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SOME DATA ON THE AVIFAUNA OF THE ISLAND OF ROTI, LESSER SUNDA ISLANDS, INDONESIA

by

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INTRODUCTION

For several years I had been looking for an opportunity to visit the island of Roti (Rotti, Roté, Loté). Junge (1954) mentions that only once an ornithological collection was made in the island, namely by Dr. H. F. C. ten Kate, an ethnologist who visited the island in 1891. Büttikofer (1892) listed five species (six specimens) collected by him.

By abbreviating my leave in Holland, it became possible to carry out my plan. My diligent helpers were Mr. L. Anggas and Mr. S. Li Djelanu. On 21 February, 1969, we left Ruteng in West Flores and after a long journey we reached the small harbour of Namo-Dalé on the north-coast of Roti on 12 March. With the kind help of Mr. Ir. Matheos Meroukh I had obtained permission to collect a limited number of protected birds for scientific purposes. Our work was made much easier by the hospitality of Father Fr. Lackner S. V. D. We found a fine working room, and in his house had no trouble with board and lodging. On the other hand, Roti had almost no means of transport, and all of us were seriously ill for some days. To this should be added that collecting was handicapped by lack of fire-arms. On the island there were no guns except the carabines of the police.

Just like for my visit to Palué in 1960 (Verheijen, 1961), I had chosen the end of the monsoon, supposedly the most important breeding season of many birds. People can then easily snare birds on their nests, and at the same time they can collect their eggs or their young. Much worse results were obtained by trapping them with lime-twigs, which are in common use, especially on the island of Ndao. It was a difficult task to make it clear that only undamaged specimens were wanted. We also used mist-nets, but it was a time-consuming work to repair them after they had been damaged by fierce or too big birds.

With the help of data about Timor (Hellmayr, 1914; Mayr, 1944), about Sumba (Mayr, 1944) and Sawu (Hartert, 1897), I had composed a list of 182 species which could be expected to be found in Roti. Such a list is not only of great use for the amateur-ornithologist to quickly identify his catches but also to get information as to the occurrence of birds in certain places, and to obtain their local names. In fact, the study of vernacular bird names was one of the main aims of our trip. Of course, this kind of information can most fruitfully be collected only at the end of an expedition. Therefore, it was a pity that I had to depart earlier than originally planned, when a very suitable motorboat appeared in the harbour of Namodulé. This is the reason that I studied only the names of the dialects of Ba'a with the help of a very good birds' connoisseur, Mr. Sakarias Mandala, and of Bilba and Diu together, with the kind assistance of Mr. N. Kisse and Mr. F. F. Oe-Ina. The names used in the island of Ndao, where a kind of Sawunese is spoken, I chiefly owe to Mrs. Rudolf and Sebastian Mengga. As here the area of observation was smaller and as I studied more in the field, the data are probably fairly complete. Before the trip I had excerpted the names of birds from Jonker's dictionary (1908), but since I had no opportunity to question informants speaking his dictionary's Termanu dialect, these were not very useful, particularly as Jonker only gives very scanty descriptions of birds. Much better I was served by the characterizations given by the Rotinese teacher, Mr. L. Foeh, to Dr. James J. Fox, who kindly placed them at my disposal. It was a pity that these data only reached me after my return from Roti.

THE VISITED ISLANDS

Roti is an oblong island with deep bays in the east. It measures approximately 1200 km², and is separated from Timor by a deep 11 km wide strait. However, it seems to be connected with it by a shallow shelf via the island of Samau. The highest mountain is 430 metres. It is hardly relevant to speak about all of Roti's biotopes, since I made observations and collected only in the north-western strip of the island.

Most materials originate from the vicinity of Namodulé. This is a small port with a few streets and an aloon-aloon¹). Around it are houses in gardens, scattered over the narrow delta and against the slopes of the hills. There is a small stream which never dries up. There grow many coconut and mango, and various other trees. Several times I walked along the beach west of Namodulé for some 5 km. The sandy strip is narrow. At low tide some

1) Aloon-aloon, or alun-alun, an esplanade or square.

large sandy and rocky shoals are visible. Mangrove swamps also occur. Behind the beach there are no dunes, but we find shrubs, wet pastures, a few wet rice-fields and, farther inland, a hilly country scarcely overgrown with grass, with dispersed shrubs, small trees and Palmyra Palms (*Borassus flabellifer*). Some 4 km from Namo-Dalé to the west lies the small lake (Dano) Bais, not far from the coast. When I visited it, the lake measured approximately 100 by 200 metres, but being very shallow, it would be much smaller in the dry season. The deepest spot is some 2 metres. Broad borders are overgrown with rushes, and a few trees were standing in the water.

Twice I visited the 70 m high uplands south of Namo-Dalé, with wet rice-field complexes and extensive grasslands. There I walked some 7 km in the direction of Ti, and visited the environs of the village of Mok-Dalé. Returning from Ndao, we went ashore in the bay of Liti-Ana in Dénka, 25 km west from Namo-Dalé. At daybreak we began the long walk to that place. The way runs for a short part along the coast, but mostly through the low hills. In the morning many bird-songs could be heard, and I had the opportunity to make some interesting observations.

