

***Aedes (Finlaya) maffii*, A NEW SPECIES OF MOSQUITO
FROM THE BRITISH SOLOMON ISLANDS
(DIPTERA: CULICIDAE)¹**

By **Brian Taylor²** and **J. A. Tenorio³**

Abstract: *Aedes (Finlaya) maffii* Taylor & Tenorio, n. sp., a member of the *kochi* group, is described from Rennell Island, British Solomon Islands Protectorate. The species is also reported from Sikaiana, Stewart Islands, B.S.I.P.

During a visit to Rennell Island, British Solomon Islands Protectorate in June 1971, one of us (B.T.) collected a number of juvenile specimens of a hitherto unnamed species of the *Aedes (Finlaya) kochi* group (Taylor 1973). All the specimens were found in water collections in the leaf axils of 2 broad-leaved species of *Pandanus*, 1 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 1 or the other of these 2 *Pandanus* species and almost without exception, it was possible to find juvenile stages of this mosquito in the leaf axils. Rarely were there more than 2 or 3 specimens in a single axil. All the adult specimens were reared and no adults were observed in the field. Previous mosquito collectors visiting Rennell Island had not encountered this species (Maffi 1973). A number of specimens collected on Sikaiana, Stewart Islands, B.S.I.P. by D. Bonnet in 1956 and reported as *A. (F.) hollingsheadi* by Belkin (1962, 1965) were reexamined by B.T. in August 1973. The morphology of the male genitalia in particular revealed that these Sikaiana specimens are the same species as that found on Rennell I., and not *hollingsheadi* as previously thought. The human population of Sikaiana is, like that on Rennell I., a Polynesian race and the economic importance of the pandanus plant as a house-building material indicates that the *Pandanus* and its associated mosquito fauna were transported by the Polynesians at some point in their migrations.

Terminology of structural parts used in this paper is according to "A Mosquito Taxonomic Glossary"

¹This paper was supported by the U. S. Army Medical Research and Development Command, Contract No. DADA17-73-C-3143, and the National Institutes of Health, Grant No. A107917-07.

²Formerly Government Entomologist, British Solomon Islands Protectorate. Present address: Cocoa Research Institute of Nigeria, Gambari Experimental Station, P.M.B. 5244, Ibadan, Nigeria.

³Entomology Department, Bernice P. Bishop Museum, Honolulu, Hawaii 96818, U.S.A.

by K. L. Knight & J. L. Laffoon, published in series, 1970, 1971, 1973, in *Mosquito Systematics Newsletter*.

***Aedes (Finlaya) maffii* Taylor & Tenorio, n. sp.**

FIG. 1-3

Aedes (Finlaya) hollingsheadi in part of Belkin, 1962: 372-73; 1965: 17.

♀. *Wing*: length, 2.66 mm; width, 0.56 mm. *Proboscis*: 1.41 mm. *Forefemur*: 1.70 mm. *Abdomen*: 2.18 mm. Characters in general as for *kochi* group (Belkin 1962: 357). *Head*: Median longitudinal light stripe of vertex with narrow, decumbent, yellowish and some white scales; narrow scales of occiput yellow; erect shallowly forked scales black; light scales on orbital line yellowish; a patch of broad white scales located laterally on head at level of antepronotum and another patch subventrally; proboscis with median white ring less than 0.30 its length, preapical white narrow ring sometimes interrupted ventrally; palpus with very few white scales on apex of segment 4.

Thorax: Integument dark brown or black; mesonotal light scaling contrasting with dark, light scales yellowish; prescutellar area with patches of light scales; anterior promontory, lateral prescutal, anterior acrostichal, posterior fossal, and posterior dorsocentral with lines of narrow yellowish scales; antealear area also with patch of yellowish scales; midlobe of scutellum with large apical patch of broad black scales, remainder of scutellum covered with broad white scales; paratergite with broad white scales; antepronotum and lower postpronotum covered with broad white scales, upper postpronotum with broad black scales; patches of white scales on pleura moderate; lower mesepimeron without scales.

