands the exposed culmen varies almost

four and the wing size even more than 20 mm. ! In our material the females average somewhat larger than the males.

Measurements of the material examined :

#### MALES

*Wing :*

Indonesia : 152, 153, 157, 160, 163, average 157

Karimundjawa : 162

*Tail :*

Indonesia : 62, 65, 66, 70, 72, av. 67

Karimundjawa : 69

*Bill (exposed culmen) :*

Indonesia : 36.2, 36.3, 37, 37.2, 38.5, av. 37.04

Karimundjawa : 35.5

#### FEMALES

*Wing :*

Indonesia : 156, 157, 158, 162, 169, av. 160.40

Karimundjawa : 159, 160, 161, 163, 166, av. 161.80

Bawean : 155

Kangean : 170, 177, av. 173.50

*Tail :*

Indonesia : 65, 65, 67, 70, 70, av. 67.40

Karimundjawa : 65, 67, 68, 69, 71, av. 68

Bawean : 66

Kangean : 70, 75, av. 72.50

*Bill (exposed culmen) :*

Indonesia : 36.3, 36.5, 37, 38.5, av. 37.08

Karimundjawa : 36.8, 37.7, 37.8, 39, 39.7, av. 38.20

Bawean : 35.20

Kangean : 38, 39, av. 38.50

19. *ACTITIS HYPOLEUCOS* (LINN) *Common Sandpiper*  
*Tringa Hypoleucos* LINNAEUS, Syst. Nat., 10th Ed., 1, 1758, p. 149:  
 Sweden

*Field notes :* We failed to establish the occurrence of the Common Sandpiper on Bawean and surrounding islands, but VORDERMAN (1892) secured two specimens near Suwari which is along Bawean's west coast. The exact collecting date of this material is not men-

tioned by VORDERMAN and its present whereabouts are not known to me.

This sandpiper is one of the most common winter visitors within the Indo-Australian region, though never seen by me in large flocks. The birds are usually alone or a couple of specimens together and can be found in the coastal regions as well as far inland, even high above sea level. The species is apparently more common in summer than most other migrating Scolopacidae, so that it is rather strange that we did not encounter it during our long stay on Bawean Island.

20. *TRINGA NEBULARIA* (GUNN) *Greenshank*  
*Scolopax nebularia* GUNNERUS, in Leem's Beskr. Finn. Lapper,  
 1767, p.251 : Norway (Trondhjem)

*Field notes* : The only observation of Greenshanks was on 7th June when some individuals were feeding on dry mud-banks, together with other waders among them *Tringa totanus*.

In Indonesia as well as in New Guinea we observed this migrant more often during the summer of the temperate zones than was the case with most other northern migrants I know from that part of the world, except perhaps *Numenius phaeopus* and *Actitis hypoleucos*.

#### Family LARIDAE

21. *GELOCHELIDON NILOTICA AFFINIS* (HORSE) *Gull-billed Tern*  
*Sterna affinis* HORSFIELD, Trans. Linn. Soc., 13, 1821, p.199 :  
 Java

*Field notes* : During our visit to the small coral island Pulau Noko on 29th May 1939, in addition to many *Sterna sumatrana*, a small flock of the Gull-billed Terns was observed on the outskirts of the coral reefs. We failed to find this fairly striking species—which is uncommon along the island of Java—during later visits to this island nor did we find it along the coasts of Bawean itself or on Pulau Gili.

22. *STERNA BERGII CRISTATA* (STEPHENS) *Large Crested Tern*  
*Sterna cristata* STEPHENS, in Shaw's Gen. Zool., 13, pt.1, 1826,  
 p.146 : China (restricted type locality)

- Material* : 2♂ 2♀ Muara, 28.6.1954
- Measurements* : See below
- Weight* : ♂♂ 320, 385; ♀ 400; juv. ♀ 280 gr.
- Gonads* : ♂♂ Testes small, ♀♀ ovaries very small
- Soft parts* : ♂♀ Iris dark brown, almost black; bill dirty lemon yellow; feet dark grey, almost black

*Stomach contents* : Remains of small fishes, in two cases of 7-10 cm.

*Field notes* : Though the total number of specimens which came to our notice was certainly not small, we saw these large terns only on three different occasions and exclusively along Bawean's south coast and on Pulau Gili.

On 29th June there were about two hundred in one flock, adults and juveniles mixed. The previous day we obtained some from a flock of 20-30 individuals. These birds vomited some fishes of 8-12 cm., together with some small squids.

On a previous occasion—on 3rd July 1953—some hundreds were present on Pulau Noko, an island off Bawean's south coast. In this case they were mixed with smaller numbers of *Sterna anaethetus* and *S. sumatrana* : the latter species was breeding there.

The Large Crested Tern is one of the most common representatives of the family within many parts of the Indo-Australian area.

*Discussion* : Among the 18 birds examined only three have their breeding plumage, showing a clear white forehead and a uniform black crown with very elongated feathers on occiput and nape. Two were collected on Bawean Island in June and one on Kangean in September and their gonads were poorly developed. Two other Bawean birds secured in the same month have very much white on the upper head, one of which, however, has still well elongated occipital feathers, the second has a very short crest.

Among the specimens in winter dress there is much variation in the extent of white and black on the head but the remaining upper-parts are almost uniform without sexual differences. One bird from Bawean, a second from Kangean and two from Karimundjawa show traces of the juvenile plumage.

There is much individual variation in wing and tail size but in the tail this is, of course, strongly influenced by the periodically lengthened outer tail feathers.

Our Bawean, Karimundjawa and Kangean material fits well in the examined series, in which the females average somewhat smaller than the male birds.

Measurements of the material examined :

#### MALES

*Wing :*

Indonesia : 328, 335, 335, 338, 350, average 337.20

Karimundjawa : 345, 355, av. 350

Bawean : 347, 352, av. 349.50

*Tail :*

Indonesia : 115, 155, 158, 160, 162, av. 150

Karimundjawa : 156, 161, av. 158.50

Bawean : 137, 170, av. 153.50

*Bill (exposed culmen) :*

Indonesia : 57.9, 59.1, 59.5, 61.2, 61.7, av. 59.88

Karimundjawa : 62, 62.2, av. 62.1

Bawean : 63.1, 64, av. 63.6

#### FEMALES

*Wing :*

Indonesia : 320, 320, 335, 338, 338, av. 330.20

Bawean : 320, 350, av. 335

Kangean : 332, 342, av. 337

*Tail :*

Indonesia : 104, 122, 133, 141, 168, av. 133.60

Bawean : 126, 168, av. 147

Kangean : 123, 140, av. 131.50

*Bill (exposed culmen) :*

Indonesia : 57, 57.7, 60, 60.2, 62.2, av. 59.38

Bawean : 60.7, 62, av. 61.35

Kangean : 58, 58.5, av. 58.25

23. *STERNA ANAETHETUS ANAETHETUS* (SCOP.) *Bridled Tern*  
*Sterna Anaethetus* SCOPOLI, Del. Flor. et Faun. Insubr., 2, 1786,  
 p.92 : Panay Island, Philippine Islands

*Field notes* : Along the coasts of Bawean itself we never observed this dark tern but we know the species from both Pulau Noko and P. Nusa, respectively along Bawean's south and west coasts. Breeding could be seen on the latter island on 31st May 1939 and again on 23rd May and 3rd July 1953; at this latter date there were 150-200 specimens.

Almost without exception the eggs-one in a clutch-were laid on a low rock overgrown with a grasslike vegetation and some low shrubs, but some birds nested on an open coral and sand-bank, which *Sterna sumatrana* preferred as its nesting site (vol. 21 Plates XXXIII and XXXVI).

Particulars about eggs of the species were published earlier (HOogerWERF 1949) and more particulars on the species obtained from the Gunung Api Island (Banda Sea) are published in some papers dealing with the birds of that island (HOogerWERF 1939, Van BEMMEL & HOogerWERF 1940).

As early as 1846 ALTING SIBERG (loc. cit.) mentioned Pulau Nusa already as a breeding place of swiftlets and of terns, for he wrote: "The summit of this rock is covered with seagrass, numbers of gulls have chosen this place to deposit their eggs."

#### 24. *STERNA SUMATRANA SUMATRANA* (RAFFL)

*Black-naped Tern*

*Sterna Sumatrana* RAFFLES, Trans. Linn. Soc., London, 13, 1822, p.329: Sumatra

*Field notes* : As is the case with *Sterna anaethetus* the present species was not found along the coasts of Bawean itself though it is very probable that it does occur there at least periodically because it breeds on some neighbouring islands.

On 29th and 31st May 1939 and again on 3rd July 1953 representatives of this species were found breeding on both Pulau Noko and P. Nusa off Bawean's south and west coast. In July 1953 their numbers were estimated at 100-150 on the first and 50-75 on the latter island and there were several clutches of 1-2 eggs. On Pulau Noko they were found almost exclusively between the low vegetation on the beach, consisting of *Scaevola taccada*, *Spinifex littoreus*, *Ipomoea pes caprae*, *Salsola kali* and *Sesuvium portulacastrum*. On P. Nusa on a bare

sand and coral-bank as well as on a rock covered with a grasslike vegetation.

On P. Noko we found a number of food pellets with a length of 10-12 cm, consisting of smeltlike fishes, which perhaps had been vomited during the courtship display or with the purpose of feeding the breeding partner.

Though both these breeding places were set aside as bird sanctuaries shortly after our 1939 visit, it became evident that frequent egg gathering still took place when we visited the islands again in 1953 when we did not succeed in finding a single incubated egg or pullus.

Particulars of the eggs of this species were published on a previous occasion (HOOGERWERF 1949).

#### Family ARDEIDAE

25. *ARDEA PURPUREA MANILLENSIS* (MEYEN) *Purple Heron*  
*Ardea purpurea* var. *manillensis* MEYEN. Acta Acad. Leop. Carol.,  
 16, Suppl. 1834, p.102 : Manila, Philippine Islands

*Field notes* : Though the number of individuals present on Bawean during the time we visited the island was not so large, we observed the species fairly regularly, scattered all over the island. On 21 different days Purple Herons—usually solitary birds—were seen, almost without exception on wet, but also sometimes on dry, ricefields and pastures !

On 23rd June a very young bird was encountered on a dry meadow and a week later such a bird was seen accompanied by an adult. On that same day, 30th June, some people brought us a pullus of approximately three weeks old and not yet able to fly, giving evidence of the species' breeding on Bawean Island.

Nowhere else in Indonesia did we ever observe representatives of this species so regularly on open fields as was the case on Bawean. Here they often behaved like Cattle Egrets or Little Egrets do on Java and on many occasions such behaviour was also seen in *Butorides striatus* (see p. 56).

26. *ARDEA SUMATRANA SUMATRANA* (RAFFL.)  
*Dusky-grey Heron*  
*Ardea Sumatrana* RAFFLES, Trans. Linn. Soc., London, 13, pt. 2,  
 1822, p. 325 : Bencoolen, West Sumatra



*Field notes* : No specimens of this large heron were observed by me on Bawean Island but under the name *Ardea typhon* (L.) VORDERMAN (1892) mentioned two specimens which he secured from Suwari along Bawean's west coast. From this locality VORDERMAN mentioned a second species not observed by me, *viz.* *Actitis hypoleucos*.

In many places in Indonesia and New Guinea the Dusky-grey Heron occurs though perhaps nowhere commonly. It can usually be observed along the coast and along the banks of large rivers, provided they are muddy. On 23rd March 1937 we secured a specimen which belonged to this species on the stones of a mountain stream in the central part of Acheen (north Sumatra) (CHASEN & HOOPERWERF 1941).