The islet of Ndao — called Dao by the inhabitants — measures 3 by 9 km. It was reached on a sampan after 24 hours sailing and rowing on a sometimes very rough sea. It is situated 7 km westward of Roti, but the gap is broken by the sandbank of Do'o. For three weeks I have lived in the very hospitable home of Mr. Sebastian Mengga, where the ladies Lina Ai, Lina Iki and Gita did their utmost to spoil me in their own simple manner. Except for the lodging and meals, I could dispose of the only table available for working and writing, and of facilities for questioning informants and receiving visitors. The fact that the house was open at every side had the disadvantage that there was no privacy, and these visitors, especially sick ones, were very numerous. I spent much time with them. Besides, I studied their most interesting language and collected plants. So birding was not the order of the day. Finally, having packed everything, I lost another two days by waiting for the sailing of our sampan.

I crossed almost the whole island. The central part has a rather fertile soil, and there most of the 2000 inhabitants are living. The crop consists mainly of the Indian Millet, *Sorghum vulgare*, which was harvested during our stay, the Mung Bean, *Phaseolus radiatus*, and the very small-grained Italian Millet, *Setaria viridis* var. *italica*. Fruit- and coconut trees and also bananas are not numerous. Very important are the Palmyra Palms. The sap is tapped by the men from 12 to 60 years, and this is the only food before noon for most people. For us it meant a very welcome substitute for the brackish drinking-water. The eastern part of the island is rocky, the western part is sandy with

a few rocks. In the eastern part I visited a few small caves in the rocks. There the sonar of the *Collocalia* sp. worked too well so that they could not be trapped in our nets. Only some fruit-eating bats could be caught. Many men go out fishing to the sea, and to them I owe some sea-birds and birds from Do'o, where they often gather.

For 24 hours I stayed on the islet of Do'o (or Doö), which measures 3 by 1½ km. It is a sandbank situated on a much larger rocky underground, which partly emerges during low tide. The islet is not higher than 10 metres, faintly undulating and overgrown with grass, shrubs and small trees. The most conspicuous plants are the abundant Pandanus trees, *Pandanus tectorius*, in which herons were nesting. On the plains I witnessed the hunting of the Swamp-Quail, *Synoicus ypsilophorus*. After having been aroused two or three times, the birds seek to conceal themselves under a tuft of grass, but are often caught in their hiding-places. One wonders how this bird, that so much avoids flying, could cross so many gaps between the islands in this area.

The islet of Nusé was visited on the return voyage to Roti. I crossed its whole breadth. As this was during the hottest hours around noon, not many birds were observed, but its impressive scenery, with a rather large lagoon in the distance, invited to a future visit. Just then many trees of a certain *Ficus* sp. were bearing abundant, bead-sized, delicious berries, which we also appreciated. I suppose that they attract many birds.

In the systematic list, behind the scientific names, the vernacular names are given (as far as known to me) as used in Ba'a (marked I), in Termanu (II), in Diu/Bilba (III) and in Ndao (IV). Later, in an article on bird-names in the Lesser Sunda Islands, I hope to go into the problems of orthography, etc. Ternary nomenclature is used only in those few cases, where it is relevant to the discussion or where subspecific characters are very pronounced.

Of each species is mentioned on which island its occurrence could be established. However, it should be noticed that the degree of "certainty" about this occurrence is not always the same. In the first place we have the 46 species of which material was collected and forwarded to the Rijksmuseum van Natuurlijke Historie, Leiden, where the identifications, which I had made with the help of my colleagues Adriaan Schouten and Erwin Schmutz, were checked; and also Ten Kate's 5 species. The second group, some 33 items, consists of birds that have only been observed by me. Finally, there are the names of those birds, approximately 16, which more or less clearly are known to the people, but were not collected nor observed. I came across most of these by asking by means of my (hypothetical) list. From experience I am

fully convinced of the need of critical treatment of such information, but I think that the names received can reasonably be answered for. Of course, by not knowing the vernacular language, many clues for identification passed unnoticed.

My visits to the islands were on the following dates: Roti from 12 to 31 March and 24 and 25 April; Ndao from 1 to 23 April; Do'o on 13 and 14 April; Nusé on 23 April, all in 1969.

LIST OF SPECIES

Podiceps sp. — I: dudi-oé; III: koki-oé.

A small grebe occurring on the lake (Dano) Bais on Roti. I saw only one specimen. It is also reported from other lakes.

Sula leucogaster Boddaert.

The Brown Booby was several times seen by me near the coasts of Roti, Ndao and Do'o.

Fregata minor (Gmelin) — I: ?inus; ?inus; IV: lino.

Several times I saw small groups of these birds flying over the islands of Roti, Ndao and Do'o. Sometimes the red pouches of the males and the white breasts of the females were very conspicuous.

Phalacrocorax melanoleucos (Vieillot) — I: susi-oé; II: sui-oé; III ?téméi.

Every time I visited Lake Bais, one, probably always the same, specimen was seen sitting on a branch over the water. It is said to occur also at other lakes.

Ardea sumatrana Raffles — IV: mangra-rou.

I saw the Giant Heron often on the reefs of Do'o and Roti. The birds always stayed far away.

Ardea purpurea L.

Once I saw this species, or *Ardea cinerea* L., flying over Namo-Dalé in Roti.

Ardea novaehollandiae Latham — I: danoé; III: danoé-ngéo.

The White-faced Heron is the best known heron in the vicinity of Namo-Dalé. It is often seen in the villages, and nests there. I could collect adults, nestlings and a clutch of eggs. Right in front of the presbytery I saw an individual of this heron alight on a coconut leaf. While making the sound

“chor, chor” it walked towards the base of the leaf, remained unseen for a short time, stepped back and flew away. This happened several times. On 16 March its nest was found in a leaf-axil, and the clutch of four eggs, slightly incubated, light greenish blue with some chalky blotches, was collected. The broad to normal-oval shells with well differing ends are rather smooth, and faintly glossy. The measurements are 46.70×35.40 , 46.30×35.35 , 46.00×36.20 and 43.85×36.20 mm. The birds are kept by the people. This species was not seen by me on the other islands.