Legs: Femora barred with white to yellowish scales, apical scales pale golden, preapical femoral tufts poorly developed on all legs; tibiae barred with yellowish scales on fore- and midlegs, white on hindlegs, barring more extensive on midleg; tarsomere 1 with basal, median and apical light rings on all legs, yellowish on fore- and midlegs, white on hindleg; tarsomere 2 with small apical light patch on foreleg, with apical light patch on midleg and apical 0.4 white on hindleg; tarsomeres 3 and 4 all dark on fore- and midlegs, 3 with apical 0.4 white on hindleg, 4 of hindleg all dark; tarsomere 5 white on all legs.

Wing: (Wing spots as defined by Belkin 1962: 551.) Dorsal scales predominantly dark brown with conspicuous pattern of pale spots as follows: vein C with very small *basal* spot, moderate *subcostal* and *apical*. no *sectoral*; vein Sc *basal* spot about 0.6 of vein between base to humeral crossvein, moderate *humeral*, *sectoral*, and *subcostal*, but no *accessory sectoral*; vein R with *basal* and *humeral* spots same as in vein Sc, small *sectoral* and *accessory sectoral*, moderate *subcostal* and *apical*, and small *accessory subcostal*. Pale spots are also present on other veins.

Halter: Capitellum covered with dark scales, pedicel pale and bare.

Abdomen: Pale scales on terga II-VII dingy yellow on median and sublateral patches, white on lateral patch; sterna with basal light scaling; sterna VI and VII without apical tufts.

♂. Essentially as in ♀, except for the following: *Head*:

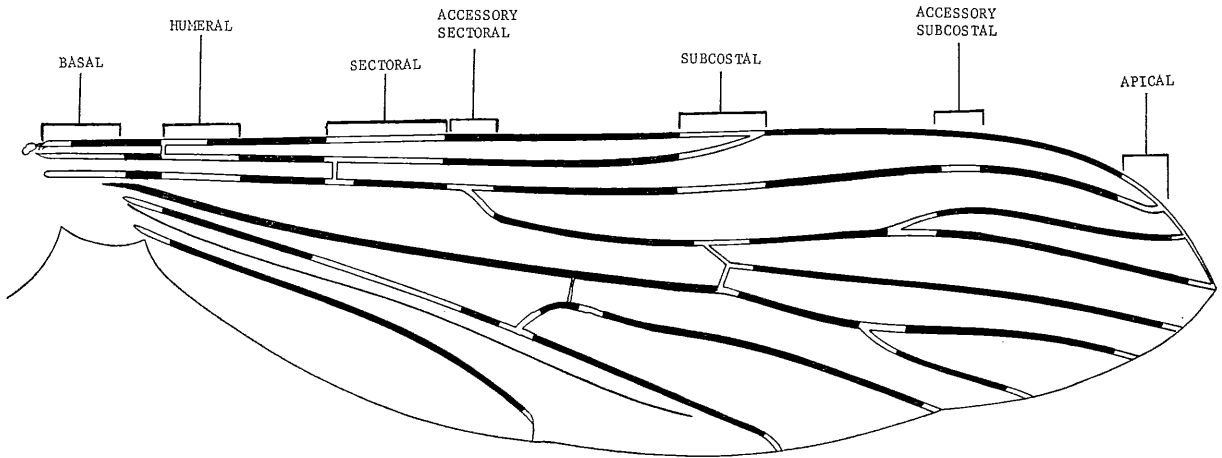


FIG. 1. Wing of ♂ *Aedes (Finlaya) maffii*, n. sp. showing pale spots on wing veins.