27. *EGRETTA ALBA MODESTA* (GRAY) *Large Egret*  
*Ardea modesta* J.E. GRAY, Zool. Misc., 1831, p. 19 : India

*Field notes* : We found the Large Egret on four occasions only and without exception along the beach. We could not set eyes on even a single specimen between 9th and 29th June which clearly demonstrates that the species is certainly not common on this island.

Three times this striking heron was encountered along the south coast and once on the beach of Pulau Gili and without exception they were solitary birds, certainly not in breeding plumage.

28. *EGRETTA GARZETTA NIGRIPES* (TEMM.) *Little Egret*  
*Ardea nigripes* TEMMINCK, Man. d'Orn. ed.2, 4, 1840, p.376 : Sunda Islands = Java (MATHEWS 1927)

*Field notes* : As was the case with the Large Egret this small species too was certainly not common on Bawean Island during the periods we were there. I can only find four different observations in my notes and between 30th May and 25th June not a single specimen was seen.

Once a solitary bird, and once two specimens together were observed in wet ricefields and twice two and four individuals were present in an area of fish ponds near Muara, quite close to the shore. Only one of these observations took place at some distance from the coast, *viz.* on 30th May in the neighbourhood of Telaga Kastoba, the crater lake in the central part of the island.

All birds observed were in non-breeding plumage but their black bill made them at once different from *Egretta intermedia*, *Bubulcus ibis* and *Egretta sacra*.

According to ALTING SIBERG (loc.cit.) some white herons were introduced here from Java by a Chinese in 1824 and "afterwards they have increased in number" added SIBERG! The species is not indicated but perhaps it was *Bubulcus ibis* which was brought to Bawean, which is a more common species on Java, though the latter egret is still unknown for Bawean Island.

29. *EGRETTA SACRA SACRA* (GMEL.) *Reef Heron*  
*Ardea sacra* GMELIN, Syst. Nat., 1, pt.2, 1789, p. 640: Tahiti

*Material* : 1 ♀ Muara, 28.6.1954

*Measurements* : See below

*Weight* : 425 gr.

*Gonads* : Ovary small

*Soft parts* : Iris light yellow; bill dark grey, under mandible lighter; feet lemon yellow, soles chromic yellow, partly black

*Stomach contents* : Small fishes, 2-4 cm. and head of a flat-fish of at least 12 cm.

*Field notes* : During our 1954 expedition the species was observed only once on Bawean itself and twice on Pulau Gili. Our first bird was seen on 13th June on the beach of Pulau Gili and not until 28th June did the second one come to our notice. In the first case it was a bird in the white, the second time one in the dark phase. In May 1939 both white and grey specimens were present on Pulau Nusa west of Bawean Island.

We never observed this heron species outside coastal regions, whatever the character of the soil.

*Discussion* : The very long bill and short tarsi make this heron at a glance separable from *Bubulcus ibis* and because of the light colour of the bill the difference from *Egretta garzetta* is very distinct too.

Except for the important differences in plumage between specimens in the light and those of the dark phase, the individual variation is not large, but when in nuptial dress the birds show distinct plumes on the breast, absent or almost absent in non-breeding plumage. In the nuptial feathering the plumes on the back are more developed and the elongated occipital feathers average longer.

There is also some variation in the extent of the white on throat and foreneck in birds of the dark phase, perhaps averaging smaller in adults, though also large in an adult female from Kangean ( $55 \times 25$  mm.) and a second from Bawean Island ( $60 \times 20$  mm). A similar large patch is shown by a bird obtained from the neighbourhood of Djakarta. Among the two specimens secured by me on the Karimundjawa Islands there is one in the white and one in the dark plumage, both skins from Bawean and Kangean are grey. Juveniles of the dark phase are apparently lighter, and those of the white plumage purer white than adult birds.

Both females from the Karimundjawa Islands obtained in November, had the ovaries well developed with egg-follicles of 1-2 and 2-5 mm.; the plumes in the dark bird are well developed on the back, but less distinct on chest and occiput. In the white bird, showing the smaller ovaries, all plumes are poorly developed. The specimen from Kangean secured in September had well developed ovaries and has beautiful plumes on back, chest and occiput. The June skin from Bawean is not yet fully adult; it is not so dark as the adults and even a trace of plumes is lacking.

E. MAYR and DEAN AMADON (1941) remarked that birds belonging to this species can be divided into two races on the basis of size, independent of any geographical variation of colour phases. From birds originating from this Archipelago they mentioned a wing length of 270-280 (♀ ♀) and 290-300 mm (♂ ♂).

The largest wings in the material examined by me were recorded in a male from Java (290 mm) and in a female from Buru (Moluccan Islands) with a wing of 283 mm. But three males from Enggano, Buru and Java measured only 277, 279 and 279 mm in the wing, whereas a female from Kangean shows a wing of 263 mm which points to

an important variation within specimens of the same sex in the very small series measured for this study. The females average somewhat smaller than the males, especially in wing size, but in our material not so conspicuously as found by MAYR and AMADON.

On account of their study of about 140 birds these authors further remarked that the percentage of specimens showing the white phase living in these areas is smaller than that in the grey plumage (32% against 68%), not only when considering the skins present in the American Museum at New York but also taking into account specimens in other collections and reported in literature. This agrees with the material in the Bogor collections because among the 43 birds from Indonesia there are 32 in the grey and only 11 in the white phase. Because white specimens are generally more conspicuous in the field than birds in the dark feathering, it seems logical to suppose that the percentage of grey individuals is still larger than may be concluded from museum material, though the ratio in this respect may vary locally.

Measurements of the material examined :

#### MALES

*Wing :*

Indonesia : 277, 279, 279, 290, average 281.25

*Tail :*

Indonesia : 92, 95, 96, 97, av. 95

*Bill (exposed culmen) :*

Indonesia : 77, 78.1, 80, 82, av 79.28

#### FEMALES

*Wing :*

Indonesia : 265, 269, 283, av. 272.33

Karimundjawa : 261, 264, av. 262.50

Bawean : 268

Kangean : 263

*Tail :*

Indonesia : 88, 89, 94, av. 90.33

Karimundjawa : 81, 87, av. 84

Bawean : 85

Kangean : 95

*Bill* (exposed culmen) :

Indonesia : 72.8, 77.2, 78, av. 76

Karimundjawa : 75.3, 76, av. 75.7

Bawean : 80

Kangean : 75.5

30. *NYCTICORAX NYCTICORAX NYCTICORAX* (LINN.)

*Night Heron*

*Ardea Nycticorax* LINNAEUS, Syst. Nat., 10th ed., 1758, p.142 :

South Europe

*Field notes* : There is only one locality where Night Herons were observed, viz. in the neighbourhood of Muara along south Bawean. At that locality the species was recorded on at least three different occasions within a week.

In the evening of 25th June several specimens flew across our Muara bivouac and in the late afternoon of the following day we again heard the birds calling. At about 3 o'clock in the afternoon of 28th June some of these herons left a section of tidal forest bordering an area of fishponds and when we visited the place shortly after that, some more flew away without giving us a chance to shoot one.

Because owing to the bird's typical calling the presence of Night Herons rarely remains concealed I suppose the species not to be common on Bawean Island.

31. *BUTORIDES STRIATUS JAVANICUS* (HORSEF.)

*Little Green Heron*

*Ardea Javanica* HORSFIELD, Trans. Linn. Soc., London, 13, 1821, p.190: Java

*Material* : 1♂ Kumalasa, 4.6.1954; 2♂ Tandjung Ga'ang, 6.6.1954; 1♂ Muara, June 1954

*Measurements* : Previously published (HOOPERWERF 1965 a)

*Weight* : ♂♂ 200, 215, 220, 230 gr.

*Gonads* : Testes well developed, 12-20 mm.

*Soft parts* : ♂♂ Iris yellow, naked skin on head yellow green, sometimes yellow; bill black, base under mandible yellow green, sometimes yellow; feet dull stonered, soles ochreous (1), feet ochreous yellow, foretarsus and upper toes darker.

*Stomach contents* : Larvae, some of 45 mm. and remains thereof (1); small shrimps and remains of large ones.

*Field notes* : In my experience this is the most common representative of the heron family on Bawean Island. We not only encountered the species along the shore both on mud- and sand- banks and on coral reefs, but also—and perhaps more often—on the paddy fields of the interior.

On 6th June we observed five specimens in a fairly small area of inundated ricefields between Kumalasa and Tandjung Ga'ang. Most encounters took place between Tandjung Lajar and Tandjung Ga'ang along the south coast, but we also saw one on Pulau Gili.

On Bawean Island the species was seen more regularly in inundated ricefields of the interior than anywhere else in Indonesia. Sometimes feeding specimens were observed on dry fields as is the case on Java with the Cattle Egret, and on 4th June a specimen was shot from a fence surrounding a garden, close to human settlements! This gave me the impression that on Bawean Island the Purple Heron and this Little Green Heron fill the ecological niche arising from the absence of the Cattle Egret.

*Discussion* : Our Bawean material was previously discussed after comparing it with all skins of the species present in Bogor's museum (HOOGERWERF 1965 a). On Bawean Island specimens were secured with reddish instead of yellowish feet, which was a feature unknown to me.

#### Family ANATIDAE

##### 32. *ANAS GIBBERIFRONS GIBBERIFRONS* S. MÜLL.

*Wood-Teal*

*Anas (Mareca) gibberifrons* S. MÜLLER, Verh. Nat. Gesch., 1 (Land-en Volkenkunde), 1843, p.159: Celebes

*Material* : 1♂, 1 sex. inc. Kampung Tandjung, 10.6.1954

*Measurements* : See below

*Weight* : ♂ 420, sex. inc. 370 gr.

*Gonads* : ♂ Testes very large, 25 mm.

*Soft parts* : Iris dark brown; bill slate with black tip, sometimes partly dark cream coloured on under mandible; feet dirty olive grey

*Stomach contents* : Fine plant remains and pebbles.

*Field notes* : This is the only duck species we found on Bawean Island and because we encountered this teal on twelve different occasions along the coast as well as in the interior, it may be called of rather common appearance.

On 7th June some were flushed from inundated ricefields bordering a highway in Bawean's central part between Mt. Buwa' Anpajung and Sangkapura, but most observations were from the south coast.

When camping at Muara this duck was observed almost daily, sometimes 12-15 together (27th and 28th June). On 30th June a pullus of about 10 days old was secured from which the breeding of the species became evident. We also repeatedly met with this teal on Pulau Gili; on 14th June five together.

*Discussion* : There is a certain amount of variation in markings and tint of the plumage on the under parts, in character and tint of the markings on the sides of the head and in the extent of the wing speculum, but because they occur in skins from the same localities this is not of subspecific significance. Two birds secured on Bawean Island, a male with well developed gonads (testes 25 mm.) and a specimen of unknown sex, show a distinct golden brownish tint on the under surface, most strikingly on the foreneck and chest. This is also present in one of the sixteen other specimens which was secured on Celebes in 1910, though less conspicuously than in the Bawean birds. This phenomenon is perhaps caused by external factors.

There is much variation in the development of the frontal bulge as is evident from the measurements given below; though this is the case in individuals of the same sex, males may average the higher forehead.

Two birds (♂ ♀) secured on the Karimundjawa Islands show a very dark pileum and between two males obtained there the difference in the height of the frontal bulge is extremely large. Both

birds with the dark pileum had large gonads (♀ two egg-follicles of 7 and 13 mm, ♂ testes of 13 × 23 mm.) The second male from Karimundjawa, showing the low forehead and a lighter pileum, had poorly developed gonads.

The scaly character caused by the light edges to the feathers of the upper parts varies too because the "scales" may be numerous and fine or less numerous and coarse. Fresh skins average darker above than old material, which is also browner.

