SOME ORNITHOLOGICAL NOTES ON THE SMALLER ISLANDS AROUND JAVA

(with the description of seven new subspecies)

by

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Between 1950 and 1957 zoölogical collecting trips were made to *Klapper* and *Trouwers Islands* in the Indian Ocean off the south coast of Java; to *Prinsen Island*[1]) and the *Krakatau* group and to the islands Legundi, Sebuku, Sebesi and Sangijang in Strait Sunda between Java and Sumatra; to the isthmus of *Udjung Kulon*, which is the westernmost part of Java; to the *Karimundjawa* Archipelago and *Bawean* Island in the Java Sea between Java and Borneo; and to the *Kangean* Archipelago east of Madura. Moreover some attention was paid to a number of islands of the Lesser Sunda group between Sumbawa and Flores (Komodo, Padar, and Rintja).

After some introductory papers about Prinsen Island (Treubia 21, 1953: 481-505), the Krakatau group (Treubia 22, 1953: 319-348), and Komodo, Padar and Rintja (Limosa 28, 1955: 96-112) it seems worth while to publish some more detailed particulars of a study of the ornithological material obtained on these islands.

This paper contains notes on *Copsychus malabaricus* (SCOPOLI), *Dicrurus hottentottus* (LINNAEUS), *Niltava banyumas* (HORSFIELD), *Treron vernans* (LINNAEUS), *Turnix suscitator* (GMELIN), *Psittacula alexandri* (LINNAEUS) and *Batrachostomus javensis* (HORSFIELD) with descriptions of new subspecies from Prinsen Island (3), the Karimundjawa Archipelago (1), Bawean Island (1) and the Kangean Archipelago (2). All types mentioned in this paper are in the Zoölogical Museum at Bogor (Indonesia); paratypes are in the Rijksmuseum van Natuurlijke Historie at Leiden (Netherlands).

English names are in accordance with CHASEN, "Handlist of Malaysian Birds" (1935).

I have to thank Dr. DEAN AMADON of the American Museum of Natural History at New York, the late Dr. G. C. A. JUNGE of the Rijksmuseum van Natuurlijke Historie at Leiden, and Prof. Dr. E. STRESEMANN of the Zoölogical Museum of the Humboldt University of Berlin for their kind help and criticism when preparing these notes.

[1]) Sometimes spelt *Princes Island*.

Copsychus malabaricus (Scopoli) — Shama (Plate IV)

After studying the series of nearly 50 skins collected by me in 1951 and 1955 in the areas in and around Strait Sunda it seems justified to consider this whole area as part of the range of *tricolor*, with the exception of Prinsen Island, which is inhabited by birds distinctly differing from all subspecies known up till now, except *melanura* and *nigricauda* which also have a black under tail as is the case in birds from Prinsen Island.

Though there is some individual variation in the chestnut area of the lower under parts it is true that *tricolor* averages darker brown than *javana* from Central Java. However, we have before us a skin from South Sumatra which does not differ in this respect from the seven (4♂ 3♀) specimens of *javana*, originating from Japara, Gundih and Gedangan (near Semarang, Central Java). Also on account of the extent of white on the belly this South Sumatra bird is very close to *javana*. This skin originates from the Lampong Districts (Way Lima). Another specimen from South Sumatra (Palembang), however, is darker brown than a great number of other skins from that island, studied by me, rather similar with a bird from Sebesi Island which area seems to be inhabited by somewhat darker birds as may be the case in *Copsychus malabaricus* from nearby Sebuku Island, but from this locality we have only one skin.

The only specimen from Sangijang Island is much lighter again, but a (very old) bird from Djakarta (Batavia) fits well in the series from Sumatra, Sebesi and Sebuku. When we pay special attention to the shade of the chestnut area on the lower under parts and the extent of that area and that of the black on the chin, throat and chest, when looking for subspecific characters of this species, it seems right to consider also birds from Billiton, Bangka, Karimata and Riouw as to belong to *tricolor*, so that FINSCH's and BODEN KLOSS's opinion seems acceptable on this point (see: BODEN KLOSS, 1931).

Of the 5 males from Java's most western peninsula, Udjung Kulon, 4 belong to the lightest brown specimens of the 30 skins of *tricolor* before me, but they are still much darker than *javana*; the feathers on the tibia are not white as is the case in these *javana* but somewhat rusty. Though BODEN KLOSS (1921) considers the colour difference in the feathers of the tibia as a subspecific character, I am of opinion this may be doubted because of the fact there is much variation in birds from the same locality. Before me is a skin of *tricolor* collected by me in 1937 in the central part of Acheen (Atjeh, North Sumatra) which is very dark

brown; on account of this colour on the under parts this bird belongs to the 4 darkest specimens of all 30 skins before me, but the tibial feathers are nearly pure white, not differing from *javana*.

As is evident from the measurements given below, our Udjung Kulon birds have a shorter tail than nearly all other *tricolor*, but without exception they had badly developed gonads and in some of them the tail-quills had not yet reached their maximum length.

On account of the fact, that there are important individual differences in the shade of the chestnut area within the same population, I am of opinion that small differences in this colour found in small series may not induce the taxonomist to base a new subspecies on such a character. I think that this was done repeatedly when separating the many subspecies of this species so that *Copsychus malabaricus* must be considered as being seriously "oversplit".

Considering the large differences in the chestnut tinge of the under parts between the few *javana* skins at my disposal and the many *tricolor*, it seems fully justified to maintain *javana* as a good subspecies. Also *omissa*, only known from East Java, seems to me a well defined race though I could not study enough material to give a definitive conclusion.

Though there may be some discolouring in the chestnut areas of the under surface which seem paler in birds of old date or in those preserved in alcohol or formalin, I think that this character does not change much. In general I should say that differences in this colour may only be accepted as to be of subspecific value when the series to be compared are not too small.

Also with a view on the individual variation in size and tone of the dark, blackish areas in the plumage it appears to me very risky to separate subspecies on account of differences in these characters so long only small series are available and fresh material must be compared with skins of old date or those preserved in liquids.

It is also necessary to be critical when considering differences in tail length when only small series of skins can be studied and no attention whatever is paid to the development of the gonads and the plumage. The many birds before me give sufficient evidence on this point but after a critical study it seems to me that *tricolor* originating from North and Central Sumatra has the longest tail and that the tail in *javana* averages much shorter than in *tricolor*. That birds with well developed gonads do not always have a splendid plumage is evident from some skins obtained at Sebesi Island from birds with very large testicles but strongly worn feathers, while birds from the Kangean Archipelago with gonads in

TABLE 1

Measurements of subspecies of *Copsychus malabaricus* with black under tail coverts.

		Islands off the west coast of Sumatra *melanura*[1])			Kangean Islands *nigricauda*			Prinsen Island *mirabilis*		
	Sex	Number of specimens	Variation	Average	Number of specimens	Variation	Average	Number of specimens	Variation	Average
Wing	♂	3	90-94	92.3	5	101-107	104.3	5	95-101	98.8
	♂♂				4[2])	95-118	103.4			
	♀				1	87		7	88-100	93.0
Tail	♂	2	130, 145	137.5	5	135-155	148.5	5	142-156	148.4
	♂♂				4[2])	114-153	133.6			
	♀				1	96		7	102-120	108.0
Culmen	♂	3	15-16.6	15.7	5	16.8-17.2	17.1	5	12-13.5	12.3
	♂♂				4[2])	18-19	18.3			
	♀				1	16.5		7	12.5-14.5	13.9

[1]) See: JUNGE, 1936. [2]) Older material.

about the same state of development had a splendid plumage!

