

Best wishes
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76. THE MOSQUITOES (DIPTERA, CULICIDAE) OF RENNELL AND BELLONA, A FURTHER CONTRIBUTION

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INTRODUCTION

An invitation by TORBEN WOLFF to identify the mosquitoes collected by the Noona Dan Expedition in 1962 and by WOLFF in 1965, coupled with a knowledge of the finds made by MAFFI, aroused my interest in the mosquito fauna of Rennell Island. Consequently, when I was asked to visit Rennell to assess the efficiency of the B.S.I.P. Malaria Eradication Programme Staff based there and to investigate the impact of DDT residual house spraying on the malaria vector species *Anopheles (Cellia) farauti* and *A. (C.) koliensis* I took the opportunity to make a fairly intensive search for mosquito species.

The two *Anopheles* species as expected are now absent or present only in very restricted numbers. I could find no specimens of either despite fairly extensive searches of typical breeding sites. I was able to re-confirm the majority of findings of previous collectors (see MAFFI, 1973) with the exception of the above two *Anopheles*, *Culex (Culex) squamosus* and *Aedes (Stegomyia) albolineatus*.

My findings of *Tripteroides (Rachionotomyia) coheni* and of a possibly new species of the *Aedes (Finlaya) kochi* group represent additions to the list of species.

On Bellona, where I was able to spend only a very short time ashore, I confirmed previous findings of three of the nine species known from this island.

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METHODS

Whenever possible pupae were reared to adults and in only a limited number of cases were individual rearings made from larvae. The major problem was an almost daily shift of camp from one village to another.

Adults were pinned within a few hours of emergence or collection.

Larvae and pupae were killed and, together with pelts and skins of these stages, were preserved in 70 % methyl alcohol. They were later conventionally dehydrated, cleared and mounted in Permount. Identifications were made using the taxonomic keys of BELKIN, 1962.

COLLECTION DATA

These are given in tabular form with reference numbers as follows: -

T/Re.1, 2, etc. - these refer to collections of juvenile stages and larval, pupal and pelt mounts are labelled appropriately.

T/0504, 0505, etc. - these refer to adult specimens either reared or collected as adults.

In due course most of these specimens will be deposited in the Bernice P. Bishop Museum, Honolulu, Hawaii, where they will form part of the Papuan Sub-Region collection.

The serial number (Map Ref.No.) given for each location is that used on the map of Rennell in the synoptic paper by MAFFI (1973).

COMMENTS ON SPECIES COLLECTED

All previous records referred to can be found in MAFFI (1973) and are not separately listed here unless of special significance.

Uranotaenia barnesi Belkin, 1962

My only collection of this species, at Matangi, was in a small densely shaded pool which is a typical breeding site as given by BELKIN, 1962.

Culex (Culex) annulirostris Skuse, 1889

The earlier reports of this species are restricted to the villages at the edge of Lake Tegano, but MAFFI discovered it at Matangi in natural water pools. Two of my collections, at Tigoa airstrip and Tahua, were in relatively large man-made pools. This species, which elsewhere in the Solomons is the most important night-biting nuisance species, is clearly spreading with the mining activities and may become a significant nuisance in the eastern part of Rennell. An inhabitant of Niupani told me that on occasions the villagers had been forced to sleep some way inland from

the lakeside. Although at the time of my visit I did not need to use a mosquito net, undoubtedly this species has been responsible for this movement of the villagers.

Culex (Culiciomyia) fragilis Ludlow, 1903

My finding, like that of DE BEAUX, was in a coconut shell, but the species would appear to be relatively uncommon.

Culex (Culiciomyia) pullus Theobald, 1905

Like MAFFI, I found this species in both coconuts and in a wheel-rut.

Culex (Lophoceraomyia) sp.

All my collections, like most of those reported by MAFFI, are of the *buxtoni* complex and are typically surface pool breeders. My specimens included adult males and I have been able to mount genitalia and antennae. The results of preliminary examinations suggest to me that at least three species are involved. I tentatively have designated these, on the basis of larval characteristics as well as the adult males, into *C. buxtoni* Edwards, 1926, *C. lairdi* Belkin, 1962, and the Rennell form which appears to differ from the other two. A more definitive study will have to be left to someone more conversant with the subgenus.