There is rather a lot of individual variation in the length of the wing and tail, but in our series this is partly caused by moult or very worn feathers; there is not much sexual difference in size, but the male averages a trifle larger.

S. DILLON RIPLEY (1942) considers *gibberifrons* a subspecies of *Anas castanea* but J. DELACOUR & E. MAYR (1945) are of the opinion that this conception is not correct and *gibberifrons* and *castanea* must be maintained as two different species.

As a result of the measuring of 32 specimens RIPLEY gives the following figures: ♂♂ wing: 181-200.5; tail: 78-91.5; culmen: 35-40.5 mm.; ♀♀ wing: 178-187; tail: 75-86 and culmen: 34-41 mm. and these figures agree fairly well with those found by me. The only five male birds measured by me, however, show a more important variation in the development of the frontal bulge (26-35.2 mm.) than was the case in those 32 birds measured by RIPLEY (♂♂ 27-33.5; ♀♀ 26-30 mm.). And our extremes were found in specimens from the same locality (Karimundjawa Islands). Also a Kangean female examined by me has a frontal bulge of 32.1 mm., which is more than RIPLEY'S maximum for his female birds. In the about 30 specimens studied by me there are only very few in which this frontal bulge is really strikingly developed, which was also the case with the many birds we examined more recently in New Guinea. This does not agree with RIPLEY'S experience. Measurements were made by me in accordance with RIPLEY'S method as indicated in his paper.



## Measurements of the material examined :

## MALES

*Wing :*

Indonesia : 180, 188, 195, 200, 200, average 192.60

Karimundjawa : 190, 191, av. 190.50

Bawean : 196

Kangean : 195

*Tail :*

Indonesia : 75, 81, 84, 91, 96, av. 85.40

Karimundjawa : 78, 88, av. 83

Bawean : 92

Kangean : 88

*Bill (exposed culmen) :*

Indonesia : 34.8, 35, 35.2, 36.1, 39, av. 36.02

Karimundjawa : 33.8, 35.8, av. 34.80

Bawean : 36.9

Kangean : 36

*Height of frontal bulge :*

♂♂ Java : 31.5, 32.9

Karimundjawa : 26, 35.2

Kangean : 27.2

♀♀ Java : none

Karimundjawa : 31

Kangean : 30, 32.1

## FEMALES

*Wing :*

Indonesia : 176, 177, 185, 187, 192, av. 183.40

Karimundjawa : 188

Kangean : 190, 199, av. 194.50

*Tail :*

Indonesia : 83, 84, 87, 90, 93, av. 87.40

Karimundjawa : 95

Kangean : 95, 96, av. 95.50

*Bill (exposed culmen) :*

Indonesia : 34.2, 34.6, 34.9, 36.3, 37.5, av. 35.50

Karimundjawa : 33

Kangean : 32.8, 34.5, av. 33.65

SEX.INC. : Wing : 185; Tail : 86; Bill : 33.50

## Family FREGATIDAE

33. *FREGATA MINOR MINOR* (GMEL.)*Frigate Bird**Pelecanus minor* GMELIN, Syst. Nat., I, pt. 2, 1789, p. 572: Christmas Island, Indian Ocean

*Field notes* : During our short visits to this island in May 1939 and July 1953 Frigate Birds were repeatedly observed along the coast or at sea not far away from Bawean. But during our last stay from May to July 1954 we observed these birds only once on Bawean Island itself and a second time on Pulau Gili. On 13th June we saw two specimens above this latter island and on 2nd July there was one above our Muara bivouac in stormy weather.

About a year earlier, on 3rd July 1953, there were five apparently young specimens near Pulau Nusa, off Bawean's west coast and on that same day a female was observed rushing after a *Sterna sumatrana*, certainly with the intention of forcing this tern to disgorge its food as was seen in the same species on Gn. Api (Banda Sea) where *Sterna fuscata* and *Anous stolidus* were among the victims (HOGERWERF 1939, V. BEMMEL & HOGERWERF 1940). Though we failed to record with certainty that in all these cases it was indeed *Fregata minor* we saw on Bawean Island and its surroundings, I suppose this to be so because of the distinct difference from the smaller *F. ariel* and on account of differences from *F. andrewsi* in those individuals we observed at close range.

VORDERMAN (loc. cit.) mentioned this species under the name *Fregata aquila* L. for Pulau Gili. He wrote: "Gili is the home of thousands of sea-birds restricted to only a couple of species but principally *Fregata aquila* L. which are abundantly present."

It is almost certain that VORDERMAN'S *F. aquila* is identical with our *minor* because according to M. BARTELS & E. STRESEMANN (1929) VORDERMAN confused both species again in his list of Java birds published in 1900. Finally *Fregata minor* was secured by ABBOTT in 1907 (OBERHOLSER, loc. cit.).

#### Family ACCIPITRIDAE

#### 34. *SPILORNIS CHEELA BAWEANUS* OBERH.

##### *Bawean Serpent Eagle*

*Spilornis bassus baweanus* OBERHOLSER, Proc. U.S. Nat. Mus., **52**, 1917, p. 185: Bawean Island

- Material*: 1♂ Sekarputih, 16.6.1954; 1♂ Sekarputih, 17.6.1954; 1♂ Batulintang, 23.6.1954; 1♀ Telaga Kastoba, 28.5.1954
- Measurements*: Previously published (HOogerWERF 1962b)
- Weight*: ♂♂ 580, 595, 620 gr.; ♀ ?
- Gonads*: ♂♂ Testes small, largest one 8 mm.; ♀ ovary fine granular
- Soft parts*: ♂♀ Iris light yellow, naked skin on head lemon yellow; bill, tip half upper mandible almost black, remaining part and lower mandible light slate; cere light yellow; feet yellow, often very dirty
- Stomach contents*: Remains of large insects, f.i. of large beetle and grasshopper; once a frog and a small snake.

*Field notes*: With the exception of the Osprey, which was observed on two or three different occasions, this was the only diurnal bird of prey coming to our notice on Bawean Island and surroundings! Though its presence could not be observed every day, it was recorded from the surroundings of almost all our camping places, giving the impression that the species is fairly regularly distributed, though perhaps absent on Pulau Gili.

As everywhere else this reptile-eating bird of prey was usually seen prying from a high protruding point, most often a dead tree. On 30th June a bird was observed in such a position for at the least two consecutive hours, which was quite close to our Muara bivouac. And even the shooting of a *Nectarinia jugularis* below its prying post could not frighten the bird.

*Discussion*: For taxonomic particulars of our Bawean material reference may be made to a previous paper written after studying all available skins of the species in Bogor's museum (HOogerWERF 1962b)

#### Family PANDIONIDAE

##### 35. *PANDION HALIAETUS* subsp.

*Osprey*

*Field notes*: Though it was not quite certain to which race the birds observed belonged, it seems justifiable to consider them to be *melvil-*

*lensis* (Mathews), because birds of the nominate race are extremely rare in Indonesia.

When camping on Pulau Gili we encountered two Osprey, apparently a pair, in the early morning of 13th June and in the evening of that same day there were three individuals, perhaps the same birds accompanied by a young one. (At the latter time we got the impression that the birds were preying on flying foxes, at that time plentiful on that island). This record too may indicate *melvillensis* because this is the subspecies of which breeding in Indonesia is certain, whereas *haliaëtus* is only known from this area as a migrant.

The second time we observed the Osprey was on 2nd July when, during stormy weather, a solitary bird hovered low over our Muara bivouac.

When in the field the most striking difference between these subspecies is the different quantity of white on the occiput, most conspicuous in *melvillensis*.

#### Family STRIGIDAE

36. *STRIX ORIENTALIS BAWEANA* OBERH. *Wood-Owl*  
*Strix baweana* OBERHOLSER, Proc. U.S. Nat. Mus., 52, 1917, p.  
 190: Bawean Island, Java Sea

- Material*: 1♂ Sekarputih, 17.6.1954; 1♀ Bawean, May 1928  
*Measurements*: See below  
*Weight*: ♂ 590 gr.  
*Gonads*: ♂ Testes moderate, 10 and 15 mm.  
*Soft parts*: ♂ Iris very dark brown, eyelid dirty crimson; bill black, under mandible and cere lighter; feet dark grey, soles lighter  
*Stomach contents*: Stomach cram-full with remains of rats, much hair and two or three lower jaws, also remains of insects, f.i. of grasshoppers.

*Field notes*: As is the case with *Spilornis cheela* on Bawean Island, this owl is perhaps regularly distributed all over the island though its

presence was more difficult to establish as is usually the case in nocturnal birds of prey.

Near almost all our camping localities the species could be found but almost exclusively on account of its melancholy call. High well-leaved trees are essential for its occurrence, though there is reason to suppose that their nocturnal raids extend far away from such trees, which are used for diurnal cover. As is the case on Java the presence of this owl was often established in old, high trees in graveyards.

Except perhaps for *Tyto alba* no other representative of the owl family could be found on this island, and on Pulau Gili even *Strix orientalis* is apparently absent.

*Discussion:* When examining the diagnosis, this subspecies should be paler throughout, the spots on the upper surface should be much reduced, also more roundish and less inclined to form bars and the dark brown bars should be much narrower on the lower surface.

When comparing a female bird obtained here as far back as 1928 with four females of the nominate race from Java, and a single male secured by me on Bawean in 1954 with two males from Java and a third originating from Sumatra, I fail to discover any difference in the plumage of all these specimens. The pure white below, as well as the tone and width of the dark bars vary considerably within birds of the same subspecies. In this respect Bawean birds do not differ from certain Javan specimens and almost exactly the same holds good for the markings and colour on the upper surface: The two subspecies do not differ at all, nor in any other detail of the plumage. I have the opinion therefore that the important differences in bill and wing sizes between representatives of Bawean's population and those from Java and Sumatra must be considered the only subspecific characters.

The female from Bawean is a trifle larger than our male bird, but the material originating from Java does not show any important difference in this respect, nor can I discover sexual dimorphism in the plumage.

A male from Sumatra does not differ in size from two males from Java so that I think it justified to include Sumatra in the range of the nominate form.

## Measurements of the material examined:

## MALES

*Wing* :

Java : 331, 341, average 336

Sumatra : 340

Bawean : 301

*Tail* :

Java : 176, 185, av. 180.50

Sumatra : 190

Bawean : 180

*Bill* (exposed culmen):

Java : 26, 26, av. 26

Sumatra : 24.2

Bawean : 23.3

## FEMALES

*Wing* :

Java : 331, 338, 340, 341, av. 337.50

Bawean : 312

*Tail* :

Java : 175 (moulting), 187, 192, 200, av. 188.50

Bawean : 185

*Bill* (exposed culmen):

Java : 22.5, 25, 26, av. 24.50

Bawean : 24

SEX. INC. Sumatra: Wing 342; Tail 191; Exp. culmen 25.3

## Family ALCEDINIDAE

37. *CEYX RUFIDORSUS RUFIDORSUS* STRICKLAND.*Red-backed Three-toed Kingfisher**Ceyx rufidorsa* STRICKLAND, Proc. Zool. Soc., London, 1846, p. 99; Malacca*Material* : 1♂ Mount Tinggi, 26.5.1954; 1♀ Sekarputih, 17.6.1954; 1 sex. inc. Mount Tinggi, 26.5.1954; 1 sex. inc. Telaga Kastoba, 29.5.1954*Measurements* : See below*Weight* : ♂ 20, ♀ 16, sex. inc. 20 gr.*Gonads* : ♂ Testes poorly developed; ♀ ovary small, not granular

*Soft parts* : ♂ ♀ Iris dark brown; bill vermillion, tip lighter; feet clear vermillion.