Considering the above it is difficult to be enthousiastic about the many subspecies of this *Copsychus*, especially those created by OBERHOLSER who was a specialist in separating birds on account of a single or a very small series of skins without sufficiently comparing his material with existing subspecies and often publishing worthless diagnoses. A reconsidering on the basis of sufficient fresh material seems necessary before such races as *ochroptila*, *heterogyna*, *eumesa*, *abbotti*, *opisthisa* and *opisthopela* are worth to be taken seriously.

Subspecies of which the validity needs not to be doubted are *melanura*, known from some islands off Sumatra's Westcoast and *nigricauda* from the Kangean Archipelago. Both of them have an entirely or nearly black undertail whereas representatives of all other subspecies have much white on those parts.

The discovery of still another population of this thrush with a black undertail on Prinsen Island, surrounded by areas where only "white-tailed" birds are living, must be seen as one of the most outstanding results of our Prinsen Island expedition in 1951. This is the more remarkable since Prinsen Island is separated from Java's westernmost peninsula, the game reserve Udjung Kulon, by a strip of water which is only 6 to 7 sea-miles wide.

TABLE 2

Measurements of subspecies of *Copsychus malabaricus* with white under tail coverts.

		Sumatra *tricolor*			Islands in Strait Sunda *tricolor*					Udjung Kulon Peninsula W. Java *tricolor*			Java *javana*		
					Sebesi			Sebuku	Sangijang						
	Sex	Number of specimens	Variation	Average	Number of specimens	Variation	Average			Number of specimens	Variation	Average	Number of specimens	Variation	Average
Wing	♂	11	92-101	97.7	6	96-103	99.3	99	98	5	91-101	95.0	4	90-93	91.
	♀	10	80-93	89.6	1	90		—	—	4	82-92	86.8	3	81-90	84.
Tail	♂	11	110-173	146.9	6	148-175	163.7	162	—	5	104-127	112.3	4	128-140	134.
	♀	10	92-127	112.8	1	110		—	—	4	103-120	109.2	3	95-111	103.
Culmen	♂	11	15-16.2	15.8	6	17-20.5	17.9	16.5	16	5	15-16.2	15.6	4	13.5-15.6	14.
	♀	10	13.8-16.2	15.0	1	17.2		—	—	4	14-17.4	15.6	3	14-15	14.

Because of the fact that *Copsychus malabaricus* living in Prinsen Island also differs from *melanura* and *nigricauda*, I propose a new name for the population of that island *viz.*:

Copsychus malabaricus mirabilis *subsp. nov.*

Type: ♂. Mus. Zoöl. Bogor, No. 21.180, 2 September 1951, Tjiharashas, Prinsen Island, West Java; leg. A. HOOGERWERF.
♀. Mus. Zoöl. Bogor, No. 21.178, 2 September 1951, Tjiharashas, Prinsen Island, West Java; leg. A. HOOGERWERF.

♂♀. Differing from representatives of the same species from the surrounding areas by having a black undertail as is the case in *melanura* from some islands off Sumatra's Westcoast and *nigricauda* from the Kangean Archipelago east of Java.

Bill much smaller, wing and tail larger than in *melanura*; bill and wing smaller than in *nigricauda*; bill smaller than in any other subspecies studied by me.

Chestnut area on under parts nearly similar to *melanura* but very different from *nigricauda* in which the brown is much lighter; undertail nearly completely black; in 5 males there are 3 with small white tips on the smaller quills of the undertail; in *melanura* and *nigricauda* before me the white fails nearly alltogether.

In *mirabilis* there is less white on the under tail coverts than in *nigricauda* but more than in the skins of *melanura* (3♂) before me. Bluish black areas on upper and under parts as in *nigricauda*, but this colour seems less brilliant in *melanura*. On account of the fact that these *melanura* skins originate from birds, shot 20 and 40 years ago, this difference might not have subspecific value.

For measurements: see Tables 1 and 2.

Dicrurus hottentottus (Linnaeus) — Hair-crested Drongo

Birds of this species originating from Prinsen Island are decidedly deeper black on the upper parts and show the metallic bluish sheen much more distinctly than is the case in all Kangean skins before me in which the sheen also averages more greenish. When selecting from a series of 8 males from the first locality and 12 from Kangean Island the 10 males with the darkest plumage on the upper surface, all 8 specimens from Prinsen Island are among them. The same holds good for the females which, however, have the metallic blue sheen on the mantle still more obvious. There are no constant differences in structure or length of the hackles on the nuchal area, nor in the length of the hairs on the forehead, though in the series before me the number of Prinsen Island birds having these hairs is larger than that of the Kangean birds and they make the impression to average longer in the males of Prinsen Island as do the hackles in several specimens. In the feathering on the forehead and in the area of the bill covered by these feathers is no difference between both populations, nor in the colour and sheen of the wing- and tail-quills either which is metallic green in all the specimens before me. There is not much difference in structure and size of the bill.

The differences indicated by VAURIE (1949) when comparing *jentincki* with *leucops* from Celebes and surrounding islands: "smaller, much less blue, duller and more black and with the gloss strongly greenish rather than purplish blue", could not be confirmed by me when comparing our fresh Kangean skins with 4 specimens of *leucops*. Both subspecies do not differ much in the tone of the metallic green or bluish green and also in the black of the mantle and remaining upper parts I failed to

discover any other than an individual variation. Nor in size of wings and tail I could find differences of any importance; the only difference I could see is one of bill-size: *leucops* has the bill shorter, also less heavy which is more important than is evident from the measurements given below.

When comparing Kangean birds with those from Prinsen Island on the under parts one can establish the same difference in the tone of the black as mentioned above for the upper parts, especially on the mantle, for Prinsen Island birds average much deeper black than is the case in the skins from Kangean before us, though the difference on the lower parts is not so obvious as on the mantle. Moreover the metallic glossy parts ("scales") of the feathers on the foreneck and chest average wider than in Kangean birds and the sheen is bluer, less green.

The differences in the plumage discussed above were studied especially in birds of which the gonads were equally developed because birds with well-developed gonads use to have the most brilliant sheen and show the deepest black. When comparing old material with freshly collected birds, I got the impression that there is not much discolouring on account of long storage.

Many birds of both localities discussed now, had well-developed gonads, forming excellent material for comparison. Nearly all males obtained at Prinsen Island and Kangean had the gonads heavily developed (Prinsen Island: testis 13-17, only once 5 mm; Kangean: testis 8-17 mm, in 3 specimens "very small") and the female birds from the first mentioned locality had the ovaria well granular as a rule and of the 3 females from Kangean two were in the same state and one "very small".

At an earlier occasion (HOOGERWERF, 1949) I doubted the validity of the subspecies *termeuleni*, known from the Thousand Islands and Djakarta Bay (West Java). At about the same time VAURIE's revision (1949) appeared in which he rejected this subspecies, including its range into that of *jentincki*, though he did not study a single skin of *termeuleni*. But after comparing the rather large series of *Dicrurus hottentottus* originating from West Java's Prinsen Island and our Kangean material now available, together with a large series of true *termeuleni* present in Leiden, there is much reason to suppose that those last birds cannot be included into *jentincki* from Kangean, principally on account of their much smaller dimensions.

FINSCH's type-description of *termeuleni* (1907) does not seem to be applicable to the Prinsen Island population, as the metallic sheen on the feathers of the head, neck and on the hackles is not greenish as FINSCH

found it in *termeuleni*, but bluish, not much different from the hue on the throat- and breast-feathering. Wings, tail and upper tail coverts are metallic green, not differing from birds secured on Kangean.

