The Mosquitoes of Polynesia with a Pictorial Key to some Species Associated with Filariasis and/or Dengue Fever[1,2]

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ABSTRACT. A list of the mosquitoes of Polynesia is tabulated and their distribution outlined. Keys for the identification of adults and larvae of Polynesian species are provided.

A pictorial key for the recognition of species associated with filariasis and dengue fever is furnished for the use of field workers.

INTRODUCTION

In order to assist field workers in recognizing the vector mosquitoes of filariasis and dengue in Polynesia, pictorial keys to the adult and larval stages have been prepared at the request of the World Health Organization. An attempt was made to make the keys precise, as simple as possible. A few additional characters indicated by a double asterisk (**) have been added to certain species or species groups wherever necessary, to assure an exact identification and to avoid confusion with very similar and/or common species in the area. Unfortunately, the highly variable nature of the *scutellaris* group renders extremely difficult the identification of certain species of this group, some of which can only be identified by examination of the male terminalia. Therefore, it is always advisable that this examination be performed not only for routine confirmation of identification but also for the detection of new species in the area.

Map 1 shows the area of the South Pacific covered by the pictorial key. This area includes all of the Polynesian triangle north of the New Zealand faunal area. The 3 angles are represented by the Fiji Islands in the west, Easter Island in the east and the Hawaiian Islands in the north.

Table 1 lists all the 43 species and forms of mosquitoes known to occur

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[1]Excluding the New Zealand faunal area covered by Belkin (1962).

[2]This study was supported by Research Contract No. DAMD-17-74-C-4086 from the United States Army Medical Research and Development Command, Office of the Surgeon General, Washington, D.C., and by a grant from the World Health Organization, Geneva, Switzerland.

in the area delimited and shows by an asterisk (*) the 19 known or suspected vector species included in the pictorial key. Those species having a limited distribution are also noted.

Table 2 lists the species by island or island group, indicating those that are endemic to a single area, and includes 9 new distribution records.

The non-pictorial keys to genera, subgenera, and species will obviate misidentification and will encourage interested workers to look for species not known to occur in these island groups and seek advice on the possible discovery of new species.

The keys will also assist in confirming the natural vectors of filariasis and/or dengue in the various island groups and in possibly incriminating species that are not known to be vectors at the present time.

It is important that final confirmation and/or determination of a species be made by specialists at one of the major museums such as the United States National Museum, Smithsonian Institution, Washington, D.C. 20560, or the Bernice P. Bishop Museum, P.O. Box 6037, 1355 Kalihi Street, Honolulu, Hawaii 96818. This is especially necessary for new distribution records, new vector species and possible new species.

Table 1
Mosquito Species of Polynesia[1]

1. *Uranotaenia colocasiae* Edwards (Fiji Is. only)
2. *Uranotaenia painei* Edwards (Fiji Is. only)
*3. *Culex (Culex) quinquefasciatus* Say
4. *Culex (Culex) atriceps* Edwards (Society Is. only)
5. *Culex (Culex) kesseli* Belkin (Society Is. only; rare)
6. *Culex (Culex) marquesensis* Stone and Rosen (Marquesas Is. only)
7. *Culex (Culex) roseni* Belkin (Society Is. only)
8. *Culex (Culex) sitiens* Wiedemann
*9. *Culex (Culex) annulirostris* Skuse
10. *Culex (Culex) albinervis* Edwards (Fiji Is. only)
11. *Culex (Culex) samoaensis* (Theobald) (Western Samoa only; rare)
12. *Aedeomyia (Aedeomyia) catasticta* Knab (Fiji Is. only)
13. *Mansonia (Coquillettidia) fijiensis* Belkin (Fiji Is. and rare in Western Samoa)
14. *Aedes (Finlaya) burnetti* Belkin (Fiji Is. only)
*15. *Aedes (Finlaya) fijiensis* Marks (Fiji Is. only)
16. *Aedes (Finlaya) freycinetiae* Laird (Fiji Is. only)
*17. *Aedes (Finlaya) oceanicus* Belkin
*18. *Aedes (Finlaya) samoanus* (Gruenberg) (Samoa Is. only)
*19. *Aedes (Finlaya) tutuilae* Ramalingam and Belkin (see Ramalingam and Belkin, 1965) (Samoa Is. only)
20. *Aedes (Finlaya)* sp. Albino form (Fiji Is. only)