*Stomach contents* : Three stomachs empty, one remains of large insects.

*Field notes* : In different localities in the interior of the island this small forest kingfisher was seen on five occasions. This may indicate a rather common occurrence, because the species is an inhabitant of dense cover, and thus in any case a bird difficult to set eyes on.

Usually solitary specimens are encountered amidst or close to dense shrubs or in similar shady places, and as is the case with many tropical representatives of the family, the presence of water is not essential.

On 16th June a specimen was caught in a rat trap with a piece of coconut as a bait.

*Discussion* : There is very much variation in the plumage of the under parts, especially because of the amount of russet on the breast and on account of differences in extent of the whitish area on the belly perhaps in not yet full adults. Also the yellow of the under surface in the adult may vary considerably, even in specimens with equally developed gonads. The darkest orange yellow bird among the 50 specimens examined, originates from the Meeuwenisland (Pulau Peutjang) off Java's western most peninsula Ujung Kulon, showing well developed reproductive organs. There are only about 20 birds in which the under parts are fairly uniform yellow, the remaining skins have a varying quantity of white on the lower under parts and some russet in the yellow of the chest, characters which should belong to the plumage of the juveniles. Some distinctly young birds indeed have much white below, some russet in the yellow and a varying quantity of black in the tail, which is considered a character of the young bird by F.N. CHASEN & C. BODEN KLOSS (1930). But almost all remaining specimens in this plumage have no black tail or black tips on the tail-quills, which makes it probable that this character is not one of juvenile plumage in pure bred *rufidorsus*, but of *rufidorsus*  $\supseteq$  *erithacus* as is the case in two of these birds according to a note on the label made by Voous.

There is also some individual variation in the white on chin, throat and foreneck. Though the very dark Udjung Kulon bird indicated above is very light on those parts, there is one from Bawean in a rather similar plumage, showing hardly any white because the yellowish tint extends to the chin.

On the sides of the head, neck and on the shoulder-region the extent and the tint of the brown and purple may vary considerably. The same holds good for the extent of the light shoulder patch which is sometimes almost absent.

The upper parts show the most important variation, not only in the russet brown, but especially when comparing the extent and tint of the purple or purplish sheen. Perhaps the latter phenomenon is less conspicuously present in juveniles though G.C.A. JUNGE (1936) remarked that a young male seen by him had the upper parts rufous, strongly washed with purple. It is perhaps not seriously influenced by the development of the gonads, because a male from Pulau Panaitan (Prince's Island) having the reproductive organs small show more purple than a male from nearby Pulau Peutjang (Meeuwenisland) in which these organs were well developed. Perhaps it also has not much to do with the sex of the bird.

None of my freshly obtained birds from the Sunda Strait region, Bawean and Kangean show traces of hybridization with *erithacus*, judging from the characters indicated by K.H. VOOUS (1951) but among the old material from Java there is a female secured at Bogor in 1922 showing a distinct blue ear patch and some blackish on the mantle; there is also a shadow of some black on the forehead in this specimen.

Fresh material cannot be separated from old skins from the same locality and perhaps formalin treatment does not badly affect the plumage as is evident from some recently obtained material prepared in different ways. I failed to find sexual dimorphism in the plumage, nor could I find such differences in birds showing gonads in a divergent stage of development.

Beyond a rather important variation in bill size there is apparently not much variation in the measurements so far as my material



is concerned. As in many other kingfishers the females average a trifle larger than the males. The subspecies *jungei* from Simalur Island averages larger than representatives of the nominate race, because the measurements published by S. DILLON RIPLEY (1942 a) are larger than those found by me in birds belonging to the nominate race.

Measurements of the material examined :

#### MALES

##### *Wing :*

Java, Sumatra, Billiton : 55, 56, 57, 59, 59, average 57.2

Udjung Kulon, West Java : 55, 56, 58, av. 56.33

Panaitan Island : 56, 59, av. 57.50

Bawean : 57, 57, av. 57

Kangean : 57

##### *Tail :*

Java, Sumatra, Billiton : 24, 24, 25, 25, 26, av. 24.80

Udjung Kulon : 21, 22, av. 21.50

Panaitan Island : 21, 21

Bawean : 20, 24, av. 22

Kangean : 24

##### *Bill (exposed culmen) :*

Java, Sumatra, Billiton : 31, 32.2, 33.4, 33.9, 36.7, av. 33.44

Udjung Kulon : 28, 29.5, 35.3, av. 30.93

Panaitan Island : 31.2, 33.6, av. 32.40

Bawean : 30.2, 32.9, av. 31.55

Kangean : 30.8

#### FEMALES

##### *Wing :*

Java, Sumatra, Billiton : 57, 57, 58, 59, 60, av. 58.20

Bawean : 57

##### *Tail :*

Java, Sumatra, Billiton : 20, 22, 22, 24, 24, av. 22.40

Bawean : 23

##### *Bill (exposed culmen) :*

Java, Sumatra, Billiton : 31.1, 32.1, 32.5, 34.1, 34.8, av. 32.92

Bawean : 31.70

## SEX. INC.

*Wing :*

Udjung Kulon : 57

Bawean : 57, 58, 58, 60, av. 58.25

*Tail :*

Udjung Kulon : 21

Bawean : 21, 22, 23, 24, av. 22.50

*Bill (exposed culmen) :*

Udjung kulon : 29

Bawean : 27.7, 30.8, 31.5, 32.1, av. 30.53

38. *HALCYON SANCTA SANCTA* VIG. & HORSF.*Sacred Kingfisher*

*Halcyon sanctus* VIGORS & HORSFIELD, Trans. Linn. Soc. London, 15, 1827, p. 206 : New South Wales, Australia

*Material :* 1 ♂ Muara, 9.6.1954; 1 ♀ Kampung Tandjung, 10.6.1954; 2 ♀ Pulau Gili, 14.6.1954

*Measurements :* See below

*Weight :* ♂ 30, ♀ ♀ 38, 39, 40 gr.

*Gonads :* Very small in all specimens

*Soft parts :* ♂ ♀ Iris dark brown; bill black, base under mandible fleshy; feet dark with light soles

*Stomach contents :* In three cases remains of small crabs, once a crab of 20 mm, once mixed with caterpillar skins and with remains of a grasshopper.

*Field notes :* with the exception of the neighbourhood of our Muara bivouac where this Australian migrant was of rather common appearance, we only saw it on three different occasions. Near Muara this kingfisher was regularly observed amidst an area of fishponds where also *Halcyon chloris* was present.

The species was also fairly regularly encountered preying on small crabs that often crowd together on sandy beaches and form an attractive food for many migrating Scolopacidae also. On 13th and 14th June we saw some specimens on Pulau Gili.

In habits this kingfisher closely resembles *Halcyon chloris*, often sharing the same habitat, where the presence of water is not essential. In Indonesia never found far inland.

*Discussion* : The colour of the under parts may vary considerably; some specimens show an almost white under surface, there are others in which those parts are buffy or even cinnamon coloured, most conspicuous on flanks and belly. There is also much variation in the presence of dark markings on the chest, which sometimes are very distinct, but scarcely present or completely absent in other skins. Differences in this respect are likely to be influenced in the first place by age.

Among the six birds recently secured on the Karimundjava Islands, Bawean and Komodo Islands in June and November and three old skins obtained in May on Bawean and Karimundjava, there are only very few showing traces of a buffy tint on the under parts. However, four skins obtained from Kangean in August show this colour strikingly and two of them are among the most buffy ones of all specimens examined. All these birds had poorly developed gonads. A female from Kangean with a well granular ovary does not show much buff. Other birds too from May, June, August, September and October are clearly cinnamon coloured below; which is also the case with a bird secured by me in August 1938 on Gn. Api Island (Banda Sea). I suppose this bird to be aberrant because the bill is very short (only 25.5 mm.).

The upper parts too may vary considerably, not only because of tone differences in the blue, bluish-green or bluish-grey on wings and remaining upper parts but also on account of differences in tint and extent of the nuchal collar, which varies from nearly pure white to cinnamon brown. In the material examined the specimens showing the cinnamon or buff colour on the under surface most conspicuously have the most brilliant tint on wings and upper parts. This is the case in a bird from Kangean showing much clear blue on wings, occiput, sides of the head, back and tail and much bluish-green on the mantle. There is also much blue on the wings and back of the bird from Gn. Api.

According to MATHEWS the buffy brown under parts should be more conspicuous in the males and sometimes also in the juveniles but young birds should be duller on wings and upper surface. However,

among the individuals seen by me, only wintering specimens of course, are females with very buffy under parts and nuchal collar and males which are almost white below. And there are also certain birds among the material examined without any brown or buff on those parts and showing the dark markings on the chest which we know in juvenile *Halcyon chloris*.

Though *post-mortem* changes in the plumage are perhaps not very important, there are some indications that old skins may become much paler above, especially on the mantle, and duller blue on wings and tail. This is evident when comparing material from Karimundjawa and Bawean secured in 1926 and 1928 with skins obtained on these islands in 1955 and 1954. And also when a bird from Kangean, collected in August 1954, having much brown on the under parts, is compared with an old one in a similar plumage, obtained in the same month.

There exists rather a lot of individual variation in the measurements of the wing tail and culmen but there is perhaps no important sexual dimorphism in this respect.

Measurements of the material examined :

#### MALES

##### *Wing:*

Indonesia : 89, 90, 92, 93, 95, average 91.80

Bawean : 90

Komodo : 86

Gn. Api (Banda sea) : 88

##### *Tail :*

Indonesia : 56, 58, 58, 61, 62, av. 59

Bawean : 59

Komodo : 55

Gn. Api : 54

##### *Bill* (exposed culmen) :

Indonesia : 32.4, 34.5, 34.5, 34.7, 36, av. 34.42

Bawean : 36.2

Komodo : 32.5

Gn. Api : 25.5

## FEMALES

*Wing :*

Indonesia : 87, 89, 93, 93, 94, av. 91.20

Karimundjawa : 92, 96, av. 94

Bawean : 85, 87, 90, 92, av. 88.50

Kangean : 88, 88, 95, av. 90.33

*Tail :*

Indonesia : 53, 55, 58, 58, 62, av. 57.20

Karimundjawa : 55, 62, av. 58.50

Bawean : 58, 58, 59, 59, av. 58.50

Kangean : 57, 58, 58, av. 57.67

*Bill (exposed culmen) :*

Indonesia : 33.4, 34.2, 34.9, 35.7, 39.2, av. 35.48

Karimundjawa : 36.1, 40, av. 38.05

Bawean : 34, 35.2, 36.9, 39, av. 36.28

Kangean : 37.6, 38, 39.3, av. 38.30

39. *HALCYON CHLORIS PALMERI* (OBERH.)*White-collared Kingfisher**Sauropatis chloris palmeri* OBERHOLSER, Proc. U.S. Nat. Mus.,  
55, 1919, p. 369: Java*Material :* 1 ♂ Kampung Tandjung, 10.6.1954; 2 ♂ 1 ♀ Pulau  
Gili, 14.6.1954; 1 ♀ Batulintang, 23.6.1954*Measurements :* Previously published (Hoogerwerf 1965 b)*Weight :* ♂♂ 65, 76, 78, 80, ♀ 80 gr.*Gonads :* ♂♂ Testes small, 2-3 (1) and large, 6-10 mm. (3);  
♀ ovary well granular*Soft parts :* ♂♀ Iris dark brown; bill black or almost black,  
under mandible fleshy for the greater part; feet dark  
grey, hind tarsus and soles chamois*Stomach contents :* Remains of small crab (1), of grasshoppers (2) and  
of insects (1).*Field notes :* As indicated in the beginning of this paper, this king-  
fisher is one of the most common bird species of Bawean Island and  
on Pulau Gili it was seen regularly too. In the neighbourhood of  
all our camping sites it was not difficult to find it, but it was  
most common along the south coast, and also around Sangkapura.