Egretta intermedia (Wagler) — I: danoé-fulak; IV: ha'u.

This heron was collected in Do'o and probably eggs of this species were offered to me from there. I saw white egrets in Roti, but I was not able to identify them with certainty. I think to have seen also *Demigretta sacra* (Gmelin).

Bubulcus ibis coromandus (Boddaert) — I: danoé-fulak; III: danoé-fula'.

On my way from Liti-Ana I observed two Cattle Egrets on the back of water-buffaloes and seven other specimens in their neighbourhood. The species was also seen flying over Lake Bais.

Butorides striatus (L.) — I: danoé-nggoa.

I saw the bird several times in mangroves on the coast of Roti and in Dano Bais. When flying away they called something like “hoh”.

Dupetor flavicollis (Latham) — I: ?danoé-manuk, ?danoé-nggoa.

I believe to have seen the Black Bittern near mangroves or trees on the coastal strip of Roti and Do'o.

Nycticorax caledonicus (Gmelin) — III: ?doá; IV: busa-liru.

On 14 April people brought to me from the island of Do'o a female with oöcytes of 2 mm in diameter. Night herons are said to occur also on Roti.

Platalea (leucorodia) regia Gould — I: mbui-suluk; III: danoé-suluk.

Hunters told me to have shot the “Spoon-Bird” or “Spoon-Heron” both on the north and on the south coast of Roti.

Dendrocygna arcuata (Horsfield) — I: timéi, ti(a)-méi-ndalak.

I saw six Whistling-Ducks on Lake Bais in Roti. A young one with not yet developed flight-feathers was given to me on 27 March. Three funny

pulli were brought to me from the Dénka wet rice-fields on 21 March. According to an interesting information by Mr. Foeh given to Dr. Fox, ducks in the lake are trapped by a disguise. The hunter conceals his head in an upturned old bucket made of one Palmyra leaf. While keeping his head just above the surface of the water, he can easily approach a duck and catch it.

Anas superciliosa Gmelin — I: tia-méi-kamba; II: ?téma-éi; III: téméi.

Judging by several descriptions and observations of Fr. Lackner, the Mallards occur, though not exclusively, in the wet rice-fields of the Ti-district.

Anas gibberifrons S. Müller — I: tia-méi; III: téméi.

On Roti I regularly saw a pair of the Grey Teal on the tidal marsh near Nomo-Dalé. They were not very wary. While leaving Roti I could buy two ducklings (24 April), which could easily be kept alive during a week's voyage. This had the advantage that their feathers could develop further.

Haliastur indus intermedius Gurney — I: bala-mbua-langga-fulak; III: bala-pua-langa-fula'; IV: manéa.

I observed this bird several times in Roti and on Ndao.

Haliaeetus leucogaster (Gmelin) — I: kakáka; III: kakáka; IV: manéa-luji-ai.

This bird is said to occur on Roti and on Ndao.

Circaetus gallicus (Gmelin) — II: bala-mbua-nggéok; III: bala-pua.

One specimen was collected in my absence. At that time no name was noted. It seems that the juvenile *Haliastur* is also called by these names.

Pandion haliaetus (L.) — II: ?téma-nggélak; IV: manéa-d'asi.

People spoke of an "eagle that dives into the sea". This is probably the Osprey.

Falco moluccensis (Bonaparte) — I: sélu; II: ?téma; III: téma-kiki'; IV: lakiki.

On Ndao I got a female Spotted Kestrel which, as I was told, had been trapped on its nest with three young on 14 April. It occurs also on Roti.

Falco (cenchroides) Vigors & Horsfield — I: tétéma; II: téma-nggi'ik; III: téma-ndi'ik.

Three times I saw a small falcon rushing past in Roti (it is perhaps more

likely to have been *Falco longipennis* — G. M.). Probably also an *Accipiter* was seen.

Synoicus ypsilophorus (Bosc) — I: kuku-hak; III: kuku-há'; IV: hod'o.

The Swamp Quails — just like on Flores living far from swamps — are very numerous on Roti, Ndao and Do'o. On each of the three islands pulli, juvenile birds, and old ones were brought to me. On Roti we also got three clutches which at first sight I took for rail's eggs, as they are spotted. Among the many eggs which I collected in West Flores, none is spotted or has clear markings. However, one clutch shows some resemblance with *castaneus* shells from Flores by being covered with a dirty yellowish film that apparently is shoven up or swept away in part. This is found also, though rarely, in Flores *castaneus* shells. Except for the colouring, the 15 eggs (C/6, C/5, C/4) resemble those from Flores. The shells are very hard, smooth, and faintly glossy. Some are normal-oval, most of them are broad-oval with well differing ends. Only where the yellowish or light-brown film is scaled, the white basic colour is discernable underneath. In two clutches the brown, almost sepia coloured spots and speckles are rather densely and regularly dispersed all over the shell, much like those on *Fulica atra* eggs. In the third clutch the markings are more vague and situated around the blunt end. They give the impression of being dispersed concentrations of the film. The measurements of 15 eggs average: 30.650×23.876 ; range $28.60-32.00 \times 23.40-24.40$ mm.

Excalfactoria chinensis (L.) — III: ?kuku-ha'.

I believe to have heard the call of these birds in a marshy grass-land near Namo-Dalé, but people could not place my description of the species.

Gallus gallus (L.) — I: manu-fuik; III: manu-fui'.