When comparing Prinsen Island birds with the beautiful series of *termeuleni* originating from the *terra typica*, present in the Leiden Museum, it became evident that there is a rather important size difference between both these populations, not only when looking upon the wings and tail but also when comparing the bill. *Termeuleni* seems indeed more related to *jentincki* from Kangean when considering the shade of the plumage owing to the duller, less deep black of mantle, back and the under parts, but more closely related to birds from Prinsen Island when looking upon the more blue in stead of green sheen of the breast-feathers. Difference in size, however, still more important than those between *termeuleni* and Prinsen Island birds, must prevent us from uniting *termeuleni* with *jentincki*. When the characters separating both these subspecies are not recognized there seems to be a serious reason to reconsider the value of many races of this and other species mentioned in VAURIE's revision (1949)!

As was published by me already at an earlier occasion (HOOGERWERF, 1949) the Hair-crested Drongo is also known from the island of Nusa Barung (off Java's south coast) and from the teak-forests in Central and East Java, but up till now there is not enough material available to give a definite opinion about the systematic position of those populations of this bird.

From the above it seems justified to recognize 3 different subspecies of this *Dicrurus*, living on the islands off Java's coast. One of these populations, that of Prinsen Island, needs to be named, for which I propose the name:

Dicrurus hottentottus faberi *subsp. nov.*

Type: ♂. Mus. Zoöl. Bogor, No. 21.155, 2 September 1951, Tjiharashas, Prinsen Island, West Java; leg. A. HOOGERWERF.
♀. Mus. Zoöl. Bogor, No. 21.163, 8 September 1951, Tandjung Kantjana, Prinsen Island, West Java; leg. A. HOOGERWERF.

♂♀. Wings and bill average longer than in birds belonging to *termeuleni* but wing and outer tail feathers in both sexes shorter than in *jentincki* from Kangean; central tail feathers intermediate between *termeuleni* and *jentincki*; bill somewhat heavier still than in this last race.

On the upper surface as well as below, the shade of the feathering is deeper black than is generally the case in both other subspecies mentioned

above, whereas the metallic hue is at the average more intense and is more blue instead of greenish when compared with *jentincki*, except the wings which are metallic green in all three subspecies. Moreover the scaly-like metallic spots on the chest are larger, averaging broader than is the case in birds of both other races.

As in *termeuleni* and *jentincki* the eye of *faberi* is creamy white. On account of this the extension of the range inhabited by populations of *Dicrurus hottentottus* having a white iris, spreads farther to the south-west than is shown on VAURIE's map (1949, p. 300).

For measurements: see Table 3.

TABLE 3

Measurements of three white-eyed subspecies of *Dicrurus hottentottus*.

		Thousand Islands and Djakarta Bay, West Java *termeuleni*			Kangean Islands *jentincki*			Prinsen Island *faberi*		
	Sex	Number of specimens	Variation	Average	Number of specimens	Variation	Average	Number of specimens	Variation	Average
Wing	♂	8	150-157	154	12	153-163	159	8	148-163	157
	♀	7	145-154	148	3	154-156	155	8	148-160	153
Tail (outer feathers)	♂	8	116-137	129	11	122-143	132	8	115-127	121
	♀	5	122-135	128	3	121-128	125	8	114-130	121
Tail (central feathers)	♂			117			132			121
	♀			118			125			121
Culmen	♂	7	27-31	29.4	12	29-35	32.4	8	31-35	33.9
	♀	7	26-31	28.7	3	30-31	30.8	8	32-33	32.6

Because the subspecies *sumatranus* known from Sumatra, has a reddish brown iris and an aberrant tail, birds of this race were only superficially compared with representatives of the new subspecies.

The new race is named to the honor of the late Mr. D. A. FABER, who accompanied the Prinsen Island expedition as a very ardent student in soil-conservation and who was a good comrade.

Niltava banyumas (Horsfield) — Hill Blue Flycatcher (Plate V)

When 12 males belonging to the subspecies *cantatrix* originating from West Java are compared with 8 skins of the nominate race, present

in the Bogor Museum and borrowed from the Raffles Museum, Singapore, it can be said that only one bird of this last subspecies shows more white on the lower parts than the average *cantatrix* but these skins indeed have nearly white under tail coverts, as is only the case in a single *cantatrix* among the 12 birds before me. The reddish brown colour on the under parts varies importantly in these specimens of *banyumas* as is the case in the series of *cantatrix* before me. There is also some variation in the quantity of black on the chin and sides of the neck.

Five skins borrowed from Singapore belonging to the subspecies *coerulifrons*, known from the Malay Peninsula, are in bad condition but they indeed seem to average whiter on the lower under parts than is the case in the average *cantatrix*, whereas also the under tail coverts are white, *not* tawny as in this race. On account of this, *coerulifrons* resembles our birds of the nominate form, also because of the similarity in the colour of the remaining under parts.

The 15 skins of male birds before me, recently obtained on Prinsen Island, differ from all 3 subspecies mentioned above because of their very white under parts; moreover they differ from *cantatrix* on account of their white under tail coverts. Perhaps the tawny colour on the higher under parts averages darker than in *banyumas*, but seems rather similar to *cantatrix*; the buffy colour on the inner wing seems lighter in Prinsen Island birds than in the averaging *cantatrix*, *banyumas* and *coerulifrons*.

When looking upon the upper parts it is evident that the last mentioned subspecies is decidedly darker than both other races, which show little or no difference from the skins from Prinsen Island. But the males of this last locality seem closer related to *cantatrix* than to *banyumas*, whereas in addition they can be distinguished from both these races on account of the smaller quantity of light sky-blue on the forehead and the area above the eyes, though there is more blue on the wing coverts and scapulars in birds from Prinsen Island.

The females of the Prinsen Island population too average clearer white below than is the case in the females of the other races, indicated above and moreover this colour covers a larger area and the under tail coverts are also white. The brown on the higher under parts seems a trifle darker than in *banyumas*, but does not differ much from *cantatrix*. Compared with 5 females of *coerulifrons* it can be said that Prinsen Island birds show still more white below and have distinctly lighter flanks.

The individual variation in the colour of the upper parts is large in the 5 skins of *coerulifrons* before me, for two of them have largely brownish upper parts, whereas the three remaining ones are olivaceous grey above.

The variation on this point is less important in the 9 specimens of *banyumas*, in the 7 females of *cantatrix* and the 7 ones originating from Prinsen Island. These *banyumas* females are decidedly less olivaceous, purer grey, than the other skins but the females from Prinsen Island are much more washed with olivaceous than all other female birds, studied by me.

Some specimens of the subspecies *whitei* present in Leiden are smaller and show less white on the lower surface than is the case in birds from Prinsen Island; moreover the females have no grey on the occiput which in colour does not differ much from the remaining upper parts. The subspecies *montana* too averages less white below and has tawny under tail coverts.

Compared with some more skins of *banyumas* from East Java and with a large series of *cantatrix* from West Java, all present in Leiden, the same differences could be established as stated above on account of the Bogor material.

One of the females from Prinsen Island shows traces of blue on the nape, mantle and scapulars and has several clear blue feathers on the forehead, but the ovary was strongly developed and there was a fully developed egg which could be preserved and is now in my collection.

All males from Prinsen Island had large gonads, testicles of 6-11 mm; the females had small ovaries, though well granular, with the exception of the single female indicated above. There are two birds among this series which still have the juvenile plumage, one of which shows already much blue on the tail. Compared with a juvenile of *cantatrix* it is evident that both these juveniles are also lighter on the under parts and have darker upper parts.

On account of the differences indicated above, it seems justified to separate Prinsen Island birds belonging to this species, for which I propose the name:

Niltava banyumas mardii *subsp. nov.*

Type: ♂. Mus. Zoöl. Bogor, No. 21.018, 2 September 1951, Tjiharashas, Prinsen Island, West Java; leg. A. HOOGERWERF.
♀. Mus. Zoöl. Bogor, No. 21.026, 5 September 1951, Tjiharashas, Prinsen Island, West Java; leg. A. HOOGERWERF.