As is well known, the presence of water is not essential for the occurrence of this noisy kingfisher, for which also reasonably good cover often seems scarcely necessary.

*Discussion* : In a previous paper (HOOGERWERF 1965 b) all material of the species present in Bogor's museum is discussed, especially the representatives of the species secured in the Strait Sunda area, Karimundjawa, Bawean and Kangean Islands.

#### Family APODIDAE

#### 40. *COLLOCALIA FUCIPHAGA FUCIPHAGA* (THUNBERG)

##### *Edible-nest Swiftlet*

*Hirundo Fuciphaga* Thunberg, Kongl. Vet. Acad. Handl., 33, 1821, p. 153: Java

*Field notes* : Apart from on the small coral island Pulau Nusa, where these swiftlets breed in a small cave with its opening to the sea, I saw some dark swiftlets only once, on 23rd June, near the village of Telukdjati along Bawean's west coast. They apparently belonged to this species but this is not certain. Although on Bawean itself several caves were visited we did not encounter any swiftlet on those occasions.

On 31st May 1939 some nests were found, exclusively made of saliva, but there were no birds. On 3rd July 1953 there were pulli in similar nests on the small island just mentioned, which were almost able to fly.

The Pulau Nusa nesting colony of these swiftlets was known to ALTING SIBERG (1846) who described the island and its rock fairly accurately. At that time the lease for harvesting the nests amounted to 240 Dutch guilders a year, which is considerably more than during our visit in 1939. On 1st January 1937 harvesting the nests was leased by the Government for a period of three years at the rate of only ten guilders a year.

*Discussion* : Most probably following THUNBERG who considered the white, edible nests to originate from *Collocalia fuciphaga*, VORDERMAN included the swiftlets of Pulau Nusa, producing such nests, in this species though he did not obtain any material.

Afterwards it became the custom to look upon *fuciphaga* as one of the species producing inedible nests and to attribute the edible ones to *francica*. Quite recently LORD MEDWAY (1962) was of the opinion that all edible nests exclusively constructed from "nest-cement" not, or only scarcely, mixed with other material, originated from *Collocalia francica*. But two years later the same author (1964) remarked that it is *fuciphaga* which builds a "white" nest, consisting largely of saliva, with very little foreign material. The name *francica* should be only applicable to the representatives of the species found on Mauritius Island in the Indian Ocean.

In accordance with LORD MEDWAY I have listed the swiftlets of Pulau Nusa as *Collocalia fuciphaga* because its nest is edible.

41. *COLLOCALIA ESCULENTA LINCHI* HORSF. & MOORE

*White-bellied Swiftlet*

*Collocalia linchi* HORSFIELD & MOORE, Cat. Bds., Mus. East Ind. Coy., 1, 1854, p. 100: Java

*Field notes*: Strangely enough this white-bellied swiftlet was observed with certainty only at Sangkapura and vicinity. During our stay at this village the species was observed daily, even in the resting house, though we did not succeed in locating the nests, which are not suitable for human consumption,

Elsewhere on the island no swiftlets were seen except some dark-bellied ones as is reported under no. 40. Swallows also were not seen on Bawean Island or Pulau Gili, neither by me nor by VORDERMAN or ABBOTT.

Family CUCULIDAE

42. *CUCULUS SATURATUS HORSFIELDI* HORSFIELD & MOORE

*Blyth's Cuckoo*

*Cuculus horsfieldi* ("MOORE") HORSFIELD & MOORE, 1857, Cat. Birds Mus. East India Coy., 2 (1856-58), p. 703: Java.

*Discussion*: We did not find this cuckoo on Bawean Island but the species is mentioned by OBERHOLSER (loc.cit.) under the name *Cuculus canorus*. Because the latter cuckoo may be looked upon as a very rare bird within the Indonesian regions further information was asked of

the Division of Birds of the United States National Museum at Washington. The Bawean bird was examined and as Dr. G.E. WATSON wrote me, proved to be *Cuculus saturatus horsfieldi*, after the opinion of Mr. H.G. DEIGNAN.

During the beginning of the winter of the Temperate Zones *Cuculus saturatus* is perhaps not rare in Java and surrounding islands as may be evident from a previous paper (HOOPERWERF 1962c) but according to JUNGE (1956) neither the Leiden Museum nor the famous BARTELS collection contains any representative of *Cuculus canorus* from Indonesia and this author does not report on any specimen originating from this area. So far as I know there is only one specimen of the Common Cuckoo known from Indonesia. This is a bird secured by the late Dr. H.C. SIEBERS, at that time ornithologist of the Bogor Museum, on 17th January 1923, on the small coral island Hoorn in the Bay of Djakarta (West Java). The skin of that bird is in the collection of the said museum and it indeed belongs to this species (HOOPERWERF 1948a).

43. *CHALCITES BASALIS* (HORSF.) *Bronze Cuckoo*  
*Cuculus basalis* HORSFIELD, Trans. Linn. Soc., London, 13, 1821,  
 p. 179: Java

*Material*: 2♂ 4♀ Muara, 27 & 28.6.1954

*Measurements*: See below

*Weight*: ♂♂ 25, 25; ♀♀ 22, 25, 25, 28 gr.

*Gonads*: ♂♂ Testes very small; ♀♀ ovaries very small, but in two cases well granular

*Soft parts*: ♂♀ Iris (very narrow) light grey; bill almost black, under mandible grey with dark tip; feet dark grey

*Stomach contents*: Stomachs cram-full with remains of small insects, in two cases of small caterpillars.

*Field notes*: This Australian migrant was only present in the surroundings of Muara where it was of rather common appearance in the last days of June. On 28th June many of them were scattered over a small area of tidal forest, principally concentrating on high *Sonneratia* and some lower *Lumnitzera* trees.



A similar situation was found by me in the beginning of June 1935 along the coast of the Bay of Djakarta (West Java) as was reported earlier (HOogerWERF & RENGERS HORA SICCAMA 1938). But at that time the birds were almost exclusively seen on low shrubs (*Pluchea indica*), scattered over an extensive complex of dry pastures. Both these cases perhaps concerned freshly arrived individuals and this was perhaps the reason why we did not see any until we camped at Muara. However, the specimens secured on Bawean were very fat which is not common in newly arrived migratory birds.

*Discussion:* When comparing this 1954 material with the six skins present in Bogor, secured at various localities in Indonesia between 1918 and 1937, the differences are rather conspicuous. The barred under parts and innerwings show considerably more contrast in fresh material and on the upper surface fresh skins are darker, especially on the pileum, and have the metallic sheen on mantle and back more brilliant.

Both in old and in fresh material there is much individual variation in the quantity of white below and in the markings on chin, throat and foreneck. On the upper surface the metallic hue varies from clear metallic green to bronzy or bronzy brown. The juvenile female differs from the adults in having the markings obsolete, almost altogether absent.

Measurements of the material examined:

#### MALES

*Wing:*

Bawean: 96, 101, average 98.50

*Tail:*

Bawean: 72, 72, av. 72

*Bill (exposed culmen):*

Bawean: 14.2

#### FEMALES

*Wing:*

Indonesia: 97, 97, 100, 101, 103, 103, av. 100.17

Bawean: 96, 100, 102, av. 99.33

*Tail :*

Indonesia : 68, 69, 69, 69, 73, av. 69.50

Bawean : 69, 70, 71, av. 70

*Bill (exposed culmen):*

Indonesia: 12.5, 13, 13.3, 13.5, 13.7, av. 13.20

Bawean: 13.3

44. *EUDYNAMIS SCOLOPACEA MALAYANA* CAB. & HEINE*Koel**Eudynamis malayana* CABANIS & HEINE, Mus. Hein. 4, 1862, p.

52: Sumatra

*Material:* 1♂1♀ Muara, 9.6.1954; 1♂1♀ Pulau Gili, 14.6.1954*Measurements:* See below*Weight:* ♂♂ 245, 248; ♀♀ 248, 270 gr.*Gonads:* ♂♂ Testes small, largest 8 mm.; ♀♀ ovaries hardly and well granular*Soft parts:* ♂♀ Iris clear red; ♂ bill olive green with dark specks on tip and along nostrils, under mandible slaty; ♀ bill dark, almost black, under mandible olive greenish with grey base; ♂♀ feet dirty slate mixed with some green, soles chamois*Stomach contents:* Remains of fruits, perhaps of *Ardisia humilis* and *Ficus* spp., also fruitstones, f.i. a large one of *Sterculia foetida*.*Field notes :* During our 1954 visit to the island the Koel belonged to the more common bird species of Bawean Island whose presence was proved on 23 different occasions, but the number of visual observations remained restricted. We found this large cuckoo most numerous in the neighbourhood of the crater lake Telaga Kastoba and in the well-forested surroundings of Sekarputih, not far from the east coast. But quite close to the south coast between Sangkapura and Tandjung Ga'ang observations were also not rare.

Usually there were several specimens together attracting our attention; at Telaga Kastoba at least five were flushed from the crown of a high forest giant. The species was also certainly not rare during

our visit to Pulau Gili. On 14th June I noted in my diary that the island was "overcrowded" with Koels.

The fact that representatives of the Corvidae are apparently absent from Bawean and surrounding islands, and birds of this family are known to me as the only host for this parasitic cuckoo, I suppose that *Eudynamis* is not a permanent resident here, as perhaps is the case in many other localities in Indonesia, including New Guinea.

*Discussion* : Though plumage alterations as a consequence of long storage are not very important in this species, fresh skins of male birds have the metallic green sheen perhaps more brilliant and less mixed with blue, especially on upper surface and wings. Not yet fully adult birds are still less glossy and not so deep black; they are more bronzy coloured above and on the wings.

The individual variation on the under surface of the females is important; the ground colour varies from almost white to bronzy buff and the markings from moderate brown to almost black. Sometimes these markings consist of spots but usually of distinct bars, varying much in width. Because all these, often very striking, differences occur in birds from exactly the same locality, they cannot be used as subspecific characters. Perhaps the bars on the under parts are darkest in not yet fully adult females and such birds keep the dark tail of the juvenile plumage for rather a long time.

On the upper surface too the female plumage varies much. In some skins the markings are small, in others they consist of heavy bars and in colour they may vary from almost white to russet brown. The markings are less numerous in juveniles in which, moreover, the general tone is darker than in the adult female.

There is apparently not much variation in the measurements of bill, wings and tail and sexual size differences are small or do not exist.