Median longitudinal light stripe of vertex wider and with some broad scales; proboscis with very narrow median white ring, sometimes interrupted dorsally, and with small dorsopreapical white patch; palpus exceeding proboscis by most of last segment, light scaling yellowish to white as follows: segment 2 basal and apical bands; segment 3 basal, median, and apical bands; segment 4 subbasal and apical bands; segment 5 basal and apical white bands. *Thorax*: Mesonotal light scaling more conspicuous, but in similar pattern to ♀; large patch of narrow yellowish scales present on supraalar. *Wing* (FIG. 1): Similar to ♀, except for presence of long *sectoral* spot on both vein C and Sc. *Abdomen*: Terga with white lateral scale patches, remainder of light patches yellowish; sterna with restricted light scaling, and poorly developed apical tufts on VI and VII.

♂ *Genitalia* (FIG. 2C): Gonocoxite about $4 \times$ longer than wide; dorsally and laterally from base to preapex with broad, dark scales; mesally near preapex with group of long, broad scales, dorsomesally at preapex with distinctly long, dark, hair-like scale; mesally with cluster of long, thin setae on basal 1/2, these setae longer basally and many with apical leaf-like expansion towards middle of gonocoxite. Claspette filament angled sharply and directed laterally slightly beyond middle, membranous from point of angle to apex; claspette stem slightly shorter than filament, mesally with a long seta near base and a short one at preapex. Specialized basal mesal seta close to claspette, sharply angled, directed mesally, and with leaf-like expansion apically. Gonostylus about 0.45 length of gonocoxite; gonostylar claw about 0.57 length of gonostylus. Aedeagus broad cylindrical, slightly expanded apically. Proctiger strongly sclerotized at apical 0.33. Lobe of IX tergum with 3 moderately long setae, sometimes with only 2 on one side.

Pupa (FIG. 2A, B). *Abdomen*: 2.58 mm. *Trumpet*: 0.38 mm. *Paddle*: 0.60 mm. Chaetotaxy as figured, setae moderately to strongly pigmented. *Cephalothorax*: In general, lightly to moderately pigmented; mesonotum darker and with small submedian unpigmented spot at level of seta 9-CT; seta 1-CT strongly pigmented, 2br, and about $2 \times$ as long as 2-CT or 3-CT. *Trumpet*: Moderately pigmented, but darker basally. *Metanotum*: Laterally with circular unpigmented spot, otherwise darkly pigmented. *Abdomen*: Lightly pigmented, except segments I-III which are as dark as metanotum. *Paddle*: Moderately pigmented basally, otherwise light; notched apically near seta 1-P; seta 2-P missing.

Larva (FIG. 3): *Head*: 0.63 mm. *Siphon*: 0.53 mm. *Anal Saddle*: 0.24 mm. Chaetotaxy as figured, most setae darkly

pigmented and multiple branched. Stellate setae all bifurcate. *Head*: Moderately pigmented, yellowish brown; seta 1-C usually 2-3br, sometimes 2br on 1 side and 3br on other side, always projecting posteriorly; seta 4, 6-C usually 4-6br, moderately pigmented and tapering to a point apically; 7-C usually 8-10br, strongly pigmented and blunt apically; 5-C single, long, and lightly pigmented; 11-C strongly pigmented, at least 10br and blunt apically; 14-C moderately pigmented, 12-14br, and pointed apically. *Segment VIII*: Comb scales on posterior row longer than those on anterior rows; seta 3-VIII 2br. *Siphon*: Entirely covered by minute setae; index about 0.46; 1-S usually 3br with minute secondary branches; pectin teeth slender and fringed with minute hairs on 1 side. *Anal Segment*: Posterior margin with long spicules; saddle densely covered with spicules and occupying dorsal 0.75 of segment.

Type data: Holotype ♂ (BISHOP 10,237), T/0592, with genitalia slide and associated larval and pupal skins (T/Re.24a), Solomon Is., Rennell I., Tegano, from leaf axil of broad, smooth-leaved *Pandanus* sp., 17.VI.1971, B. Taylor. Allotype ♀, T/0593, with associated larval and pupal skins (T/Re.24b), same data as holotype. Paratypes all from Rennell I., collected by B. Taylor: 3 ♂♂, T/0505-T/0507, with associated pupal skins (T/Re.11a), Tahunuku, 12.VI.1971; 2 ♀♀, 1 ♂, T/0519-T/0521, with associated pupal skins (T/Re.13a), Matangi, 13.VI.1971; 1 ♀, T/0504, with associated pupal skin (T/Re.5), Tepoogima, 10.VI.1971.