Aedes (Finlaya) notoscriptus (Skuse, 1889)

As MAFFI (1973) has said, we now consider the form of the *mediovittatus* group which is found on Rennell to be more similar to *notoscriptus* than to *albilabris* Edwards. The adult females are clearly *notoscriptus* as, apart from taxonomic characters, they are persistent day-biters of man whereas *albilabris*, even when it is very abundant, does not attack man. Although the larvae may be found in relatively unshaded areas such as on the beach at Tuhugago, my personal experience is that the females are only found attacking some distance into the bush away from human habitations.

The taxonomic characters of the juvenile stages differ from all the forms shown in BELKIN (1962), including *albilabris*, and it seems possible that a species complex is involved but this can only be decided by a detailed study of specimens from many areas within the wide range of this group.

Aedes (Finlaya) sp. (kochi group)

I am tentatively regarding this widespread pandanus axil breeder as a new species. It would appear to fall within the *bougainvillensis* complex of the *kochi* group as given by BELKIN (1962). Using his taxonomic keys the adults lead to *oceanicus*.

The juvenile stages, however, in the case of the pupae lead to either *hollingsheadi* or *oceanicus* depending on one's interpretation of the clear unpigmented spots on the mesonotum and metanotum as being large or small, and in the case of the larvae lead to *hollingsheadi* or *bougainvillensis*. The male genitalia, on the other hand, are quite distinct, particularly in the development of the claspette which is relatively large and sharply angled. A full description will have to be left to another place.

This, from my findings, would appear to be one of the more widespread species on Rennell where it breeds in the axils of the two broadleaved pandanus species, one with a smooth edged leaf and the other with a spiny edge, known locally as "hanga" and used as the main house-thatching material. Nearly all the villages have "gardens" of one or other of these two pandanus species and almost without exception I was able to find juvenile stages in the leaf axils. Rarely were there more than two or three specimens in a single axil.

All the adult specimens were reared and no adults were observed in the field.

On Bellona a brief search of several pandanus plants revealed no specimens of this species.

Aedes (Stegomyia) albolineatus (Theobald, 1904)

This species, which I, like MAFFI and others, found without difficulty on Bellona, is curiously rare or absent from Rennell.

Aedes (Stegomyia) gurneyi Stone & Bohart, 1944

I was pleased to find specimens of this species on Rennell as I had examined several badly rubbed specimens collected by WOLFF in 1965 and decided these were *gurneyi*. An unusual fact was that WOLFF's collections were all females from malaise traps and I, too, collected one adult female apparently attacking. BELKIN (1962) states that females have not been reported to attack man and I have not collected females in this way elsewhere in the Solomons although it is a fairly common juvenile finding. Also curious was that I collected several males apparently attracted to myself or my clothing and in one instance to a captive female of the species.

Aedes (Stegomyia) hebrideus Edwards, 1926

Undoubtedly this is the most important species as far as man-biting is concerned, although in the inland areas of Rennell it was nowhere near as dense in numbers as on Bellona and on the beaches of Rennell. In the latter two areas it was impossible to sit comfortably in any shaded spot because of the vicious attacks of this species. An unconfirmed report from a Bellona inhabitant suggests that this species may transmit some form of disease, possibly of a virus type.

Aedes (Stegomyia) hoguei Belkin, 1962

I was unable to repeat MAFFI's collection of day-biting females but obtained two larvae from a coconut at Niupani and possibly two or three fragmentary larvae of a hairy form from a small rock-hole near the rim of the island.

Tripteroides (Rachionotomyia) solomonis (Edwards, 1924)

This species would appear to be quite widespread on Rennell. My findings included several in treeholes whereas previously the findings were restricted to coconuts. BELKIN (1962) notes that this species exhibits considerable geographical variation and this is true of the Rennell form where the larvae show consistent small differences from the Guadalcanal form. It is also interesting that, whereas elsewhere in the Solomons *T. solomonis* is a fairly persistent day-biter, on Rennell this does not seem to be the case.