Measurements of the material examined :

#### MALES

*Wing* :

Indonesia : 200, 205, 205, 210, 216, average 207.20

Sunda Strait area : 207, 207, 208, 213, av. 209

Karimundjawa : 206

Bawean : 204, 210, av. 207

Kangean : 215

*Tail :*

Indonesia : 186, 189, 192, 202, 206, av. 195

Sunda Strait : 198, 202, 205, 206, av. 202.75

Karimundjawa : 200

Bawean : 200, 212, av. 206

Kangean : 207

*Bill* (exposed culmen) :

Indonesia : 29, 30, 30.5, 31, 31.4, av. 30.38

Sunda Strait : 29.3, 30.5, 31, 32.7, av. 30.88

Karimundjawa : 31.2

Bawean : 27.7, 29.5, av. 28.60

Kangean : 30

## FEMALES

*Wing :*

Indonesia : 195, 202, 211, 212, 222, av. 208.40

Karimundjawa : 208

Bawean : 203, 205, av. 204

*Tail :*

Indonesia : 181, 186, 191, 203, 210, av. 194.20

Karimundjawa : 198

Bawean : 188, 205, av. 196.50

*Bill* (exposed culmen) :

Indonesia : 27.5, 28.8, 30.3, 30.4, 32, av. 29.80

Karimundjawa : 28

Bawean : 28.8, 30.5, av. 29.65

## Family PYCNONOTIDAE

45. *PYCNONOTUS ATRICEPS ATRICEPS* (TEMME.)*Black-headed Bulbul**Turdus atriceps* TEMMINCK, Pl.Col.147, 1823 : Java*Brachypodius baweanus* Finsch, Notes Leyden Museum, 22, 1901,  
p.209 : Bawean Island*Material :* 2♂ 1♀ Sangkapura, 25.5.1954; 4♂ 1♀ Mt. Bulu,  
5-6.6.1954; 2♀ Sekarputih, 16.6.1954*Measurements :* Previously published (HOOGERWERF 1945, 1963 e)*Weight :* ♂♂ 22, 25, 27, 28, 28, 29; ♀♀ 22, 25, 25, 28 gr.

*Soft parts* : ♂ ♀ Iris very light blue; bill black; feet black, almost black or dark slate, soles chamois

*Gonads* : ♂ ♂ Testes well developed, 3-15 mm; ♀ ♀ ovaries well granular

*Stomach contents* : Remains of many species of berries, in three cases mixed with remains of insects, once of a wasp.

*Field notes* : This bulbul is one of the three most common birds of the island, and is fairly indifferent to its surroundings, provided some trees or higher shrubwood are available where it behaves rather strikingly.

In contradistinction to our experiences in all other localities where we have found the species, observations of individuals in the dark phase were more common than those in the green and yellow plumage which is considered the normal one. This is also evident from the material secured, containing only three normal, and no fewer than seven melanistic ones. The collection of the Bogor museum now contains 23 specimens from this island among which 15 are in the dark phase. But among the 72 skins from other localities only two are aberrant ones.

Though there is a possibility that birds of the dark phase are more conspicuous when in their natural surroundings than normally coloured ones, there is no reason to suppose this to be more strikingly the case on Bawean Island than in the other parts of this bird's range, which makes it difficult to suggest a satisfactory solution for this phenomenon. Though it may be true that bird populations on small islands incline to melanism, it seems of some importance to say that f.i. from Panaitan Island (Prince's Island) where the species is rather common, no melanistic individuals are known!

*Discussion* : VORDERMAN (1892) as well as OBERHOLSER (1917) listed the birds in the grey phase under a separate name, *Micropus (Microtarsus) chalconcephalus*. This clearly demonstrates the lack of field observations by VORDERMAN, ABBOTT and OBERHOLSER, because mixed couples are of fairly common appearance on Bawean Island and can also be encountered in the other localities where both phases occur.

Our Bawean material together with a number of skins present in the Bogor museum, originating from this island and from other localities, were discussed on previous occasions (HOOGERWERF 1945, 1963 e). As a result of our study we concluded that the subspecies *baweanus* cannot be upheld.

#### 46. *PYCNONOTUS PLUMOSUS SIBERGI* HOOGERWERF

##### *Large Olive Bulbul*

*Pycnonotus plumosus siberigi* Hoogerwerf, Bull. Brit. Orn. Club, 85, 1965, p. 47 : Bawean Island (Java sea between Java and Borneo)

*Material* : 2♂ 3♀ Sangkapura, 25.5 & 11.6.1954; 1♀ Mt. Tinggi, 26.5.1954; 1♂ 2♀ 1 sex. inc. Mt. Martalaja, 31.5.1954; 1♂ 1♀ Mt. Bulu, 5.6.1954; 2♂ 1♀ Sekarputih, 16.6.1954; 1♂ 1♀ Batulintang, 23.6.1954; 4♂ 1♀ Muara, 26.6.1954

*Measurements* : Previously published (HOOGERWERF 1965)

*Weight* : ♂♂ 28, 29, 5×30, 31, 2×32, 35; ♀♀ 6×30, 33, 2×34, 38; sex.inc. 34 gr.

*Gonads* : ♂♂ Testes well developed in all adults (1) 3-12 mm; ♀♀ ovaries well granular, egg-follicles 2-11 mm, in one bird ovary fine granular

*Soft parts* : ♂♀ Iris red or redbrown, light brown in juveniles; bill black or almost black; feet fleshy brown, black or almost black, soles ochreous or chamois

*Stomach contents* : Remains of small fruits, mainly of berries, perhaps of *Lantana camara* or *Ardisia humilis*, also *Ficus* fruits, in two cases fruitstones of 10 and 15 mm.; in two stomachs remains of insects, once a small green grasshopper.

*Field notes* : This is perhaps the most common bird species on Bawean Island because it was observed almost daily sometimes fairly numerous and always making the impression of having an elastic adaptability. We failed to find it on Pulau Gili however.

Though we tried to find differences in habitat between this and the preceding species of bulbul, we did not succeed. Both these

species seem to prefer higher brushwood, fruit gardens and secondary forest, even close to human settlements; but do not avoid heavy jungle, so far as Bawean is concerned where the jungle is not so dense.

Both these bulbuls are conspicuous because of their liveliness and their continuous chatter. *Pycnonotus plumosus*, moreover, is a meritorious singer, and—together with *Trichastoma abbotti*—certainly ranks as one of the best songsters of the island.

*Discussion:* The population of this species known from Bawean Island differs from representatives of the species known from other localities, as I have demonstrated in a recently published paper (HOOPERWERF 1965).

#### Family MUSCICAPIDAE

#### Sub-family TIMALIINAE

#### 47. *TRICHASTOMA ABBOTTI BAWEANA* (OBERH.)

#### *Abbott's Brown Babbler*

*Malacocincla abbotti baweana* OBERHOLSER, Proc. U.S. Nat. Mus., 52, 1917, p. 194: Bawean Island

*Material:* 2♂ Mt. Tinggi, 26.5.1954; 3♂ Sekarputih, 17.6.1954

*Measurements:* Previously published (HOOPERWERF 1966)

*Weight:* ♂♂ 28, 30, 30, 32 gr.

*Gonads:* Testes large, 10-14 mm. (3) and very small (2)

*Soft parts:* Iris dark brown or reddish brown; bill black, under mandible blue or olive grey; feet grey of fleshy grey, soles chamois

*Stomach contents:* Remains of insects.

*Field notes:* The fact that this bird which loves dense brushwood was encountered so many times, may justify the conclusion that it belongs to the more common species of this island, and it is not even averse to suitable localities close to human settlements. The most important reason for this may be the abundance of dense shrubs and underwood though such a vegetation is certainly not the exclusive habitat of this bird.

It is without doubt the most excellent songster of Bawean's birds comparable with *Copsychus malabarica* of Java and certain strophes show some similarity with the song of that *primus inter paris* of Java's songbirds. In the early morning especially when the birds were often singing from conspicuous points, though always close to suitable cover, their identity could be easily ascertained. But these were not the only opportunities to set eyes upon the bird because it appears more often outside the dense tangle of undergrowth than does *Trichastoma sepiarium* from Java.

We did not observe any representative of the species on Pulau Gili.

*Discussion:* The material secured on Bawean Island, together with some skins obtained there in 1928, were discussed already in some previous papers (HOOGERWERF 1947, 1966).

#### Sub-family SYLVIINAE

#### 48. *ORTHOTOMUS SEPIUM BAWEANUS* HOOGERWERF

##### *Ashy Tailor Bird*

*Orthotomus sepium baweanus* HOOGERWERF, Bull. Brit. Orn. Club, 82, 8, 1962, p. 150-152: Bawean Island, Java sea

- Material:* 4♂ 2♀, 1 sex. inc. Sangkapura, 25.5, 11.6.1954; 1♂ 2♀ Kampung Tandjung, 10.6.1954; 4♂ 3♀ 1 sex. inc. Sekarputih, 16 & 17.6.1954; 1♂ 1♀ Batu-lintang, 23.6.1954; 3♂ 1♀ Muara, 27 & 28.6.1954
- Measurements:* Previously published (HOOGERWERF 1948b, 1962a)
- Weight:* ♂♂ 8, 8 × 10, 2 × 11, 12; ♀♀ 8, 9, 6 × 10 gr.
- Gonads:* ♂♂ Testes well developed, 2-5 mm (11), small (1); ♀♀ ovaries poorly developed, not or hardly granular
- Soft parts:* ♂♀ Iris light ochreous brown; bill dark, almost black, under mandible fleshy; feet brownish fleshy, sometimes pure fleshy
- Stomach contents:* Fine remains of insects, in two cases remains of small caterpillars and in one case a large moth in the gullet.



*Field notes*: Again a species which can without any doubt be called common and which is scattered over almost the entire island. Though it was most often the bird's call showing its presence, visual observations were hardly less common.

Together with *Anthreptes malacensis*, *Nectarinia jugularis*, *Dicaeum trochileum* and some other species, this tailor-bird is an inhabitant of cultivated areas, by preference those partly covered with brushwood, orchards, bamboo and light forest, but on several occasions it was also observed along jungle paths through heavy forest in the central part of Bawean.

These very busy birds are usually in pairs or small family groups, sometimes roaming the shrubs, in company of other species in search of small caterpillars and insects, their favourite food.

Though on Pulau Gili too conditions for the species seemed excellent, we failed to find it there,

*Discussion*: Together with material from other localities the Bawean birds were discussed previously (HOogerWERF 1948b, 1962a) when they were described as belonging to a separate race.

49. *PHYLLOSCOPUS BOREALIS* subsp. *Arctic Willow Warbler*

*Field notes*: This is another species which I did not find on Bawean Island or its surroundings, but there are four (3 ♀, 1 sex. inc.) in the Bogor collection originating from this island. They were obtained there in May 1928 during the expedition of Dr. K.W. DAMMERMAN.

The species visits the Indo-Australian region as a winter visitor from the Northern Hemisphere.

*Discussion*: When studying the Bawean material there was no opportunity to compare it with skins of the subspecies *examinandus*, known from Bali or *xanthodryas* from Java and Borneo. Moreover, the four winter skins were not too good and therefore perhaps not suitable material with which to arrive at a conclusion.

## Family ZOSTEROPIDAE

50. *ZOSTEROPS CHLORIS MAXI* FINSCH*Large Bridled White-eye**Zosterops Maxi* FINSCH, Journ. für Orn., 55, 1907, p. 302: Thousand Islands, West Java

*Field notes*: During our visit to Pulau Gili on 29th and 30th May 1939 this white-eye was noted as a fairly common bird on this small island. But we did not succeed in recording even a single specimen during our camping there from 12th till 15th June 1954, nor did we meet with it or any other representative of the White-eye family elsewhere on Bawean Island.

Representatives of this species are confined to small islands so far as the Java sea and its surroundings are concerned. It prefers the smallest ones, sometimes even when they are overcrowded by people, provided there is some higher vegetation for protective cover.

*Discussion*: On account of the fact that the small coral-islands in and around the Bay of Djakarta and the islands of the Karimundjawa and Kangean Archipelagos are inhabited by the subspecies *maxi*, it seems justifiable to include also the Pulau Gili birds in this race.

## Family DICAIEIDAE

51. *DICAEUM TROCHILEUM TROCHILEUM* (SPARRM.)*Scarlet-breasted Flowerpecker**Certhia trochilea* SPARRMAN, Mus. Carls. 4, no.80, 1789; West Java (STRESEMANN 1923)

*Material*: 1♂ Mt. Tinggi, 26.5.1954; 1 ♀ Kampung Tandjung, 10.6.1954; 3♂ 1 ♀ Batulintang, 23.6.1954

*Measurements*: Previously published (HOGERWERF 1965d)

*Weight*: ♂♂ 2 × 9, 2 × 10; ♀♀ 2 × 9 gr.