♂♀. In size not much differing from *Niltava banyumas cantatrix* from West Java, but the wing of the male averages somewhat longer, also when compared with *banyumas* and the bill is a trifle narrower at the base. In the females the bill of the new race is smaller when compared with

cantatrix as well as with *banyumas*. *Mardii* is larger than *coerulifrons*, *whitei* and *deignani*, known from Continental Asia, from which it might also differ in coloration.

♂. On account of the lighter tinge of the lower under parts and under tail coverts, which are nearly pure white for the greater part, the new subspecies seems closer to *banyumas* from East and Central Java than to *cantatrix* of West Java which shows much less white below and has nearly always tawny under tail coverts.

In the subspecies *mardii* the abdominal region is still lighter than usually is the case in *banyumas* and in *coerulifrons* or *montana* and the light tinge is spread over a larger area; the tawny colour on throat, foreneck and

TABLE 4

Measurements of subspecies of *Niltava banyumas*.

		Central and East Java *banyumas*			West Java *cantatrix*			Prinsen Island *mardii*		
	Sex	Number of specimens	Variation	Average	Number of specimens	Variation	Average	Number of specimens	Variation	Average
Wing	♂	6	72-77	74.8	15	72-77	74.7	15	74-78	76.3
	♀	7	69-74	71.9	7	70-72	71.7	7	69-74	71.4
Tail	♂	6	58-63	59.3	14	60-66	63.3	15	58-68	62.5
	♀	7	55-61	57.1	7	56-60	58.4	7	56-61	58.0
Culmen	♂	6	12-13	12.7	15	12-13.8	12.9	15	11-13.7	12.2
	♀	6	11-12.5	12.0	7	12-13.2	12.6	7	10-11.2	10.3

breast averages a trifle darker than in *banyumas*, more resembling *cantatrix* again, but there is rather much individual variation in the tinge of that colour which makes the subspecific value of this character rather doubtful. The buffy colour on the inner wing coverts is decidedly lighter in *mardii* than in both other subspecies, known from Java.

On upper parts and shoulder region *mardii* resembles more *cantatrix* than *banyumas*, because of the clear blue of these parts; the blue colour is still brighter than in *cantatrix*, which also holds good for the blue on the wings. When seen in a series the blue on the lores and forehead, however, averages less conspicious than is the case in *banyumas* or *cantatrix*.

♀. In the under parts of the females too the light area is more extensive and the tinge is purer than in the other subspecies discussed above.

The tawny colour on the throat, foreneck and breast is rather similar with *cantatrix*, averaging a trifle darker than in the *banyumas* skins before me.

Shoulders and upper parts, except the upper head and the tail, are more olivaceous and the wings more olive-brownish than in *banyumas* or *cantatrix*. Upper head and tail rather similar with birds of both these subspecies, but the occiput is decidedly greyer than is the case in females of *whitei*.

For measurements: see Table 4.

The subspecific name is dedicated to one of the senior taxidermists of the Bogor Museum who accompanied us to Prinsen Island.

Treron vernans (Linnaeus) — Pink-necked Green Pigeon

As is evident from the measurements published below, freshly collected skins from the islands in and around Strait Sunda, Klapper- and Trouwers Island (Pulau Deli and P. Tindjil) fit exactly within the subspecies *griseicapilla* originating from South Sumatra, Java and Billiton, which is also the case with 26 ♂ and 12 ♀ from South Sumatra, Bangka, Nias and Malacca measured by JUNGE (1936) and with some additional measurements given by this last author afterwards (JUNGE, 1948).

Though variation of the green in the upper parts and in the yellow on the under surface may be partly caused by age-differences, because young birds seem to be darker above and deeper yellow below, there is also a certain degree of variation in birds having equally developed gonads. Before me are 5 freshly obtained skins (♂) from the islands in the Sunda Strait, four of which are very dark on the under parts, much darker than two fresh skins from Java. There is also an important difference in the green on the upper parts, which is also the case with the three females from this area; this green is also darker than in birds from Java.

A reliable comparison of the freshly collected material from the Sunda Strait area with typical representatives of the subspecies *griseicapilla* was only possible with two males from Bogor, so that principally on account of the similarity in size we united those birds with this last race, also because the Sunda Strait falls within the range of this subspecies. But it must be remarked that males from the islands in Strait Sunda average darker in all tinges of the under parts than fresh skins from Bogor, Udjung Kulon and from Borneo, though when comparing old skins from Krakatau with old material from Java and Sumatra there are no differences. But the Krakatau population, of course, is still very young

because all animal life was destroyed in 1883 and birds with an "own character" must fail.

Owing to the dark under parts those Strait Sunda males are very close to 2 old skins from Borneo one of which is classified as *purpurea*, the second one as *griseicapilla*, perhaps only on account of the locality, for one (*purpurea*) comes from East Borneo (Kutei) the other one from the northern part, but in plumage they are rather similar.

Besides these Borneo skins there are also 2 birds from Palembang and Acheen (North Sumatra)—the last one classified as *parva*—which are nearly inseparable from our Strait Sunda birds, though there are others from South and North Sumatra which fit excellently in the average *griseicapilla*.

Recently collected material from the Kangean and Karimundjawa Islands differs distinctly from *griseicapilla* because of its larger size. Therefore the populations of these groups of islands cannot be united with *griseicapilla* from West Java nor with *purpurea* of East or Central Java. As early as in 1902 HARTERT already paid attention to the larger size of the pigeons from Kangean, but not earlier than in 1938 MAYR described it as a separate subspecies, *kangeana*. The measurements, published by MAYR (160-167 mm for the wing) seems to be flattered when comparing them with those found by me but some birds of our series were moulting the primaries or else they are somewhat worn; the larger size of *kangeana* seems important enough to make it a valid subspecies.

MAYR (1938) points to the subterminal black bar on the tail being rather wider in *kangeana* than in *purpurea*, but this is not so in the four male birds of *kangeana* before me when we compare them with two of *purpurea*. In 50 % of each of these subspecies this bar is narrow and in the others wide and also in the large series of *griseicapilla* and in the birds from the Karimundjawa Islands the individual variation in size of this dark bar is so important that it seems to me not of the slightest subspecific value.

I have no fresh *purpurea* at my disposal but only 2 old males and 1 old female so that I cannot give an opinion about the other differences in colour indicated by MAYR which induced him to consider *kangeana* closer to (paler) *purpurea* than to *griseicapilla*. After comparing the 5 fresh male birds belonging to this last subspecies originating from Strait Sunda discussed above already, with 3 fresh male birds of *kangeana* there is no doubt about *kangeana* averaging paler than *griseicapilla* in nearly all parts of the plumage but they do agree nearly exactly on all parts with 4 males from Udjung Kulon and Bogor, West Java.

Two out of the 3 recently collected females from the Strait Sunda area differ from *kangeana* by the darker tinge on the chest and the creamy instead of yellow tone of the feathers on the belly and on the smaller under tail coverts. The green of the upper parts varies too, but *kangeana* females average a trifle lighter than specimens obtained from the Strait Sunda islands, Prinsen Island and Sebuku; and the lightest bird is a *kangeana*. The third bird from Sunda Strait, from Sangijang Island, has much yellow and dark upper parts, rather different again from the average *kangeana*.

Treron vernans from the Karimundjawa Archipelago does not differ much in size from *kangeana*, but the tail of male and female averages somewhat longer than in birds belonging to this last race. Males from Karimundjawa average darker than *kangeana* on nearly all under parts: there is less yellow in the green and moreover the orange patch on the chest averages smaller. The same holds good for the upper surface: not only the green is darker and purer in 5 out of the 7 Karimundjawa birds, but also the grey on the occiput averages darker, especially purer than in *kangeana* though somewhat lighter than is the case in *griseicapilla*. About the same can be said of the vinaceous nuchal collar which in birds from the Karimundjawa Islands seems to be intermediate between *kangeana* and *griseicapilla*. As there is much individual variation in the colour of the lower back and upper tail coverts I do not think it justified to look upon such differences as of subspecific value.