The Red Jungle-Fowl is well known on Roti.

Turnix maculosa (Temminck) — I: kuku-téluk; III: kuku-télu'.

On Roti I could collect a pullus of a Button-Quail (20 March). It had no white irides. Here "Three-Toe" is the name for *Turnix*. By "Four-Toes", kuku-hak, besides quails, often rails are meant.

Rallus philippensis L. — I: kékéko; III: kékéko.

An adult bird and a chick (31 March), with not yet developed wing-feathers, could be collected on Roti.

Porzana sp. — I: ?kuku-hak, ?nggumék.

In the vicinity of Mok-Dalé I saw a small rail crossing upright the road between wet rice-fields.

Poliolimnas cinereus (Vieillot) — I: ?bonik.

Judging from descriptions, this light coloured rail occurs on Roti.

Amaurornis phoenicurus leucomelanus (S. Müller) — I: kolo-ba'ok; III: kolo-bao'.

The White-breasted Watercock was often heard calling during the whole day in the neighbourhood of Namo-Dalé. I could collect an adult and a half-grown bird (27 March). On 25 March I received a clutch of 5 fresh eggs. The shells are almost glossless, smooth, normal- to broad-oval with well differing ends. Colour and markings are almost identical with those of the same subspecies in Flores, and with *javanicus* as described by Hoogerwerf (1949). The measurements are: 39.40×29.00 , 38.70×29.30 , 37.00×28.95 , 36.95×28.60 and 36.85×28.70 mm.

Pluvialis dominica fulva (Gmelin) — IV: ?koki.

On 14 and 15 April I was able to observe a group of some 25 Golden Plovers on Ndao. They were seeking food on a sandy plain with scant cover of grass. Three or four males were already in nuptial plumage. People told me that these birds are staying there for some days every year.

Charadrius peronii Schlegel — I: nggoti-batu-tasi.

An individual was trapped on the island of Do'o (13 April); I have also seen a pair of small plovers on Roti, but am not sure of their identity. The vernacular name is used for all small shore-birds.

Numenius phaeopus (L.) — IV: pengala.

I observed the Whimbrel on the islands of Roti, Ndao and Nusé. Also another *Numenius*-species was seen. I heard a yodeling and a "chuh-chuh" call.

Tringa glareola L.

Three times I saw on Roti a Wood Sandpiper fly up from wet rice-fields while it uttered its "chie chie chü" call.

Tringa hypoleucos L. — I: nggoti-batuk; III: koti-batu-lé; IV: ana-sosa-d'asi.

The Common Sandpiper occurs on all the four islands.

In the neighbourhood of Namo-Dalé I saw a group of rather big, long-legged dotterels in shallow water near or under mangrove trees. They stayed together, only withdrawing a bit when I came nearer. The tide prevented a closer observation. Their call was a fairly melodious "chü chü chü".

Gallinago sp.

While laying snares, my helper, L. Anggas, saw a snipe in a moory grassland, as he told me. I assume he was right, though people asked about the occurrence of this bird could not give sufficient information.

Himantopus himantopus leucocephalus Gould.

This migrant was collected by Ten Kate in August 1891.

Esacus magnirostris (Vieillot) — IV: dadili.

A specimen of this beautiful bird, with clipped wings, was shown to me on Ndao. It was tame and looked for food on the beach. The bird had been caught on the island of Nusé, where I myself could observe one individual among a group of Whimbrels on the top of low dunes. Our bird made a yelling call. I had heard the same call in the evening, when, from our sampan, we could see a group of Thick-knees on the beach of Dénka, Roti. I had not the heart to collect this fine and quiet, though dangerous looking, bird, to be stuffed. The iris was light sulphur-yellow, the bill black with at the base yellowish green, the legs were straw-yellow, towards the feet more greyish yellow.

Stiltia isabella (Vieillot).

This stilt was collected by Ten Kate in August.

Sterna abifrons Pallas — I: mbui-tasi; II: manu-tasi; III: manu-pui-tasi; IV: d'ara.

I saw many Little Terns from our sampan resting on fish-trap fences near the coast of Roti. The vernacular names are also used for other kinds of terns.

Sterna bergii Lichtenstein.

Some ?pairs were seen on the reefs near Namo-Dalé, and also from the sampan. In the night I heard their characteristic "kürr"-call, both on the sampan and on the island of Do'o.

Sterna fuscata L.

A very emaciated specimen, that appeared to be half blind, was brought to me by fishermen on Ndao.

Sterna anaethetus Scopoli — d'ara-lou.

Also this tern was caught by fishermen of Ndao.

Anous stolidus (L.) — IV: d'ara-med'i.

A sick and emaciated specimen was picked up at sea.

Treron psittacea (Temminck) — I: lénggus; IV: koo-régu.

A Green Pigeon was collected on Roti. The measurements of the bigger testis were 7.5×2.5 , of the smaller 5×2 mm.

Ptilinopus regina flavicollis Bonaparte — I: lénggu-ndalak; III: mahó; IV: hua-nao.

On 20 March a female could be trapped near its nest in the vicinity of Lake Bais. The nest was situated in a shrub at a height of 3 metres. The single egg was clearly visible through the scanty nest materials, but it got lost. In Ndao I collected a female with a full-grown oöcyte.

Ducula (aenea) (L.) — I: ku-makamuk; II: ku; III: maka-mu'; IV: aga-rao.

Imperial Doves seem to occur on Roti, but I did not hear any. In Ndao they are said to appear in certain months of the year. On Nusé I saw a *Ducula* flying over.