*Gonads*: ♂♂ Testes well developed, 1-4 mm.; ♀♀ ovaries very small

*Soft parts*: ♂ ♀ Iris dark brown; bill black, under mandible entirely or for the greater part slate

*Stomach contents*: Stomachs empty or almost empty, but in bowels, often purplish tinted, small fruits or fruitstones, in one case perhaps of *Viscum* sp.

*Field notes*: As is the case in many other localities where it occurs, this flowerpecker is one of the most common bird species within cultivated areas on Bawean Island.

It most often attracts attention because of its irregular rapid flight and on account of its high-pitched notes. Though it also occurs in regions where such trees are not to be found, the species shows a preference for kapoc trees. The mistletoe parasites often present on these trees are almost without exception caused by the activities of these tiny birds. But the fact that these parasitic plants are also abundantly present on many other trees, is a proof of the bird's divergent attention, certainly on the island of Bawean, where no other representative of the family occurs.

The birds are usually alone or in pairs and more often high above the ground than low down.

*Discussion*: The species was already discussed in a previous paper with special reference to Bawean's population which apparently differs from Java birds (HOogerWERF 1965d).

#### Family NECTARINIIDAE

##### 52. *NECTARINIA JUGULARIS PECTORALIS* HORSEF.

*Yellow-breasted Sunbird*

*Nectarinia pectoralis* HORSFIELD, Trans. Linn. Soc., London, 13, 1821, p. 167: Java

*Material*: 1 ♀ Sangkapura, 25.5.1954; 6 ♂ 1 ♀ Muara, 30.6 & 2.7.1954

*Measurements*: Previously published (HOogerWERF 1965c)

*Weight*: ♂ ♂ 7, 3 × 8, 2 × 9; ♀ ♀ 7, 8 gr.

*Gonads*: ♂ ♂ Testes well developed, 3-5 mm; ♀ ♀ ovaries hardly (1) or well (1) granular

*Soft parts*: ♂ ♀ Iris dark brown; bill and feet black

*Stomach contents*: Stomach empty (3), fine remains of small insects, in one case of small spiders.

*Field notes*: Though this sunbird may be called one of the more common species on Bawean Island it is perhaps less intensively scattered all over the island than f.i. *Pycnonotus plumosus*, *Orthotomus sepium*, *Dicaeum trochileum*, *Anthreptes malacensis* and several others, and we did not find it on Pulau Gili.

It usually shares the habitat with all those species which prefer cultivated areas, provided there is sufficient protective cover of higher shrubs or trees. During our stay on this island the species was most plentiful in the neighbourhood of Muara. On 30th June we found a nest in that area containing two fledglings almost able to fly.

More often than *Anthreptes malacensis* this smaller species feeds on low flowering shrubs as *Crotalaria*, *Lantana* and many cultivated flowers in tropical gardens, feeding on honey, small spiders and many other tiny insects.

*Discussion*: Together with the other material of the species present in Bogor's museum, our Bawean birds have been discussed previously (HOOGERWERF 1965c).

### 53. *ANTHREPTES MALACENSIS MALACENSIS* (SCOP.)

#### *Brown-throated Sunbird*

*Certhia malacensis* SCOPOLI, Del. Flor. et Faun. Insubr., 2, 1786.  
p. 91: Malacca

*Anthreptes malacensis baweanus* OBERHOLSER, Proc. U.S. Nat. Mus.,  
52, 1917, p. 196: Bawean Island

*Material*: 1♂ 1♀ Sangkapura, 25.5.1954; 2♀ Mt. Tinggi, 26.5.1954; 1♂ Mt. Martalaja, 31.5.1954; 1♂ 1♀ Mt. Bulu, 5.6.1954; 1♀ Sekarputih, 16.6.1954; 1♂ 2♀ Muara, 29.6.1954

*Measurements*: Previously published (HOOGERWERF 1965e)

*Weight*: ♂♂ 11, 3 × 12; ♀♀ 2 × 10, 2 × 12, 2 × 15 gr.

*Gonads*: ♂♂ Testes large, 6-10 mm.; ♀♀ ovaries well (5) or poorly (2) developed, one egg-follicle of 5 mm.

*Soft parts* : ♂ ♀ Iris red or clear reddbrown; bill black or almost black, under mandible lighter; feet olivegreen, soles olive yellow or ochreous.

*Stomach contents* : Stomach empty (2); fine insect remains, once of two flies and a small spider.

*Field notes* : This is again a fairly common bird within all cultivated regions on this island, most often found on coconut palms, but certainly not exclusively, and also present at localities where such palms are absent, even in heavy forest. We also found this sunbird on Pulau Gili.

An apparently unusual concentration of many of these sunbirds was encountered on 10th June in some trees almost entirely covered with epiphytic climbers, growing along a village path in southern Bawean.

*Discussion* : In some previous papers this species was discussed (HOogerWERF 1945, 1965e). After comparison of representatives of Bawean's population of the species with those from other localities it became evident that the subspecies *baweanus* cannot be upheld and Bawean Island must be included in the range of *malaccensis*.

#### Family PLOCEIDAE

54. *PASSER MONTANUS MALACCENSIS* DUB. *Tree Sparrow*  
*Passer malaccensis* DUBOIS, Fauna, 52, Vert. Belg., Ois. 1, 1885, p. 572: Malacca

*Material* : 2 ♀ 1 imm. ♂ Sangkapura, 11.6.1954

*Measurements* : See below

*Weight* : ♂ 18, ♀ ♀ 20, 21 gr.

*Gonads* : ♂ Testes very small; ♀ ♀ ovaries well granular, 1 egg-follicle 3 mm.

*Soft parts* : ♂ ♀ Iris dark brown; bill almost black, under mandible lighter; feet brown fleshy.

*Stomach contents* : Remains of seeds, once a rice grain, and small pebbles.

*Field notes:* Though the sparrow may be considered of common appearance in Sangkapura and adjoining areas, it is apparently absent in many other localities because elsewhere we only found it in the neighbourhood of Balibakgunung, some miles north of Sangkapura.

In the latter village the species was abundantly present, behaving as familiarly with human beings as usually is the case elsewhere. On 11th June we counted about 20 specimens on the small lawn in front of the resting house of Sangkapura.

Neither VORDERMAN nor ABBOTT recorded the species when visiting the island in 1892 and 1907, though they both visited Sangkapura which is the most important settlement and the harbour where all ships from Java arrive. Owing to this it is almost certain that sparrows arrived later and it cannot be excluded that they have been introduced by men, though in this case not as cage-birds.

*Discussion:* The extent of the white on the belly and the dark colour on the flanks varies considerably in the different individuals. The same holds good for the black area on chin, throat and foreneck, apparently most obvious in the male bird, which also averages whiter in the nuchal collar.

The Bawean birds secured recently are a trifle lighter below but they were preserved in formalin which might have caused some fading.

On the upper parts the males apparently show more contrast in the markings than the females usually do. In all old skins examined -which are considerably lighter and also browner than fresh material- there is a distinct contrast between the uniformly brown crown and neck and the streaked mantle. This is not so in a female secured on Bawean Island in 1928 in which the tint of the occiput does not differ much from the mantle, this is also the case in both adult females obtained recently on this island, and having well developed reproductive organs.

In view of the probably rather recent arrival of this species on the island it seems important enough to point to this difference which is very conspicuous both in old and in fresh material. Also when these

Bawean skins are compared with a beautiful series of old material from Java, present at Leiden, the difference in this respect is distinct.

Measurements of the material examined:

MALES

*Wing:*

Java: 66, 66, 67, 68, 69, average 67.20

Bawean: 65

*Tail:*

Java: 49, 50, 50, 51, 51, av. 50.20

Bawean: 46

*Bill* (exposed culmen):

Java: 10, 10.3, 10.6, 11, 11.1, av. 10.60

Bawean: 10.4

FEMALES

*Wing:*

Java: 66, 66, 67, 67, 67, av. 66.60

Bawean: 65, 66, av. 65.50

*Tail:*

Java: 49, 50, 50, 52, 52, av. 50.60

Bawean: 51, 52, av. 51.50

*Bill* (exposed culmen):

Java: 9.9, 10, 10.2, 10.2, 11, av. 10.26

Bawean: 10.5, 10.7, av. 10.6

55. *PADDA ORYZIVORA ORYZIVORA* (LINN.) *Java Sparrow*

*Loxia oryzivora* LINN. Syst. Nat., 10th ed., 1758, p. 173: "Asia" = Java

*Material:* 1 imm. ♂, 3 imm. ♀ ♀ Muara, 27.6.1954; 1 ♀ Batu-lintang, 23.6.1954

*Measurements:* See below

*Weight:* ♂ 20, ♀ ♀ 20, 20, 21, 29 gr.

*Gonads:* ♂ Testes very small; ♀ ♀ ovaries very small (2), well developed, 1 egg-follicle of 4 mm (1) though still a young bird.

*Soft parts:* ♂ ♀ Iris dark brown or red, eyelid fleshy to red, almost white in some juveniles; naked skin around eyes light slate; bill purplish fleshy to rose red, under mandible lighter; bill in juveniles dark, sometimes almost black; feet light fleshy, duller in juveniles.

*Stomach contents:* Remains of grasslike seeds and small pebbles.

*Field notes:* As remarked already when discussing *Streptopelia chinensis* and *Geopelia striata* ALTING SIBERG (1846) mentioned the Java Sparrow as one of the three bird species which are said to have been introduced by the first Prefect of Bawean Island, Mr. H. FREDERIKS, in 1802. But strangely enough neither VORDERMAN nor ABBOTT listed the species as occurring on the island after their visits in 1892 and 1907, though the first author wrote that "this bird is imported from time to time as a cage bird from Surabaya."

It therefore seems logical to suppose that the species has repeatedly been introduced here with a varying amount of success. Nowadays it perhaps has settled because we found it on several occasions, sometimes adults and juveniles mixed in small flocks. The species was most frequently seen on the peninsula south of Muara. Between Sangkapura and Muara twelve were seen on 12th June and about 20 on 27th June. In the latter case four, all young ones, were killed with one single shot.

Though this rice-eating bird has apparently spread farther than *Passer montanus*, we only found it along the south coast and it could not be seen on Pulau Gili.

*Discussion:* The only adult specimen (♀) from Bawean Island does not differ from specimens originating from Java. There are not many *post-mortem* changes nor important individual variations in the plumage.

The four juveniles are more fleshy greyish below than young birds from other localities, which have more buffy under parts.



## Measurements of the material examined:

## MALES

*Wing:*

Java: 68, 69, 69, 70, 71, average 69.40

*Tail:*

Java: 40, 46, 47, 47, 49, av. 45.80

*Bill (exposed culmen):*

Java: 16.1, 16.2, 16.5, 16.7, 16.9, av. 16.48

## FEMALES

*Wing:*

Java: 67, 67, 68, 68, 69, av. 67.80

Bawean: 68

*Tail:*

Java: 45, 47, 48, 48, 49, av. 47.40

Bawean: 47

*Bill (exposed culmen):*

Java: 15.2, 16.2, 16.5, 16.8, 16.8, av. 16.30

Bawean: not measured

56. *LONCHURA PUNCTULATA BAWEANA* HOogerWERF*Spotted Munia**Lonchura punctulata baweana* HOogerWERF, Bull. Brit. Orn. Club, 83, 2, 1963, p. 38-40: Bawean Island, Java sea*Material:* 1 ♂ Mt. Bulu, 5.6.1954; 2♂ 3♀ Sangkapura, 11.6.1954; 3♂ 8♀ 1 sex. inc. Muara, 26. 6 & 2.7.1954*Measurements:* Previously published (HOogerWERF 1963)*Weight:* ♂♂ 10, 4 × 11, 12; ♀♀ 2 × 10, 8 × 11, 1 × 12 gr.*Gonads:* ♂♂ Testes small, well developed in one juv.; ♀♀ ovaries poorly developed, only one well granular.*Soft parts:* ♂♀ Iris dark brown; bill dark, often almost black, sometimes light slate with dark tip, under mandible light slate, sometimes fleshy; feet light blue or slate.*Stomach contents:* Remains of small seeds, most often perhaps of grasslike plants.*Field notes:* This rice-consuming bird was certainly of more common appearance than either of the species discussed last though not many were found beyond the areas bordering the south coast.