Other specimens examined, all from Rennell I. collected by B. Taylor: 6 larvae (T/Re.24), same data as holotype; 4 larvae (T/Re.5), same data as paratype ♀ T/0504; 6 larvae (T/Re.13), same data as specimens T/0519-T/0521; 4 larvae (T/Re.11), same data as specimens T/0505-T/0507.

The above specimens and others collected during June 1971 on Rennell I. are deposited in the Bernice P. Bishop Museum. This species is dedicated to Mario Maffi in recognition of his contribution to the knowledge of mosquitoes on Rennell I.

Systematics: This species falls within the *bougain-*

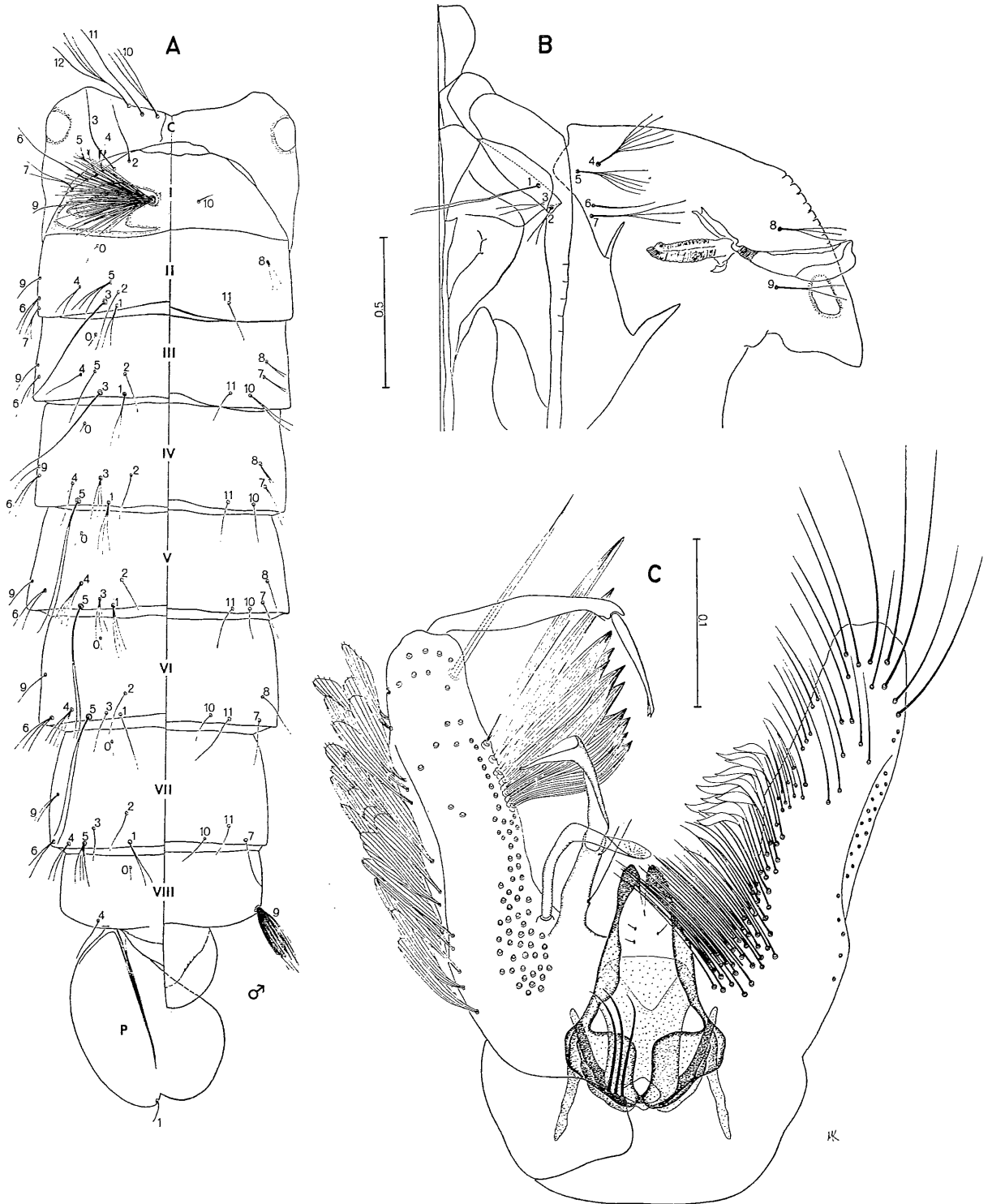


FIG. 2. *Aedes (Finlaya) maffii*, n. sp. (A) pupa abdomen. (B) pupa cephalothorax. (C) ♂ genitalia.