Geopelia striata maugei (Temminck) — I: katéu; II: katéu; III: katéu-oé, katéu-batu; IV: koro-'ia.

This species was collected on Roti. On 18 and 24 March I got eggs in Roti, and on Ndao on 4 April. The broad-, normal- and narrow-oval shells, with slightly different, rather obtuse ends, are smooth, faintly glossy, and of a chalk-white colour. The measurements of 3 clutches (C/2) are: 23.10×18.80 , 22.90×18.75 ; 23.30×17.35 , 23.50×17.40 and (Ndao clutch) 23.80×17.30 , 23.70×17.15 mm.

Streptopelia chinensis tigrina (Temminck) — I: mbaláka; II: kalua; III: mbalua, kalási-ina; IV: koro-menanga.

The Tigrine Dove is common on Roti and Ndao. On Roti I saw many nestlings and young birds. Eggs could be collected on Ndao (7, 8, 9 and 17 April). The shells are long- to broad-oval with slightly differing ends. The texture is smooth, glossy, and white-coloured. The biggest egg measures 31.05×23.20 , and the smallest 26.55×21.40 . The other 9 shells show a range of 27.45 - 30.95×21.30 - 22.45 mm.

Streptopelia bitorquata (Temminck) — I: mbaláka-boá; II: kalua-kapak; III: mbalua-kapak, kalási-mané.

This turtle dove could be heard everywhere near the coast of Roti, but was not collected. It was numerous in the mangroves near Namo-Dalé.

Chalcophaps indica timorensis Bonaparte — I: mu'ék; III: muké'; IV: koro-ai.

The Green-winged Ground Doves are numerous on Roti, and were collected there and on Ndao. Also half-fledged nestlings could be collected on 16 March, and a fledgling specimen on 19 March. In Kupang-Timor they were called pompa-hutan. I mistook the young birds at first for *Macropygia*, but that species was unknown to my informants. In Ndao I received two clutches. The two saved eggs are much bigger than those of the subspecies *indicus* on Flores. Their measurements are: 28.90×21.05 and 28.05×21.05 mm. They are smooth, glossy, and brownish cream coloured.

Tanygnathus megalorhynchus (Boddaert) — I: nggia; III: ngia; IV: gié.

I believe to have seen this bird in high trees near Mok-Dalé on Roti. Also smaller parrots, probably *Trichoglossus ornatus*, called ngia-lutu' in Bilba, occur. On Ndao we find no Psittacidae, but the inhabitants have a general name for them, evidently because their sailors occasionally bring specimens from elsewhere.

Aprosmictus jonquillaceus (Vieillot) — I: nggia-ina.

On 31 March two old birds with two callow young were brought to me in Namo-Dalé, from somewhere in the district Termanu. It was queer that the two birds, apparently a pair, were mauling each other without release in a rather big cage. The nest was situated in a cavity of a rock, as people told me.

Cacatua sulphurea (Gmelin) — I: kata-tua; II: kakaé; III: kakaé; IV: kaka-tua.

I did not observe a single cockatoo, but they certainly occur on Roti, though not on Ndao.

Eudynamys scolopacea (L.) — I: doa; II: ku-kaoa; III: kukoa; IV: ?toé.

The Koel is probably meant with the vernacular names. I could not obtain certainty about this elsewhere well-known bird. Anyhow, it is rare in the neighbourhood of Namo-Dalé and on Ndao, if it occurs there.

Chrysococcyx (Chalcites) lucidus plagosus (Latham).

On Ndao 3 specimens were trapped with lime-twigs on 8, 10 and 11 April.

The people did not know these birds, though I showed them to many older men. The gonads were inactive.

Cacomantis (variolosus (Vigors & Horsfield)?) — I: pau-péu; III: manu-pui-uda.

Probably a kind of Brush Cuckoo is meant with these vernacular names. I myself did not hear the bird.

Centropus bengalensis (Gmelin) — I: kokok; III: koko'; IV: tatolo.

The Lesser Coucal was seen and heard wherever I went on Roti. Two birds with active gonads were collected there. It occurs also on Ndao.

Tyto alba (Scopoli) — I: mbaná; II: panganá; III: paná; IV: hania.

According to information from inhabitants of Roti, the Barn Owl occurs there. Three kinds of owls are told to be found. However, like everywhere, the descriptions of owls were very poor.

?*Otus* ?*Ninox scutulata* — III: tutu-lui'; IV: tutu-riu.

Ninox novaeseelandiae (Gmelin) — I: mbui-kokodok.

Possibly the Boobook Owl is meant with the vernacular name.

Caprimulgus affinis Horsfield — I: sisék, sisak; IV: saka-haka.

We aroused a nightjar on the tidal strip near Namo-Dalé. I heard many Savanna Nightjars from the sampan near the north coast of Roti, and also on Do'o. They are probably also found on Ndao.

Collocalia esculenta (L.) — I: mbui-lalao; III: lalao; IV: dad'a.

Glossy swiftlets are numerous on Roti and Ndao. This species was collected with eggs and nest. The nest chiefly consisted of a kind of seaweed. Its measurements were at the outside $70 \times 55 \times 35$ mm, the cup measured $47 \times 40 \times 25$ mm and one egg 15.75×9.95 mm.

Collocalia sp.

A bigger species than *esculenta* was seen on Roti, and near and in caves on Ndao. It seems to nest in these caves. The vernacular names are the same as those of the preceding species.

Halcyon chloris (Boddaert) — I: silaé; III: silaé; IV: cika-daé.