But in this species, as perhaps is the case with *Padda oryzivora*, the pattern of its distribution may vary in accordance with the area covered with a ripening rice crop, which was scarcely anywhere the case during our stay there.

In the neighbourhood of Muara and at some other localities along the south coast we repeatedly encountered flocks of 15 to 40, consisting for the greater part of juveniles. On 26th June eight birds were killed with one shot from such a flock among which only two were adults.

Though VORDERMAN obtained one specimen from Bawean's east coast, ABBOTT did not mention the species which perhaps points to its scarcity during that period.

*Discussion*: The birds from Bawean Island have been discussed previously (HOOGERWERF 1963). Comparison of this population with those from other localities induced me to separate Bawean birds.

57. *PLOCEUS MANYAR MANYAR* (HORSF.)

*Streaked Weaver Bird*

*Fringilla Manyar* HORSFIELD, Trans. Linn. Soc., London, 13, 1821, p. 160: Java

*Field notes*: Again a species of which I failed to record representatives but proof of its occurrence was obtained by VORDERMAN (1892) who reported some nests of this weaver bird without succeeding in laying hands on the birds.

The nests of this species are so typical that there need not exist any doubt about VORDERMAN'S record. There is a possibility that the species no longer occurs on this island or only periodically appears during periods of ripening or ripe rice crops on Bawean.

Family STURNIDAE

58. *GRACULA RELIGIOSA BAWEANA* OBERH.

*Bawean Grackle*

*Gracula javensis baweana* OBERHOLSER, Proc. U.S. Nat. Mus., 52, 1917, p. 195: Bawean Island

- Material* : 1 ♂ 1 ♀ 1 imm. ♀ Telaga Kastoba, 29.5.1954; 1 ♂ Mt. Martalaja, 31.5. 1954; 1 ♂ 1 imm. ♀ Sekarputih, 17. 6. 1954
- Measurements* : Previously published (HOogerWERF 1963c)
- Weight* : ♂♂ 290, 338; ♀ 330 gr.
- Gonads* : ♂♂ Testes small; ♀♀ ovaries very poorly developed
- Soft parts* : ♂♀ Iris dark brown; bill orange with yellow tip; naked skin around eyes and wattles light lemon yellow; feet light lemon yellow
- Stomach contents* : Large fruits of forest giants, mostly with large fruitstones of 10-20 mm; once a round pebble of 15 mm.

*Field notes* : Without describing the Grackle as a common species on Bawean Island it certainly may not be called rare as is evident from the fact that it was observed on 17 different occasions at different localities.

Though this, often noisy, bird does not avoid cultivated areas, provided some high trees are left for cover or from which to keep a watchful eye on the surroundings, it certainly does prefer heavy woods or complexes where such forest borders freshly cleared property or badly maintained gardens.

We found the Grackle rather common in the zone of heavy forest bordering Telaga Kastoba where, repeatedly, several were observed together. But elsewhere too small flocks of 5-7 birds were occasionally encountered, often drawing attention by the constant squabble from the highest trees available.

Both VORDERMAN and ABBOTT secured specimens of the species.

*Discussion* : The material obtained from this island was discussed on a previous occasion together with representatives of the species from other localities (HOogerWERF 1963c).

Family **ORIOLIDAE**59. *ORIOLUS CHINENSIS INSULARIS* VORDERM.*Black-naped Oriole*

*Oriolus insularis* VORDERMAN, Nat. Tijdschr. Ned. Indië, **52**, 1893,  
p. 200: Kangean Island

*Material* : 2♂ 1♀ Kampung Tandjung, 10.6.1954; 1♂ imm.,  
1♀ imm. Muara, 27 & 30.6.1954

*Measurements* : Previously published (HOOGERWERF 1963d)

*Weight* : ♂♂ 65, 80, 80, ♀ 80, imm. ♀ 71 gr.

*Gonads* : ♂♂ Testes very small (1), large 12 and 13 mm. (2);  
♀ well granular ovarium.

*Soft parts* : ♂♀ Iris clear red, dark almost black in imm.; bill  
purplish fleshy, black in imm.; feet dirty slate.

*Stomach contents* : Remains of insects, in two cases mixed with  
caterpillar skins and parts of larvae; once remains  
of pupae and of a shell; only once remains of fruits.

*Field notes* : Though this oriole was observed almost as many times  
as the Grackle, we suppose the former to be less common because  
there were very many days without even a single specimen coming to  
our notice. Most observations were on the south coast, and in the  
neighbourhood of Sangkapura, as well as at Muara and surroundings  
where the species was of common appearance though most often one,  
and never more than two specimens were encountered, within fairly  
extensive areas.

On 30th June some resting flying foxes were flushed from a  
coconut palm by an alarmed oriole though we could not locate its  
nest.

The species was also found on Pulau Gili but certainly not so  
plentifully as suggested by ALTING SIBERG (1846). He wrote that  
on this small island orioles were numerous, but that they were absent  
on Bawean itself. This may point to a scarcity of the species here in  
those days.

Intrigued by this difference in occurrence SIBERG brought eight specimens from Pulau Gili to Bawean's north coast where they were released. But "they united as a flock of doves and returned without any delay to their native island". . .

*Discussion* : After comparison of Bawean birds with material from other localities in Indonesia, present in Bogor's museum it became evident that Bawean's population possesses the racial characters of *insularis* more conspicuously than do birds from the *terra typica* Kangean (HOogerWERF 1963d).

\* \* \*

Below is a list of bird species of which the identity could not be established with absolute certainty.

1. *Ptilinopus melanospila melanauchen* (SALV.) *Black-naped Fruit Dove*

During a trip around Telaga Kastoba we repeatedly heard a call which we attributed to this small fruit pigeon. The hills surrounding this mountain lake are well forested, forming an excellent habitat for this dove.

Though we know the bird's call very well, we mention the species with a query because we did not see the calling bird, nor did we encounter it elsewhere on this island or on Pulau Gili.

2. *Gallinula chloropus orientalis* HORSFIELD *Moorhen*

On 29th May 1939 this species is mentioned in my diary for Pulau Gili where a solitary bird was observed. This remained the only record, which, moreover, could not be confirmed during our 1954 visit to this island.

On account of the fact that the White-breasted Waterhen (*Amaurornis phoenicurus*) was heard repeatedly during our 1939 visit, there is a possibility that we confused both species and I actually saw a representative of the latter species. Therefore I think it better not to mention the species as certain.

3. *Charadrius mongolus* subsp. *Small Sand-Plover*

We believe that we saw this species on the beach between Muara and Sangkapura and also on Pulau Gili, sometimes mixed with the somewhat larger *Charadrius leschenaultii*; but on 29th June there

was a small group perhaps exclusively belonging to this species. We failed to secure one.

4. *Capella* sp.

*Snipe*

ALTING SIBERG wrote that "snipe visit the island in small numbers only during January and February, disappearing again after this period". He added: "This differs from the situation on Java where they usually arrive in November and do not leave until April".

I consider it fairly certain that snipe were indeed indicated by that author because he also speaks about plovers, curlews, waterhens etc. Also in other respects this author gives evidence of being quite well acquainted with Bawean's birdlife. Moreover, on Java snipe are well known gamebirds and attractive meat, certainly not unknown to such a man as ALTING SIBERG.

5. *Phaeton rubricauda* subsp.

*Red-tailed Tropic Bird*

We did not observe Tropic Birds off Bawean or its surrounding islands but after visiting "Pulau Manukan Aër" which is close to Pulau Gili, VERLOOP (1905) wrote: "It is quite correct to call this rock the island of seabirds because we found there many white birds with a pinkish tint and a long black, in any case dark coloured tail, with scarlet bill and yellow feet."

Though it is by no means certain that it were indeed Tropic Birds VERLOOP saw, it seems probable that this was so because the description given reminds one of this rock-loving species. Because of the scarlet bill and dark tail we may suppose it dealt with *rubricauda* and not with *lepturus*.

In any case we believe the question important enough to rescue this sight-record from oblivion.

6. *Egretta intermedia intermedia* (WAGL.)

*Smaller Egret*

On 22nd May we observed an Egret which perhaps belonged to this species. The bird was feeding in wet ricefields north of Sangkapura but disappeared without enabling us to ascertain its identity.

7. *Bubulcus ibis coromandus* (BODD.) *Cattle Egret*

Not far from the locality where we believe we saw *Egretta intermedia* we saw six white herons which almost certainly were Cattle Egrets.

8. *Dendrocygna* sp. *Whistling Teal*

I did not succeed in finding indications of the occurrence of any other duck species than *Anas gibberifrons* but VORDERMAN (loc. cit.) wrote: "In the neighbourhood of Pomona must occur a *Dendrocygna* species."

Though we also camped (from 15th till 17th June) not far away from this village along Bawean's east coast, we failed to find any confirmation of VORDERMAN'S supposition, for which he did not give any reasons.

Since this author always gives the impression of great reliability I mention the Whistling Teal here.

9. *Tyto alba javanica* (GMEL.) *Barn Owl*

In the evening of 25th May we heard the typical call of this owl in the neighbourhood of Sangkapura's resting house. On account of the fact this was the only occasion we heard it and we failed to find it elsewhere on Bawean Island, we do not think it justified to mention the species definitely.

10. *Cacomantis merulinus* subsp. *Brain-fever Bird*

On 26th June we saw a small cuckoo flying over our Muara bivouac, followed by an adult *Orthotomus sepium*, a species which may be called the most important host for this cuckoo.

Because this remained the only observation and the striking call of the species was never heard on Bawean Island or on Pulau Gili, I do not think it right to mention this cuckoo without a query.

11. *Lalage nigra* vel. *sueurii* *Pied Cuckoo-Shrike*

On 26th June we observed two birds in the neighbourhood of our Muara camp which we supposed to belong to one of these species.

On account of the fact there were in those days rather a lot of specimens of the small cuckoo *Chalcites basalis*, a bird which resembles

the females of these *Lalage* species, and since we did not succeed in making any more definite observation, we have listed the species as doubtful.

12. *Stachyris melanothorax* subsp. *Pearl-checked Babbler*

On 30th May we heard the distinct call of what was probably this inhabitant of tangled vegetation, in dense brushwood near the crater lake Telaga Kastoba.

This observation remained the only one making it not quite justifiable to list the species definitely for the island.

13. *Cisticola juncides* subsp. *Streaked Fantail Warbler*

On one of the first days of our sojourn on this island, we thought we saw a single bird of this species in a standing ricecrop north of Sangkapura. We failed to obtain certainty and no more observations took place, which induces me to mention the Fantail Warbler as doubtful.

14. *Motacilla* sp. *Wagtail*

On 30th May there was a bird apparently of this genus flying over a wet ricefield in the neighbourhood of Telaga Kastoba. It was, however, too far away to be identified with certainty and because this remained the only observation I dare not mention wagtails for Bawean Island.

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