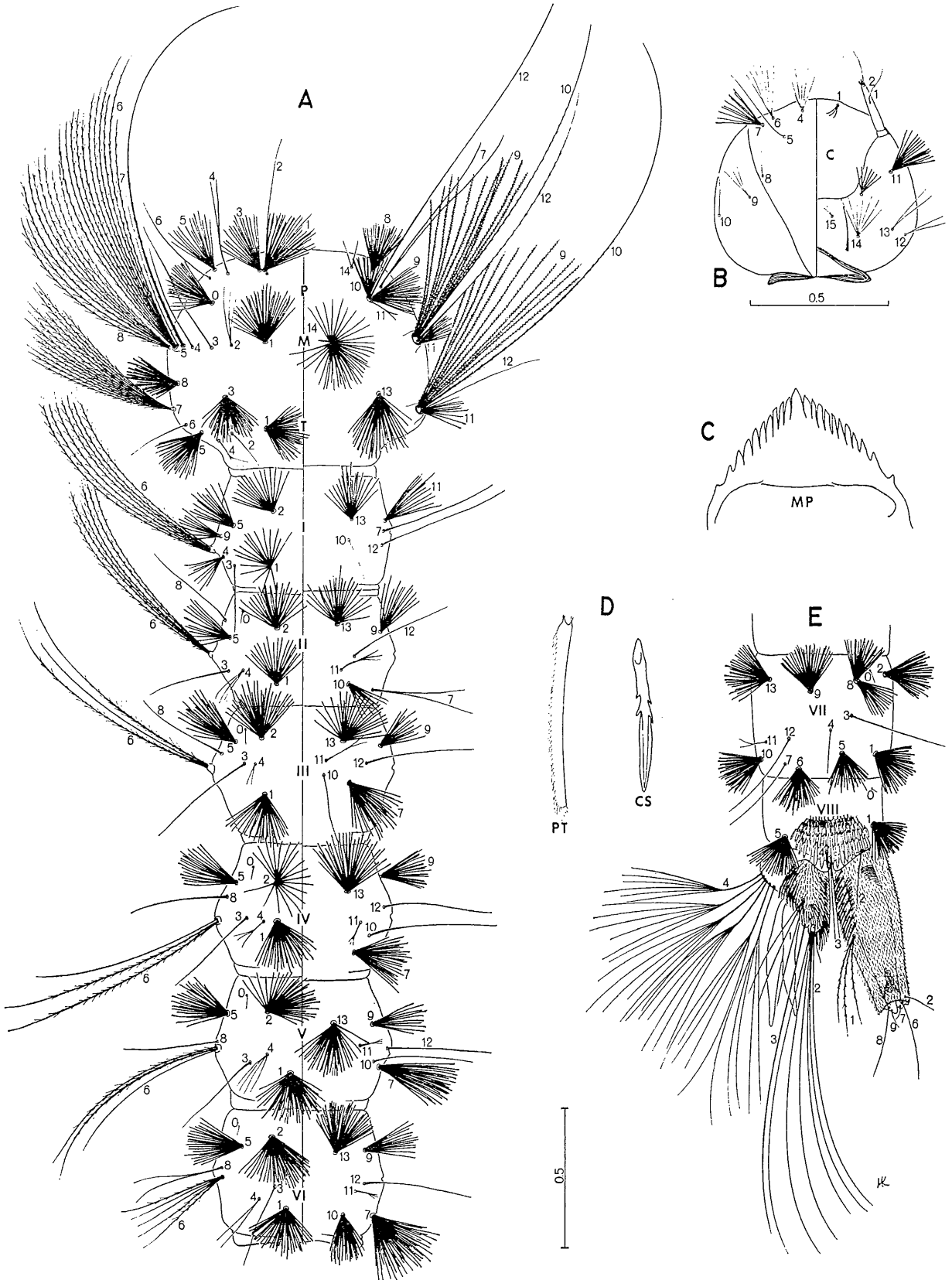


FIG. 3. *Aedes (Finlaya) maffii*, n. sp. Larva. (A) thorax and abdomen. (B) head. (C) mental plate. (D) pecten tooth and comb scale. (E) terminal segments of abdomen.

villensis complex of the *kochi* group and closely resembles *A. (F.) hollingsheadi* Belkin, from which it is differentiated by the overall coloration, wing spots, and ♂ genitalia. Some differences also can be observed in the larvae and pupae. The thoracic yellowish scale pattern is more distinctive in *maffii* than *hollingsheadi* and the coloration of *maffii* is generally more black and white. On the wing, the prehumeral white scaling (or basal spot) of vein R in *maffii* is about 0.6 of distance from base to humeral crossvein, while this is almost entirely dark, or with but few white scales, in *hollingsheadi*. The claspette of the ♂ genitalia in *hollingsheadi* is relatively straight compared to a strongly angled one in *maffii*. The pupa of *maffii* generally has larger and more distinctly outlined unpigmented spots on the mesonotum and metanotum than *hollingsheadi*. The larva of *maffii* has seta 1-C of the head 2-3br, seta 3 of abdominal segment VIII 2br, and 1-S of siphon 3br with minute secondary branches; these are 3-4br, 3br, and 2br without secondary branches, respectively, in the larva of *hollingsheadi*.