White-collared Kingfishers were numerous on Roti, Ndao and Do'o, and were collected there. Their gonads were inactive.

Alcedo atthis (L.) — I: silaé-lé.

One individual was seen several times perching on a branch over the water of Lake Bais.

Merops ornatus Latham — I: kokolok; III: kokolo'; IV: kepero.

This bee-eater is common on Roti and Ndao, and specimens were collected there. As people told me, nesting holes of a *Merops* species are found in Dégka. In the Ti-district I find the name "Kokolo Hill" on the map.

Pitta brachyura (L.) — ?mbui-la'us.

According to information by Mr. Mandala, a *Pitta* is meant by the given vernacular name.

Hirundo tahitica Gmelin — III: lalao; IV: dad'a-lou.

This swallow was often seen on Roti, and was collected on Ndao.

Anthus novaeseelandiae medius Wallace — I: nggoti-batu-léték; II: koti-batu-na'uk, koti-batu-lété; IV: kati'i.

Several times this pipit was seen on Roti, and it was collected on Ndao. One female had swollen ovaries (9 April). Nestlings were brought on 18 April, and three clutches of 3, 3 and 4 eggs on the 17th and 18th of that month. The eggs much resemble those of the subspecies *albidus* on Flores, but they are bigger. The markings are approximately as those for *malayensis*, as described by Hoogerwerf (1949), but the size is much bigger. The average measurements of 10 eggs are: 22.90×16.05 ; range $21.20-23.95 \times 15.70-16.40$ mm.

Coracina novaehollandiae subsp. — I: kiki; III: mbui-uda-oé; IV: cilolo.

An individual of this species was observed near Mok-Dalé on Roti. On Ndao I received a bird which was probably a migrant (19 April). People had foretold that the cilolo would appear before long.

Coracina novaehollandiae personata (S. Müller).

On 26 March, two not yet fully fledged nestlings of a *Coracina* species were brought to me. The nest was very shallow, only half a cm deep; so not a "neat" cup as said by Delacour (1947: 200). It was made of short stalks loosely connected by cobwebs, cocoons, and a small piece of string. These are interwoven and somewhat covered with lichens. It "sat" on a branch. Its measurements were $14 \times 10 \times 2.5$ cm, just large enough to hold the two nestlings.

Lalage sueurii (Vieillot) — I: lénggu-léak; IV: bui(y)éda.

This species was collected on Roti and Ndao. On Ndao I received also two clutches with 2 and 3 eggs in the first week of April. They are normal to broad-oval with well differing ends. The basic colour is bluish green. The markings consist of greyish-purple spots: the primary ones are brownish dots, spots, and clouds all over the shell, many of them drawn in the length of it, most densely on the larger end. The measurements are: 19.20×15.40 , 20.50×15.80 ; 21.50×16.10 and 21.65×15.95 mm. One nest was situated on an oblique branch, and therefore had a thick wall at one side and almost no wall on the other side. The nest is made of fibres, with in the cup some leaflets, firmly attached to each other by cobwebs. Its inside is not lined; the outside is covered with cobwebs and cocoons. It is much better constructed than the nest of *Coracina*. The cup is a trifle deeper than those of Flores nests. The measurements of the cup are $60 \times 60 \times 15$ mm; of the outside 75×80 , while the height is zero at one side, and 40 mm at the other side.

Saxicola caprata (L.) — I: mbui-bi'ik; II: ?ai-po'o; III: téu-hi; IV: tojo.

This bird was collected on Ndao and Roti, and seen on Do'o. Possibly ai-po'o is the name for the next species.

Saxicola gutturalis (Vieillot).

Ten Kate collected this bird (*Oreicola melanoleuca*, Büttikofer, 1892).

Sylviinae.

On Roti, in the vicinity of Mok-Dalé, for only a moment I observed a birdlet at seven metres height in a tree. I regarded it as a Warbler, and was reminded of an *Orthotomus*, because of its erect tail. The persons present called it bobo'é.

Gerygone inornata Wallace.

This warbler was collected on Roti, where I also received a nest with two full-fledged nestlings on 24 March. The nest was hung up preterminally at a horizontal twig with two leaves in front of it, and is very similar to *G. sulphurea* nests in Flores. It is purselike and consists of very fine fibres fastened by cobwebs. It had a small penthouse above the entrance high in the side wall, but had no "appendix". Its measurements were at the outside $14.5 \times 10 \times 5$ cm.

Cisticola juncidis (Rafinesque) — I: tai-na'uk; II: taki-na'uk; III: taki-nau'; IV: kabuku-j'u'u.

The Common Fantail Warbler was observed on Roti and Do'o, and occurs

most probably also on Ndao. On 22 March two nestlings were brought to me. In Namo-Dalé, on 31 March, I received a nest with three hard-set eggs. The shells are broad-oval, one of them with hardly differing ends. They are smooth and glossy. The basic colour is light greyish blue. The underlying markings consist of vague dots and spots of a purplish colour all over the whole shell, but densely concentrated on the blunt end. The primary spots are brownish, dispersed, but forming a distinct zone around the larger end. The measurements are: 15.10×11.45 and 14.40×11.20 mm.

Cisticola exilis (Vigors & Horsfield).

In the vicinity of Namo-Dalé, near the coast, I saw several males in nuptial plumage singing in the tops of *Pandanus* trees or in high grasses.

Rhipidura rufifrons semicollaris S. Müller — I: sibé'o; II: sibéko; III: saka-liti.