Tripteroides (Rachionotomyia) coheni Belkin, 1950

This was the first finding on Rennell of what BELKIN (1962) describes as appearing to be a very scarce species. The larvae were collected from a coconut containing fresh water but with only a small entry hole. All findings elsewhere have been in treeholes (BELKIN, 1962).

MOSQUITO SPECIES RECORDED FROM
RENNELL AND BELLONA

Rennell

Anopheles (Cellia) farauti Laveran
Anopheles (Cellia) cf. *koliensis* Owen
Uranotaenia barnesi Belkin
Culex (Culex) annulirostris Skuse
Culex (Culex) squamosus (Taylor)
Culex (Culiciomyia) fragilis Ludlow
Culex (Culiciomyia) pullus Theobald
Culex (Lophoceraomyia) cf. *buxtoni* Edwards
Culex (Lophoceraomyia) cf. *lairdi* Belkin
Culex (Lophoceraomyia) sp., Rennell form
Aedes (Finlaya) notoscriptus (Skuse)
Aedes (Finlaya) sp. (*kochi* group)
Aedes (Stegomyia) albolineatus (Theobald)
Aedes (Stegomyia) gurneyi Stone & Bohart
Aedes (Stegomyia) hebrideus Edwards
Aedes (Stegomyia) hoguei Belkin
Tripteroides (Rachionotomyia) solomonis (Edwards)
Tripteroides (Rachionotomyia) coheni Belkin

Bellona

Anopheles (Cellia) farauti Laveran
Uranotaenia quadrimaculata
Edwards
Culex (Lutzia) halifaxii Theobald
? *Culex (Lophoceraomyia)* sp.,
Rennell form
Aedes (Finlaya) notoscriptus
(Skuse)
Aedes (Stegomyia) albolineatus
(Theobald)
Aedes (Stegomyia) gurneyi
Stone & Bohart
Aedes (Stegomyia) hebrideus
Edwards
Aedes (Stegomyia) hoguei Belkin

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RENNELL ISLAND

Coll. No.	Date	Location (Map Ref. No.)	Bionomics	Reference Numbers
<i>Uranotaenia barnesi</i>				
16	13.6.71	Matangi (26)	Freshwater pool, deep shade	T/Re.14; 1L
<i>Culex (C.) annulirostris</i>				
33	17.6.71	Niupani (34)	Freshwater swamp	T/0555; 1 ♂
37	19.6.71	Niupani (34)	In house at 7 a.m.	T/0557; 1 ♀
14	13.6.71	Near Tahua (25)	Wheel rut, exposed, no grass	T/Re.12; 1L
30	17.6.71	Tegano (40)	Freshwater swamp	T/Re.25; 3L, 2P skins, assoc. adult T/0554, 1 ♀
7	10.6.71	Tigoa airstrip (14)	Open drain, grassy	T/Re.3; 1L
<i>Culex (C.) fragilis</i>				
10	12.6.71	Tahanuku (20)	Coconut, foul water	T/Re.9; 8L
<i>Culex (C.) pullus</i>				
28	17.6.71	Hutuna (41)	Coconut, foul water	T/Re.23; 4L T/Re.23a; 2P skins, assoc. adults from T/0550-2, 2 ♀, 1 ♂
10	12.6.71	Tahanuku (20)	Coconut, foul water	T/Re.9a; 3P skins, assoc. adults T/0508-10, 3 ♀
14	13.6.71	Near Tahua (25)	Wheel rut, exposed, no grass	T/Re.12; 1L skin, 1P skin T/Re.12a; 3P skins, assoc. adults T/0516-8, 3 ♂
<i>Culex (L.) cf. buxtoni</i>				
40	19.6.71	1000 m along path (39) Niupani-Tegano	Freshwater pools at swamp edge	T/Re.30; 4L T/Re.30a; 4P skins, assoc. adults T/0573-6, 3 ♀, 1 ♂; T/0576 with genitalia and antenna mount
<i>Culex (L.) cf. lairdi</i>				
27	17.6.71	Hutuna (41)	Freshwater swamp	T/Re.22; 1L