Though the colour of the plumage of adult birds with strongly developed gonads and those with small ones does not differ much, I concentrated my attention on birds with equally developed reproductive organs.

The differences between these two populations of *Treron vernans* are

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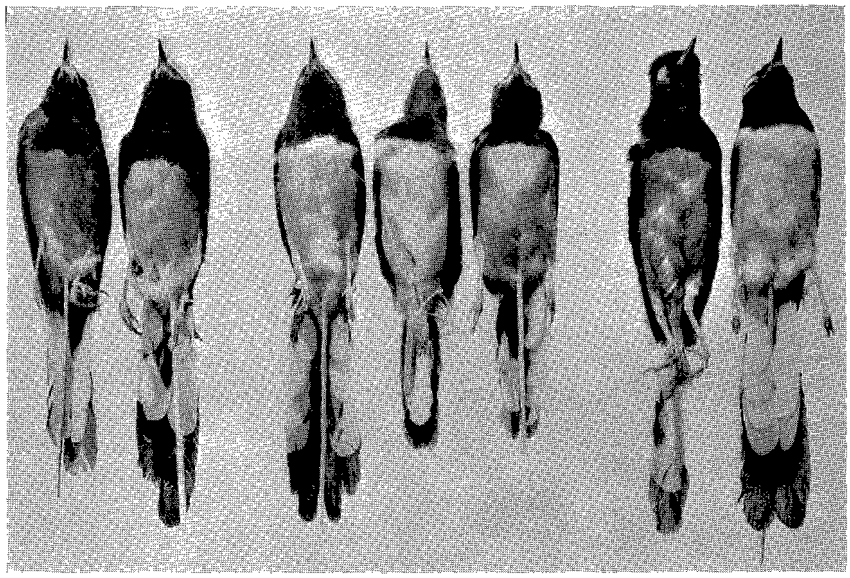
EXPLANATION OF PLATE IV

Fig. 1. *Copsychus malabaricus* ♂♂.
C.m. tricolor: 1. Meeuwen Island, Udjung Kulon, West Java.
2, 3. Udjung Kulon Peninsula, West Java.
6. Palembang, South Sumatra.
7. Lampong District, South Sumatra.
C.m. javana: 4, 5. near Semarang, Central Java.

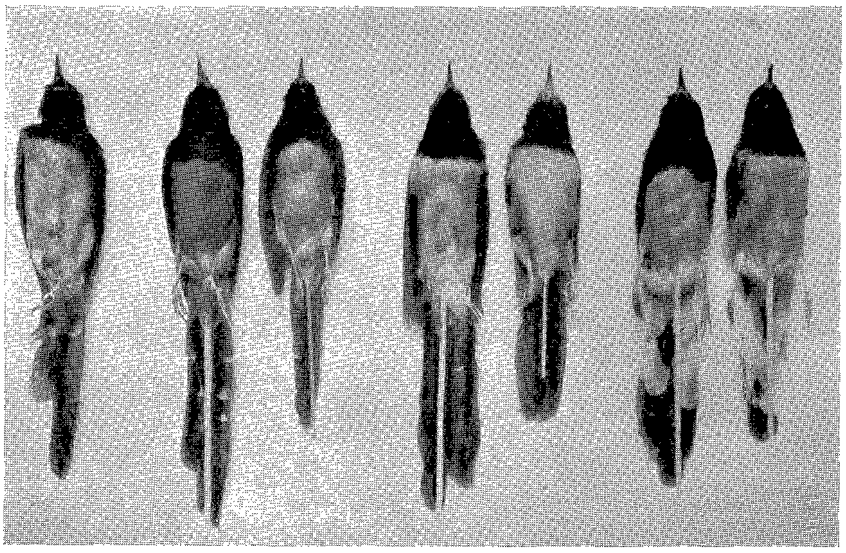
Fig. 2. *Copsychus malabaricus*.
C.m. melanura: 1. West Sumatra.
C.m. mirabilis 2, 3. Prinsen Island.
C.m. nigricauda: 4, 5. Kangean Islands.
C.m. tricolor: 6, 7. West Java.



1 2 3 4 5 6 7

Fig. 1. *Copsychus malabaricus* ♂♂

Explanation on opposite page.



♂ ♂ ♀ ♂ ♀ ♂ ♀
1 2 3 4 5 6 7

Fig. 2. *Copsychus malabaricus.*

Explanation on opposite page.

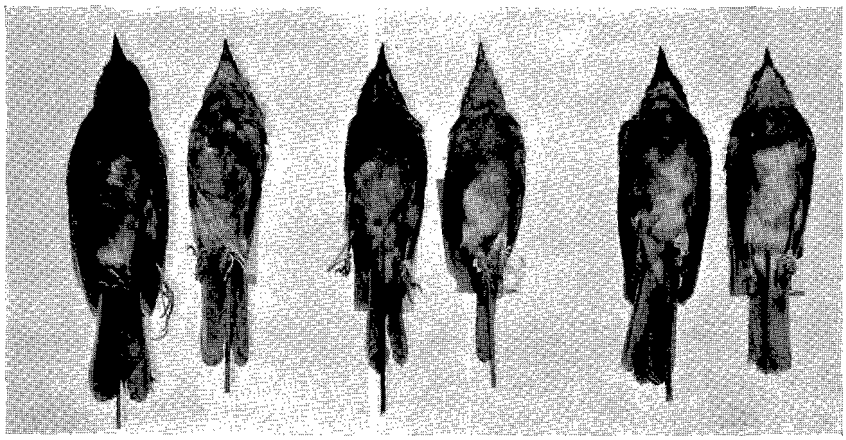


Fig. 1. *Niltava banyumas.*

Explanation on opposite page.

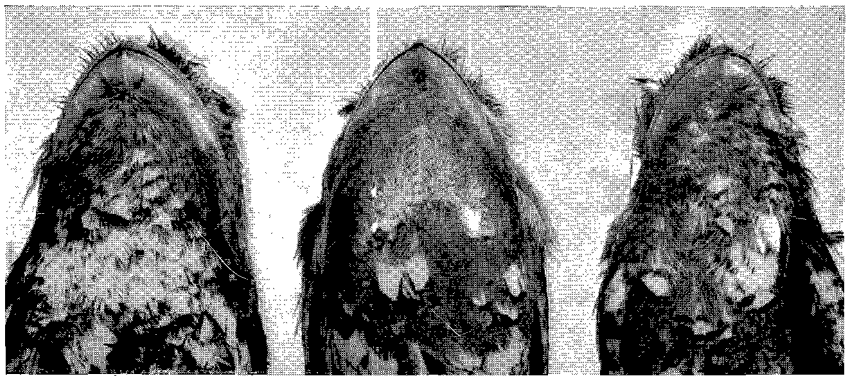


Fig. 2. *Batrachostomus javensis* ♂♂.

Explanation on opposite page.

most distinct in the females. Because of the fact there were only one or two birds with large ovaries in our fresh series, we compared birds with small but well granular ovaries. The green on the chest of Karimundjawa females is not only darker than in *kangeana* but even than in *griseicapilla*, throat and foreneck are decidedly less green and more greyish and the light area on the lower under parts is creamy against clear yellow in *kangeana*, rather similar to two fresh females of *griseicapilla* from Prinsen Island and Sebuku, but very different from a fresh skin from Sangijang Island and all old and fresh skins of *griseicapilla* from various parts of its range, which have a nearly clear yellow belly. The yellow on the wing coverts is also less clear in birds from Karimundjawa than it is in *kangeana* or *griseicapilla*. On the upper surface all females from Karimundjawa are darker green, less washed with yellow than *kangeana*.