This fantail was collected on Roti and Ndao. The gonads pointed to a breeding season. The testicles of one male (14 March) were very different in size. On Ndao I got a nest with newly hatched young (16 April) and another with two eggs (17 April). The shells are broad-oval with well differing ends, of which the smaller one is also rather obtuse. The dull shell is of a cream colour. The underlying markings are violet-greyish, vague spots and blotches, especially around the larger end. The primary ones are light olive-brown coloured, forming a broad zone on the blunt end. They consist of cloudy blotches and vague spots, while only a few speckles are found on the rest of the egg. They measure: 16.85×13.20 and 16.85×13.00 mm.

Rhipidura rufiventris tenkatei Büttikofer.

This endemic form was collected by Ten Kate.

Myiagra ruficollis (Vieillot).

On Roti people brought a heavily damaged bird to me, allegedly trapped on its nest. I saw an individual of this species near Lake Bais.

Dicaeum maugei Lesson. — III: soko-liti'.

Often I heard the voice of a *Dicaeum* on Roti and, possibly, also on Ndao. Near Mok-Dalé I saw one specimen with a red rump and a white belly. This species (*Dicaeum mackloti* cf. Büttikofer) was collected by Ten Kate.

Nectarinia solaris Temminck — III: susu-nolo.

The male of this sunbird was often seen near Lake Bais, but we could not trap it. A clutch brought to me on 24 March belongs certainly to this species.

The 2 eggs are long and broad-oval with well differing ends. The shell is fragile, smooth, and glossy; its basic colour greyish green. On the blunt end of the smaller shell we find very conspicuous violet-grey markings. The primary ones, being brownish speckles, are scarcely dispersed over the whole shell. On the bigger egg the primary markings on the blunt end are conspicuous, and the secondary ones very rare. The measurements are: 16.30×11.50 and 16.10×11.95 mm. The nest is a small pouch(now) without an appendix, having a small penthouse above the opening. It consists of fine fibres, small strips of leaves, and some little stalks, a bit mixed with scales of cajuput bark (*Melanoleuca* sp.), all of them fixed together with cobwebs. The cup is hardly lined. The outer surface of the nest is covered with many scales of cajuput bark. The outside measurements are: $18 \times 8 \times 7$ cm; the entrance measures 4×4 cm, and the depth from the threshold is 3.5 cm inside the cavity.

Zosterops citrinella Bonaparte — I: mbui-abak; III: mata-déngé; IV: a(na-)ndélo.

This white-eye was also collected by Ten Kate (Mees, 1961: 29). The specimens collected by us on Roti had active gonads. On Ndao I got several clutches, but I saw no nestlings. The eggs (C/2, C/2, C/4, C/4) were collected on 3, 4, 5 and 17 April, and I inspected a few other nests. The shape of the eggs is long-, normal- and broad-oval. The shells are fairly firm, smooth and rather glossy. The colour is plain: in 2 clutches blue, in five white. The measurements are: biggest egg, 18.50×12.05 , smallest egg 15.30×11.10 , while 7 shells range $15.20-18.50 \times 11.10-12.50$ mm. The nests have deep to fairly deep cups, which are not lined. Their material consists chiefly of long, straw-yellow threads taken from Palmyra leaves and of fine stalks, which are carelessly fastened with cobwebs, and green and white cocoons. The nests are hung up between horizontal branches or in a fork of a tree. The measurements of 4 nest-cups are: $35 \times 40 \times 35$, $40 \times 35 \times 35$, $55 \times 50 \times 25$ and $55 \times 40 \times 30$ mm.

Lichmera indistincta limbata (S. Müller) — I: koko-diduk; III: koko-dido'; IV: cika-'ia, cika-ai.

Brown Honey-Eaters, with their striking, beautiful song, which is heard especially in the morning but also during the day, are very numerous on Roti and Ndao, and they occur also on Do'o. I heard and saw them in gardens, bushes, scrubland and mangroves. They are said, like friar-birds and crows, to drink the sweet Palmyra juice from the catching buckets in the tree tops. On Ndao people have different names for the male (*cika-ai*) and for the

female (*cika-ia*). The female is much smaller than the male, and is at once distinguishable by the yellowish gape. At first one thinks to come across a juvenile bird. Judging by the conditions of the gonads, all birds on Roti and Ndao were in a breeding condition. On Ndao several nests with eggs were brought to me. The shells are broad- to very broad-oval. The smaller end is also rather obtuse. They are smooth, fragile, and faintly glossy or dull. They are whitish to whitish cream-coloured, and inconspicuously marked with rare brownish dots and speckles, most of these on the larger end. Not always the light reddish primary markings can be distinguished from the pale-brown secondary ones. The measurements of 6 eggs (C/1, C/2, C/3) are $16.4-17.8 \times 13.4-14.2$ mm. Most nest-cups have perpendicular walls, and are therefore very spacious. They are chiefly made of the long threads of Palmyra leaves. At the outside strips of half withered grass leaves are found, and also many cobwebs and cocoons. The deeper part of the cup is conspicuously lined with a layer of reddish brown tinder, a fungus taken from the Palmyra palm. The nests are hung up firmly between two branches or in a fork, up to 15 metres high, in several kinds of trees. The measurements of the outside average $50 \times 50 \times 50$ mm, and of the cup $40 \times 40 \times 35$ mm. The bottom is almost flat.

Philemon buceroides (Swainson) — I: koa; III: koa'; IV: koa(-dué).

On Roti I saw fledglings and juvenile birds, and collected some of them, with adult birds. The species is not found on Ndao and Nusé. Some 50 years ago the Ndao people, as they told me, could prove their independence from Roti by pointing to the lack of this "Roti bird" on their islands.