Coll. No.	Date	Location (Map Ref. No.)	Bionomics	Reference Numbers
23	16.6.71	Niupani (34)	Freshwater swamp	T/Re.19; 5L, 2P skins, assoc. adults T/0534-5, 2 ♂; genitalia slides and antenna of T/0534
33	17.6.71	Niupani (34)	Freshwater swamp	T/Re.27; 1P skin, assoc. adult T/0556, 1 ♀
30	17.6.71	Tegano (40)	Freshwater swamp	T/Re.25; 1L
3	10.6.71	Tematiga (8)	Surface pool, heavily grassed	T/Re.4; 4L
<i>Culex (L.)</i> sp.				
16	13.6.71	Matangi (26)	Freshwater pool, deep shade	T/Re.14; 1L
<i>Culex (L.)</i> sp. Rennell form				
2	10.6.71	Hana'akaba (12)	Surface pool, grassy, semi-shade	T/Re.2; 5L
1	9.6.71	Near Tahanuku (19)	Wheel rut exposed to sun	T/Re.1; 1L
6	10.6.71	Near Tigoa airstrip (13)	Surface pool	T/Re.7, 3L, 1P skin, assoc. adult T/0502, 1 ♂; also genitalia and antenna slide
<i>Aedes (F.) notoscriptus</i>				
42	20.6.71	Soaika Hill, Hutuna (42)	Day man-biting and resting in tree hole	T/0568-70; 3 ♀
44	20.6.71	Soaika Hill, Hutuna (42)	Tree hole	T/Re.32; 5L
35	17. and 18.6.71	800m in bush from Niupani (35)	Day man-biting	T/0545-6; 2 ♀
39	19.6.71	Niupani-Tegano (38)	Tree hole in banyan	T/Re.29; 1L
48	21.6.71	Tuhugago (37)	Hole on fallen palm on beach, brackish water	T/0580-2; 2 ♀, 1 ♂
46	21.6.71	Cliff-top above Tuhugago (37)	Day man-biting	T/0577-9; 3 ♀
<i>Aedes (F.)</i> sp.				
15	13.6.71	Matangi (26)	Smooth-leaved <i>Pandanus axil</i>	T/Re.13; 6L T/Re.13a; 3P skins, assoc. adults T/0519-21, 2 ♀, 1 ♂
12	12.6.71	Tahanuku (20)	<i>Pandanus axil</i>	T/Re.11; 4L T/Re.11a; 3P skins, assoc. adults T/0505-7, 3 ♂

Coll. No.	Date	Location (Map Ref. No.)	Bionomics	Reference Numbers
31	17.6.71	Tegano (40)	Broad, smooth-leaved <i>Pandanus axil</i>	T/Re.24; 5L T/Re.24a; individual rearing, L and P skins, assoc. adult T/0592, 1♂ T/Re.24b; individual rearing, L and P skins, assoc. adult T/0593, 1♀
4	10.6.71	Tepoogima (9)	<i>Pandanus</i> ("Hanga") axil	T/Re.5; 4L, 1P skin, assoc. adult T/0504, 1♀

Aedes (S.) gurneyi

43	20.6.71	Soaika Hill, Hutuna (42)	"Attracted" to man	T/0571-2; 2♂
18	14.6.71	Nagau (28)	Coconut, clear water	T/Re.16; 2L
25	16.6.71	Niupani (34)	Hole in trunk of coconut palm	T/Re.20; 2L
32	17.6.71	Niupani (34)	Hole in trunk of coconut palm	T/Re.26; 2L
36	18.6.71	800 m in bush from Niupani (35)	Day flying	T/0553; 1♂
38	19.6.71	800 m along path Niupani-Tegano (38)	♀ day man-biting, ♂ attracted to captive ♀	T/0559-63; 1♀, 4♂
41	19.6.71	1100 m along path Niupani-Tegano (39)	Rock hole, rain water plus leaves	T/Re.31; 1L (damaged)