Also when compared with 7 males and 2 females recently collected in Central and East Borneo which parts fall within the range of *griseicapilla*, the differences with birds originating from Karimundjawa Islands are outstanding which is not only the case when looking upon the colour differences but also when considering the measurements of wings and tail. These Borneo males show much clear orange yellow on the chest and the blue-grey and vinaceous areas on occiput, nape and upper mantle are large, causing the difference with material from Karimundjawa still more strikingly present than is the case when comparing this last population with material from Java and Strait Sunda.

From the above it is evident that the population of *Treron vernans* which inhabits the Karimundjawa Archipelago cannot be considered as identical with *kangeana*, nor with *griseicapilla* or *purpurea* either. *Parva* and *zalepta* are distinctly smaller as is the case with *mesochloa* and *miza*

EXPLANATION OF PLATE V.

Fig. 1. *Niltava banyumas.*

N.b. cantatrix: 1. West Java.
N.b. banyumas: 2. East and Central Java.
N.b. mardii: 3. Prinsen Island.

Fig. 2. *Batrachostomus javensis* ♂♂.

B.j. cornutus (Sumatra), *left*: bill very wide.
B.j. javensis (Java), *middle*: bill narrower.
B.j. longicaudatus (Kangean Islands), *right*: bill narrowest.

though to a smaller degree, but they also differ on other points from *kangeana* and from birds coming from Karimundjawa, for instance on account of their much lighter colour. I did not see *idina* but concluding from the diagnosis I should say that this is again a subspecies which differs much from Kangean and Karimundjawa birds.

I propose to separate the population of *Treron vernans* living on the Karimundjawa Archipelago under the name:

Treron vernans karimuniensis *subsp. nov.*

Type: ♂. Mus. Zoöl. Bogor, No. 23.918, 31 October 1955. Karimundjawa Archipelago, Java Sea; leg. A. HOOGERWERF.
♀. Mus. Zoöl. Bogor, No. 23.922, 5 November 1955, Karimundjawa Archipelago, Java Sea; leg. A. HOOGERWERF.

♂♀. Much larger than *griseicapilla* of West Java, *purpurea* of Central and East Java and Southeast Borneo and *parva* of North Sumatra, also larger than *miza*, *mesochloa* and *zalepta*; the female averages also somewhat larger in the wing than *kangeana* but the male somewhat smaller, though the tail in both sexes again averages a trifle longer in the new subspecies and the females average somewhat heavier in the bill than *kangeana* which is more striking than is shown by the differences in measurements given in Table 5.

♀. Characters most distinct in the females. In plumage closer to *kangeana* than to *purpurea* or *griseicapilla*, but green on the chest darker than in all of these subspecies and more greyish, less green on throat and foreneck; light areas on the lower under surface and smaller under tail coverts creamy, much differing from *kangeana* which has more yellow on those parts as is the case in nearly all *griseicapilla* we studied. The same holds good for the light markings on the wing coverts in *karimuniensis* which are of a paler tinge than is usually the case in *kangeana* and *griseicapilla*. In the upper parts too all females of the new race are darker green, less washed with yellow than *kangeana* or *griseicapilla*. Both on the upper and under parts birds belonging to these two subspecies make a more yellowish impression than *karimuniensis*.

♂. In the males the green, vinaceous and grey on the under parts average somewhat darker than in *kangeana* or *griseicapilla*, the green is less washed with yellow; about the same is the case with the green of the upper parts and the grey on crown and neck; the green is duller and the grey seems somewhat intermediate between *kangeana* and *griseicapilla* but more resembling the tinge of the latter subspecies and this holds good too for the cinaceous colour of the nuchal collar; the grey and

vinaceous area averages smaller than is usually the case in *griseicapilla*. The orange patch on the breast averages smaller than in *griseicapilla* and *kangeana*.

From MAYR's publication (1938) it is evident that he found his (few) *kangeana* closer to (paler) *purpurea* than to darker *griseicapilla* and this is not at all the case with the new subspecies *karimuniensis* which is very dark as we tried to prove above after studying good series of fresh skins, taken not yet fully two years ago when writing this paper.

We have only one skin of *Treron vernans* from Bawean Island where we found the species rare when we visited the area in May and June 1954. Our bird is a not yet fully adult male which seems more closely related to *karimuniensis* than *griseicapilla* or to *purpurea*, also on account of its larger wing which measures already 150 mm.

For measurements: see Table 5.

TABLE 5

Measurements of subspecies of *Treron vernans*.

		South Sumatra, Billiton I., West Java *griseicapilla*			Islands in Strait Sunda *griseicapilla*			Karimundjawa Islands *karimuniensis*			Kangean Islands *kangeana*		
	Sex	Number of specimens	Variation	Average	Number of specimens	Variation	Average	Number of specimens	Variation	Average	Number of specimens	Variation	Average
Wing	♂	10	133-151	143.1	11	136-149	142.7	8	147-162	153.0	4	150-165	156.5
	♀	8	134-151	140.3	7	131-148	137.0	6	148-155	151.2	7	139-154	148.6
Tail	♂	10	78-95	89.0	11	84-95	90.7	7	96-107	102.7	3	99-103	100.7
	♀	8	83-90	86.3	7	75-87	81.7	6	91-96	93.0	7	79-97	90.0
Culmen	♂	10	14-16.2	14.9	11	13.5-17	15.5	8	14-16	14.8	4	15.3-17	15.9
	♀	8	14-16.5	15.2	7	14-18	15.3	6	14-16.7	15.1	6	14-15.5	14.6

Turnix suscitator (Gmelin) — Bustard Quail

When comparing specimens of this Quail belonging to the nominate race with those of the subspecies *kuiperi* (Chasen, 1937), known from the island of Billiton, and with *powelli* from the Lesser Sunda Islands, it is rather easy to separate the birds belonging to those 3 races on account of the particulars given in the diagnoses. The female of *kuiperi* averages in having less black on the chin, throat and foreneck than in birds of the

nominate race in which moreover the dark markings on the under parts do not spread so far downward as in *kuiperi*. Finally the lower under surface is less washed with buffy in birds of this last race. The subspecies *powelli* can be separated at a glance on account of the lack of hardly any buffy tinge below which gives the under parts quite a different appearance.

Though the upper parts show a considerable individual variation in colour and markings, it is not difficult to separate birds of these three subspecies when studied in series. *Kuiperi* is darker with the markings more sharply defined than in birds of the nominate race, whereas the female of *kuiperi* averages somewhat darker on the pileum. The females of *powelli* are more uniform grey above than in both other races giving the upper parts of *powelli* quite a different appearance. In the males this difference is less obvious but still present.

The 3 males and 3 females secured by me on the island of Bawean are strikingly different from the three subspecies discussed above. In markings and colour of the under parts they seem somewhat intermediate between *kuiperi* and *powelli* as they are less buffy than *kuiperi*, but they show much more of this tinge than in *powelli*. Moreover the females of Bawean have still less black on the chin and throat than *kuiperi* and perhaps also than *powelli*. On account of the considerably less amount of buff on the under surface these birds make quite a different impression when compared with *suscitator* and *kuiperi*. When looking upon the upper parts the male as well as the female seem intermediate between birds of the nominal race and *powelli*, for the markings are somewhat more numerous than in this last race, but strikingly scarcer than is usually found in birds belonging to *suscitator*. Pileum and nape of the females are very dark, perhaps averaging darker than in *suscitator* or *powelli*, sharply contrasting with the lighter mantle. One of the females has a russet coloured nuchal collar as is present in certain specimens of *suscitator* and *kuiperi*. The markings on the wing are less striking than in the last named subspecies and are rather similar to *powelli*.