Amandava amandava flavidiventris (Wallace) — III: manu-pui-lutu'.

The Red Avadavat was collected on Roti only. Nests with brooding adults, and with eggs (C/6, C/5, C/4 and C/4) were brought to me on 16, 17, 21 and 22 March. They were found in leaf-axils of young Palmyra palms at a height of 1.50-3 metres. The shells are normal- to long-oval with distinctly differing ends. They are relatively firm, smooth, and faintly glossy or dull. The measurements of 8 eggs are: $13.15-14.70 \times 10.25-10.90$ mm. The nests are made of grasses. The inside is lined with very fine grass ears.

Poephila (Taeniopygia) guttata (Vieillot) — I: séké-luték; III: kéké-déngongolo-pila; IV: ana-mangungu.

In Kupang I got birds with developing gonads on 7 and 8 March. On Roti eggs were collected in the second half of the month. On Ndao, in April, people brought me hatching birds with eggs and nestlings, and juvenile birds.

I collected nests with 2, 5, 5 and 7 eggs. These are long- to normal-oval with well differing ends, most shells are dull, but a few are glossy. The colour of one clutch is white, of the three others very light blue. The measurements of 12 shells are: 13.60-15.50 \times 10.40-10.90 mm. The nests are made of fine rootlets, while near the entrance more grass stalks and panicles are found.

Lonchura quinticolor (Vieillot) — I: daik; III: ?kékédé'.

This mannikin was collected on Roti with nests and eggs (C/4, C/5, C/6), and with nestlings. The shells are conical, others broad-oval, but most of them are elongate. The rather firm shell is chalky white, without gloss or faintly glossy. The measurements of 29 eggs are: 14.90-17.90 \times 10.75-12.20 mm; the longest egg being 17.90 \times 11.20, the biggest one 16.95 \times 12.20 and the narrowest 17.15 \times 10.75 mm. The nest materials are rather coarse leaves and grass stalks, which towards the inside are getting finer. Also the silky alang-alang (*Imperata cylindrica*) panicles are used.

Lonchura pallida (Wallace) — IV: ana-mangungu-nid'u.

A female with active ovaries was collected on Ndao on 10 April.

Padda fuscata (Vieillot) — I: kékédék.

I believe to have observed the Timor Sparrow near Mok-Dalé on Roti. Mr. Foeh, Fox's informant, gave a convincing description.

Oriolus melanotis (Bonaparte) — I: koa-késé; III: koa-kété'.

Very often I had heard a presumed *Oriolus* call, but then, when I could detect the calling bird high in a tree, it seemed to be a *Philemon*. I made even notes of this imitation, until a dark coloured *Oriolus* was brought to me. The gonads of a male and a female were swollen. Schouten pointed out to us that the tips of the tail-feathers are not white as stated by Van Balen (1914: 540), but buffy.

Dicrurus (bracteatus) densus Bonaparte — I: siké(k); II: saiké; III: iko-ngau-sé'.

This drongo appeared several times before dawn in a high tree near the presbytery in Namo-Dalé. Its call was very different from that of *D. hottentottus*. Once, at day-break, I saw that the bird was chased away by a *Halcyon chloris*.

Artamus leucorhynchus (L.) — I: kékédé-batu; II: kékée-oé; IV: dad'a-lou.

The White-breasted Wood-Swallow was observed on Roti and Ndao, and collected on the second island.

Corvus macrorhynchus Wagler — I: ka; II: ka'; III: ka'; IV: laká.

The crow is present on Roti, Ndao and Do'o. In the dry monsoon it comes in big numbers to Ndao, as people told me, to drink from the palmjuice buckets.

Further collecting in special habitats, e.g. in the wet rice-field complexes, in the accidented highlands, in the wooded area of Landu, and in or near the big lakes and estuaries in the eastern part of the island, might have resulted in a doubling of the number of species collected. Of course, fire-arms should be at the collector's disposal. A very clear indication of the limitedness of the present collection is the fact that out of the five species recorded by Büttikofer (1892), I observed only one. However, it should be taken into consideration that the two migrants from Australia (*Himantopus leucocephalus* and *Stiltia isabella*) possibly had not yet reached Roti in the month of March.

Directly from the eggs collected, and indirectly by estimating the age of young birds, the month(s) of egg-laying (indication by numbers) can be given for the following species: *Ardea novaehollandiae* (12, 1, 2, 3), *Dendrocygna arcuata* (12 or 1), *Anas gibberifrons* (12 or 1 and 2), ?*Falco moluccensis* (3), *Synoicus ypsilophorus* (2, 3), *Turnix* sp. (2), *Rallus philippensis* (1, 3), *Amaurornis phoenicurus* (1, 3), *Ptilinopus regina* (3, 4), *Geopelia striata* (3, 4), *Streptopelia chinensis* (1, 2, 3, 4), *Chalcophaps indica* (2, 3, 4), *Aprosmictus jonquillaceus* (3), *Collocalia esculenta* (3), *Anthus novaeseelandiae* (3, 4), *Coracina n. personata* (2 or 3), *Lalage sueurii* (3, 4), *Gerygone inornata* (2 or 3), *Cisticola juncidis* (3), *Rhipidura rufifrons* (3, 4), ?*Myiagra ruficollis* (3), *Nectarinia solaris* (3), *Zosterops citrinella* (4), *Lichmera indistincta* (4), *Philemon buceroides* (2), *Amandava amandava* (3), *Poephila (Taeniopygia) guttata* (3, 4), *Lonchura quincolor* (3).

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