Aedes (S.) hebrideus

29	17.6.71	Hutuna (41)	Day man-biting	T/0542-4; 3♀
28	17.6.71	Hutuna (41)	Coconut, foul water	T/Re.23a; 2P skins, assoc. adults from T/0547-9, 3♀
21	15.6.71	Kagaba (31)	Coconut, freshwater and sand	T/Re.18; 3P skins, assoc. adults from T/0527-32, 2♀, 4♂
22	15.6.71	Kagaba (31)	Day man-biting under coconut palms	T/0526; 1♀
19	14.6.71	Labagu (29)	Day man-biting under coconut palms, on beach	T/0522-5; 4♀
20	15.6.71	Labagu (29)	Coconut, freshwater	T/Re.17; 6L
24	16.6.71	Niupani (34)	Day man-biting under coconut palms	T/0536-8; 3♀
34	17.6.71	Niupani (34)	Coconut, freshwater	T/Re.28; 2L; also adult T/0558, 1♂

Coll. No.	Date	Location (Map Ref. No.)	Bionomics	Reference Numbers
10	12.6.71	Tahanuku (20)	Coconut, foul water	T/Re.9b; 1P skin, assoc. adult T/0511, 1 ♀
11	12.6.71	Tahanuku (20)	Coconut, freshwater	T/Re.10; 2P skins, assoc. adults T/0512-3, 2 ♂
13	12.6.71	Tahanuku (20)	Day flying under coconuts	T/0503; 1 ♂
8	11.6.71	Tigoa airstrip (14)	Day man-biting in semi-shade	T/0501, 1 ♀
47	21.6.71	Tuhugago (37)	Coconut foul water	T/Re.34; 6L T/Re.34a; 3P skins, assoc. adults T/0589-91, 3 ♀
49	22.6.71	Tuhugago (37)	Rock pool, brackish water, in splash zone on shore	T/Re.35; 3L T/Re.35a; 6P skins, assoc. adults T/0583-8, 4 ♀, 2 ♂
<i>Aedes (S.) hoguei</i>				
34	17.6.71	Niupani (34)	Coconut, freshwater	T/Re.28; 2L
45	21.6.71	3.5 km along path Niupani-Tuhugago (36)	Rock hole, rain water and leaves	T/Re.33; fragments of 2/3L of a hairy form
<i>Tripteroides (R.) solomonis</i>				
5	10.6.71	Kaagua (2)	Coconut husk, foul water	T/Re.6; 4L; 2P skins, assoc. adults T/0564-5, 2 ♀; also adults T/0566-7, 2 ♂
17	14.6.71	Nagau (28)	Coconut, freshwater plus debris	T/Re.15; 7L T/0541; 1 ♂
18	14.6.71	Nagau (28)	Coconut, clear water	T/Re.16; 2L
32	17.6.71	Niupani (34)	Hole in trunk of coconut palm	T/Re.26; 2L
39	19.6.71	800 m along path Niupani-Tegano (38)	Treehole in banyan	T/Re.29; 5L
9	11.6.71	Tigoa airstrip (14)	Treehole	T/Re.8; 6L; 1P skin, assoc. adult T/0514, 1 ♀; also adult T/0515, 1 ♂
<i>Tripteroides (R.) coheni</i>				
26	16.6.71	Niupani (34)	Coconut with small hole, freshwater	T/Re.21; 6L, 1P skin, assoc. adult T/0539, 1 ♀; also adult T/0540, 1 ♀

BELLONA ISLAND

Coll. No.	Date	Location (Map Ref. No.)	Bionomics	Reference Numbers
<i>Aedes (F.) notoscriptus</i>				
53	23.6.71	Munda	Hole in flame tree, <i>Poinciana</i>	T/Be.3; 1P skin, assoc. adult T/0609, 1 ♀
<i>Aedes (S.) albolineatus</i>				
51	23.6.71	Roadside Ahanga to Munda	Treehole	T/Be.1; 1L, 1P skin, assoc. adult T/0608, 1 ♂
54	23.6.71	Roadside Ahanga to Munda	Hole in trunk of coconut palm	T/Be.2; 1L
53	23.6.71	Munda	Hole in flame tree, <i>Poinciana</i>	T/Be3; 2L, 1P skin, assoc. adult T/0610, 1 ♀ (damaged)
<i>Aedes (S.) hebrideus</i>				
50	23.6.71	Ahanga beach	Coconut, freshwater	T/0603-7; 3 ♀, 2 ♂ T/0611; 1 ♂
52	23.6.71	Roadside Ahanga to Munda	Day man-biting	T/0600-2; 3 ♀