There is not much difference in size between the representatives of the different subspecies indicated above, but the bill is somewhat shorter in the male bird and decidedly more slender in both sexes of birds from Bawean, especially when looking upon the basal part of both mandibles.

The only female of the subspecices *rufilata* present in the Museum at Bogor differs at a glance from Bawean birds by the more thickset bill, showing a very heavy base. Moreover this female does not show any black on the chin and throat and has much finer bars on the under surface. The tinge of the lower under parts shows much resemblance with that

in the birds from Bawean but the upper parts seem to resemble those of the females of *powelli*.

The *post-mortem* changes in the plumage of *Turnix suscitator* do not seem important, nor is there much difference either between skins preserved in formalin and those preserved without using liquids.

The population of this Quail, living on the island of Bawean is strikingly different from the four races discussed above and must be separated. I propose to name it.:

Turnix suscitator baweanus *subsp. nov.*

Type: ♂. Mus. Zoöl. Bogor, No. 22.783, 29 June 1954, Muara, South Bawean, Java Sea; leg. A. HOOGERWERF.
♀. Mus. Zoöl. Bogor, No. 22.785, 1 July 1954, Muara, South Bawean, Java Sea; leg. A. HOOGERWERF.

♂♀. In measurements of wings and tarsi, birds belonging to the subspecies mentioned above do not differ much, but the bill of the male bird of *baweanus* is a trifle shorter and in both sexes decidedly more slender than in representatives of the other races, which character is very striking when comparing the bills from aside because both mandibles are much lower at their base.

♀. Black on the chin, the throat and foreneck less extensive (spread over a much smaller area) than in all other subspecies mentioned above, excepted perhaps *rufilata* of which the only skin before me shows no black at all on those parts; dark and light bars on foreneck and breast are on the average less coarse, more resembling *powelli* than *suscitator* or *kuiperi*. Less and duller buffy on the lower under parts than in the last named subspecies, rather similar with the female of *rufilata*. Much differing from *powelli*, which is greyer on the under surface without or nearly lacking any buff.

Plumage of the upper parts shows fewer markings than in *suscitator* or *kuiperi* but the markings are more numerous than in *powelli*. Crown and neck dark, in one skin joining on to a distinct rufous collar. Also on wing quills and wing coverts the markings are less extensive than in *suscitator* or *kuiperi*, in this respect too more resembling *powelli*.

♂. and juv. ♀. Much less and duller buffy below than in *suscitator* or *kuiperi*, most conspicuous on the lower under surface but more buffy than in *powelli*. As in the adult females of the new race the markings on upper parts and wings are scarcer than usually found in *suscitator* or *kuiperi*, more resembling *powelli* though in this last race the general colour of the wings seems lighter. But the material of this subspecies

before me is already 20-30 years old so that this character may not have much subspecific value.

Of the six skins of *baweanus* five were taken from birds with strongly developed gonads and also among the specimens with which we compared the new subspecies, special attention was concentrated on birds with gonads in the same state of development.

The subspecies *atrogularis*, perhaps living in North Sumatra could not be studied, but according to the diagnosis *baweanus* cannot be identical with this subspecies.

For measurements: see Table 6.

TABLE 6

Measurements of subspecies of *Turnix suscitator*.

		Various localities *suscitator*			Billiton Island *kuiperi*			Lesser Sunda Islands *powelli*			Bawean Island *baweanus*		
	Sex	Number of specimens	Variation	Average	Number of specimens	Variation	Average	Number of specimens	Variation	Average	Number of specimens	Variation	Average
Wing	♂	5	76-86	82.8	5	82-87	84.6	2	82, 87	84.5	2	82, 89	85.5
	♀	10	83-92	87.9	7	85-90	88.4	4	90-93	91.3	3	82-94	88.7
Culmen	♂	5	11-12.5	11.8	5	11.5-13	12.1	2	13, 13	13.0	2	11, 12	11.5
	♀	10	13-15	13.7	7	13.5-15	14.2	5	12.5-14.5	13.4	3	13-14.5	13.8
Height of bill	♂	5	5-6	5.7	4	5-6	5.4	2	5, 6	5.5	3	5-5	5.0
	♀	11	5.5-8	6.5	5	6-7	6.6	5	6-7	6.3	3	5.5-6	5.7

Psittacula alexandri (Linnaeus) — Red-breasted Paroquet

When the variations in plumage owing to age-differences are excluded, the feathers of the under surface do not vary much in the series of this Paroquet before me which belong to the subspecies *alexandri* from Java and *dammermani* (CHASEN, 1933) from the Karimundjawa Islands. However, there is some individual variation in the extension and tone of the rose colour on those parts and in the tinge of the green on the belly and under tail coverts, which are uniform green in certain specimens but usually washed with some blue. There is also some variation in the extension of the black patch on the cheeks and in the tinge of the grey on the sides of the head and neck, usually mixed with a varying quantity of olivaceous green. Some variation too is shown in the yellow tinge on

the wing coverts and in the tone of the green of the upper parts. There is rather much difference in the extension and tone of the grey on the pileum, nearly without exception washed with some blue, sometimes rather importantly. This is most strikingly the case in birds originating from the Karimundjawa Islands, as well as in specimens obtained not yet fully one year ago as in those secured as long as 27 years ago.

When comparing the skins of this species originating from Kangean with those obtained on the Karimundjawa Islands, it is evident that none of the Kangean birds has so much blue in the grey of the head as most of the Karimundjawa skins and that the grey tinge extends lower down the neck than is the case in *alexandri* and *dammermani*. The difference in the tone of this grey colour is also distinct on the sides of the head and neck. Besides by this difference Kangean birds can be separated on account of the larger quantity of yellow on the wing coverts. Though there is some individual variation on this point, it is evident that when seen in a series the birds from Kangean definitely show the greatest amount ot yellow on the wings; this holds good for both sexes.

On the under surface the difference between birds from Kangean and those belonging to the nominate race and *dammermani* seems not important but perhaps the green on the lower under parts covers a smaller area than in *dammermani* though not different from *alexandri*.

Comparing old and fresh skins of *dammermani* with recently collected birds from Kangean, many females can be separated from the males because of their darker rose under parts which are less washed with blue in the regions where this colour meets with the green tinge of the lower under surface.

In measurements Kangean birds are intermediate between *alexandri* and *dammermani*, but the bill is still heavier than in birds of the last named subspecies which is most obvious when seen from aside, as the bill is higher.

MAYR (1938) gives the wing measurements of Kangean skins in the ROTHSCHILD collection as 158-164 mm, thus rather well fitting in the measurements as we found them, but he had not enough material at hand to separate Kangean birds from *dammermani*. CHASEN (1935) included Kangean in the range of *alexandri* without having enough material at his disposal to justify this statement. After comparing my material with skins present in te American Museum of Natural History, Dr. D. AMADON wrote me: "Your Kangean race seems perfectly valid and good".

The gonads of our Kangean birds were small in most specimens but some males had testicles from 5 to 10 mm. The females from Karimun-

djawa had also small gonads except one or two birds, but the males had large testicles (8-22 mm).

On account of the differences in feathering and size, indicated above, I propose to separate the Kangean population of *Psittacula alexandri* under the name of:

Psittacula alexandri kangeanensis *subsp. nov.*

Type: ♂. Mus. Zoöl. Bogor, No. 23.130, 22 August 1954, Bujutan near Ardjasa, Kangean Islands, Java Sea; leg. A. HOOGERWERF.
♀. Mus. Zoöl. Bogor, No. 23.134, 24 August 1954, Bujutan near Ardjasa, Kangean Islands, Java Sea; leg. A. HOOGERWERF.

TABLE 7

Measurements of subspecies of *Psittacula alexandri*.