Bionomics and disease relations: As mentioned above, larvae and pupae of *maffii* were all found in water collections in leaf axils of 2 broad-leaved

Pandanus spp., 1 with a smooth-edged leaf and the other with spiny edge. All the adult specimens were reared and none were observed in the field. The bionomics and disease relations of the adults are not known.

Distribution: Known only from the Solomon Islands: Rennell Island (Matangi, Tahunuku, Tegano, and Tepoogima) and Sikaiana, Stewart Islands.

Acknowledgments: We wish to express our gratitude to Dr W. A. Steffan, Bishop Museum, for his review, corrections, and comments on the manuscript; to Dr J. N. Belkin, University of California at Los Angeles, for enabling one of us to reexamine the Sikaiana specimens; and to Mary Keeler, Bishop Museum, for the illustrations.

LITERATURE CITED

- Belkin, J. N.** 1962. *The Mosquitoes of the South Pacific*. University of California Press, Berkeley. **1:** 608 p.; **2:** 412 p.
1965. The mosquitoes of the Robinson-Peabody Museum of Salem Expedition to the Southwest Pacific. *Contrib. Amer. Ent. Inst.* **1:** 11-34.
- Maffi, M.** 1973. The mosquitoes (Diptera: Culicidae) of Rennell and Bellona. *Nat. Hist. Rennell I., Br. Solomon Is.* **7:** 41-60.
- Taylor, B.** 1973. The mosquitoes (Diptera, Culicidae) of Rennell and Bellona, a further contribution. *Nat. Hist. Rennell I., Br. Solomon Is.* **7:** 61-71.