		Java *alexandri*			Karimundjawa Islands *dammermani*			Kangean Islands *kangeanensis*		
	Sex	Number of specimens	Variation	Average	Number of specimens	Variation	Average	Number of specimens	Variation	Average
Wing	♂	6	145-157	150.3	10	165-183	174.1	7	160-168	163.1
	♀	5	142-157	147.6	5	164-173	168.8	3	155-157	156.0
Tail	♂	4	152-185	165.0	9	160-225	188.6	6	172-206	188.7
	♀	4	130-150	140.5	3	167-192	177.0	1	150	
Culmen	♂	6	26-29	27.8	10	28-32	29.6	5	29-31	29.6
	♀	5	26-28	27.2	5	27-29	27.8	3	27-29	27.7
Height of bill	♂	5	24-25.5	24.8	5	25-26	25.3	5	25-27	26.2

♂♀. Larger than *Psittacula a. alexandri* from Java, but smaller than *dammermani* from the Karimundjawa Islands; bill still a trifle heavier than in *dammermani*.

Yellow colour on wing coverts in male (with equally developed gonads) of *kangeanensis* clearer and spread over a larger area than in *alexandri* or *dammermani*. In the only three females before me this character is less distinct.

All adult specimens of this new race have less blue in the grey of head and neck, which is most distinct on the crown, so that the upper head is purer, about light olive grey. Especially the fresh female skins of *dammermani* have much blue in the grey of the head.

On the lower under parts of the males the green area seems smaller than in *dammermani*, rather similar with males from Java; the slight differences in the tinge of red and green on the under parts do not seem to be of subspecific significance.

According to CHASEN (1933) the subspecies of *alexandri* described from the islands off Sumatra's Westcoast, agree more with the northern race *fasciatus*, so that apart from its smaller size *kangeanensis* cannot be identical with birds originating from these parts of the Indonesian Archipelago. Two skins belonging to the subspecies *cala*, known from Simalur, and *perionca* from Nias Island have a much smaller bill and more black on the bill than have birds from Java, Karimundjawa or Kangean.

For measurements: see Table 7.

Batrachostomus javensis (Horsfield) — Javan Frogmouth (Plate V)

The four specimens belonging to this strange forest-bird, secured by me on Pulau Sepandjang of the Kangean Archipelago are all males. They could be compared with four males of the subspecies *cornutus*, six males of *javensis*, four of which were borrowed from the Leiden Museum. They have also been compared with *Batrachostomus mixtus* and *B. poliolophus*.

The large measurements and the different tinge of the plumage make these Kangean birds at a glance separable from those belonging to the nominal race so that it is only necessary to compare them with *cornutus*, known from Borneo, Billiton and Sumatra. When comparing the under parts of our four Kangean birds with four rather fresh males from Billiton and Sumatra, classified as *cornutus*, the markings and colour of the feathers do not differ much, but in *cornutus* the markings show more contrast on the under surface.

There are more differences on the upper parts on account of the dark areas. These are restricted to a minimum in Kangean birds and most obvious on the mantle, nape and pileum. In addition the white on forehead and nuchal collar is much less extensive than in *cornutus*. The pileum and the nape show distinct dark markings in the four specimens of *cornutus*, but in birds from Kangean these parts of the plumage are a uniform brown with regular, fine dark bars. By this character these birds are at once separable from *cornutus*.

The most important difference between birds belonging to both populations is formed by the distinctly less heavy bill of the birds from Kangean, which is especially striking when looking upon them from below. The tail is distinctly longer.

The only male of *B. poliolophus* known to science and collected by HANS BARTELS in Sumatra (M. BARTELS, 1938) differs importantly from our Kangean males, not only in plumage but also in size, especially the length of the tail, which, also according to ROBINSON and KLOSS (1924) is much shorter. According to my opinion it may be doubted, however, whether this Sumatran skin of *poliolophus* has been correctly sexed because of the striking resemblance with females.

Batrachostomus mixtus from Borneo, which perhaps must be seen as a race of *poliolophus*, cannot be identical with birds from Kangean on account of the longer ear-bristles and the much shorter tail. One male bird, recently collected in Borneo and identified by Prof. STRESEMANN, belongs to *mixtus*, though the bill- and ear-bristles are rather short, nearly similar to those of *javensis*. The tail, however, is very short, though averaging distinctly longer than in *poliolophus* but much shorter than in Kangean birds.

In view of the great importance which STRESEMANN (1937) attached to the difference in size of the tail and the ear coverts, it may not be doubted that *Batrachostomus* from Kangean must be seen as a subspecies of *javensis*.

Two birds collected on Kangean had the testicles rather well developed (length about 4 and 8 mm), the other birds had small gonads. These last specimens show less white on the mantle and on the lower parts.

From the above it seems evident that the Kangean specimens of this species of *Batrachostomus* cannot be included into one of the subspecies indicated above. They also differ from *chaseni* and *continentalis*, because of their larger size and because of differences in the plumage, nor do they agree with *Batrachostomus poliolophus* or *B. mixtus*.

I have to thank Prof. Dr. STRESEMANN who was so kind to compare my birds with some material at hand in Berlin which induced him to write: "*Batrachostomus* von Kangean ist eine sehr deutlich neue Subspecies von *B. javensis*". Therefore I propose to separate the Kangean Frogmouth under the name:

Batrachostomus javensis longicaudatus *subsp. nov.*

Type: ♂. Mus. Zoöl. Bogor, No. 23.136, 10 September 1954, Pulau Sepandjang, Kangean Archipelago; leg. A. HOOGERWERF.

Bill much smaller than in *cornutus*, but only a trifle smaller than in the typical race. Tail longer than in both these subspecies; wing much longer than in *javensis*. The difference in size of the bill with *cornutus* is much more evident in view than seems to be the case when considering

the measurements given below; it is most distinct in the width of the mouth.

The plumage seems closest to *cornutus* but the markings on the upper parts show less contrast. The very dark areas of the upper parts are reduced to a minimum, most strikingly on mantle, nape and pileum. The dark markings, so strikingly present in fresh skins of *cornutus*, largely fail on the nape and pileum in *longicaudatus*. These parts are more or less uniform brown, with regular fine, dark bars, whereas in the new subspecies also the light areas on the forehead and the nuchal collar are reduced to a minimum. The markings on the under surface too show

TABLE 8

Measurements of subspecies of *Batrachostomus javensis*.

		Java [1]) *javensis*			Sumatra *cornutus*			Kangean Islands *longicaudatus*		
	Sex	Number of specimens	Variation	Average	Number of specimens	Variation	Average	Number of specimens	Variation	Average
Wing	♂	12	122-129	124.8	5	130-139	134.2	4	133-140	136.3
Tail	♂	9	93-120	110.4	5	118-142	130.2	4	131-145	138.8
Wing/tail index	♂	9	86.4-93.7	88.6	5	89.4-102.2	96.9	4	98.4-104	101.8
Culmen	♂	12	16-19	17.3	5	20-23	21.6	4	20-22	21.0
Width of bill	♂	12	30.5-33.5	32.2	5	33.5-37	34.8	4	29-33	31.5

[1]) Measurements taken by the late Dr. G. C. A. JUNGE from material in the Leiden Museum.

less contrast, but this is less striking than on the upperside. In comparison with *longicaudatus* the subspecies *javensis* is much lighter and more ferruginous in the areas where *cornutus* and the new race are dark brown or even partly nearly black.

The subspecies *chaseni*, known from Palawan and Banguay Islands, and *continentalis* from the continent of Asia are much smaller; besides, they differ in other respects. *Batrachostomus poliolophus* and *B. mixtus* from Sumatra and Borneo, have a much shorter tail and longer ear-bristles.

The female of this subspecies is not yet known.

For measurements: see Table 8.

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