21. *Aedes (Levua) suvae* Stone and Bohart (Fiji Is. only)
22. *Aedes (Ochlerotatus) edgari* Stone and Rosen (Society Is. only)
*23. *Aedes (Ochlerotatus) vigilax* (Skuse) (Fiji Is. only)
24. *Aedes (Aedimorphus) vexans* (Meigen)
*25. *Aedes (Stegomyia) aegypti* (Linnaeus)
*26. *Aedes (Stegomyia) albopictus* (Skuse) (Hawaiian Is. only)
*27. *Aedes (Stegomyia) cooki* Belkin (Niue I. and Tonga Is. only)
*28. *Aedes (Stegomyia) futunae* Belkin (Horn Is. only)
*29. *Aedes (Stegomyia) horrescens* Edwards (Fiji Is. only)
*30. *Aedes (Stegomyia) polynesiensis* Marks (see Huang, 1975)
*31. *Aedes (Stegomyia) pseudoscutellaris* (Theobald) (see Huang, 1975) (Fiji Is. only)
*32. *Aedes (Stegomyia) rotumae* Belkin (Rotuma I. only)
*33. *Aedes (Stegomyia) tabu* Ramalingam and Belkin (see Ramalingam and Belkin, 1965) (Tonga Is. only)
*34. *Aedes (Stegomyia) tongae* Edwards (Tonga Is. only)
*35. *Aedes (Stegomyia) upolensis* Marks (Samoa Is. only)
*36. *Aedes (Stegomyia)* sp. Tafahi form (Tonga Is. only)
37. *Aedes (Stegomyia)* sp. Wallis form (Wallis Is. only; rare)
38. *Tripteroides (Tripteroides) purpuratus* (Edwards) (Fiji Is. only)
39. *Tripteroides (Rachionotomyia) rotumanus* (Edwards) (Rotuma I. only)
40. *Toxorhynchites (Toxorhynchites) amboinensis* (Doleschall) (see Steffan, 1968) (introduced)
41. *Toxorhynchites (Toxorhynchites) brevipalpis* Theobald (see Steffan, 1968) (introduced)
42. *Toxorhynchites (Toxorhynchites) inornatus* (Walker) (introduced)
43. *Toxorhynchites (Toxorhynchites) splendens* (Wiedemann) (introduced)

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[1]Excluding the New Zealand faunal area covered by Belkin (1962).

*Included in the Pictorial Key.

Table 2
Distribution of Mosquito Species in Polynesia[1,2]

1. Fiji Islands 23 spp.
1, 2, 3, 8, 9, *10, 12,* 13, *14, 15, 16, 20, 21, 23,* 24, 25, *29,* 30, *31,* 34,* *38,* 42, 43

2. Tonga Islands 10 spp.
3, 8, 9, 17, 24, 25, 27,* *33, 34, 36*

3. Samoa Islands 13 spp.
3, 8, 9, *11* (rare), 13 (rare), 17, *18, 19,* 24, 25, 30, *35,* 41

4. Rotuma Island 6 spp.
3,** 9, 24, *32, 39, 43*** (no *Aedes aegypti*; *Culex sitiens* may be present)

5. Horn Islands 6 spp.
3,* 8,* 9,* 17,* *28,* 30 (no *Aedes aegypti*)

6. Wallis Islands 8 spp.
3, 8, 9, 17,* 24, 25, 30, *37*

7. Ellis Islands 6 spp.
3, 8, 9, 24, 25, 30

8. Tokelau Islands 2 spp.
24, 30

9. Phoenix Islands (unknown)
3??, 25??, 30?

10. Niue Island 4 spp.
3, 8, 25, 27

11. Northern Cook Islands 4 spp.
3, 9, 25, 27

12. Southern Cook Islands 5 spp.
3, 9, 24, 25, 30

13. Society Islands 8 spp.
3, *4, 5, 7,* 9, *22,* 25, 30

14. Austral Islands 4 spp.
3, 9, 25, 30

15. Tuamotu Archipelago 4 spp.
3, 9, 25, 30 (*Aedes albopictus* was introduced on one small island, but apparently did not become established)

16. Rapa Island 2 spp.
3, 9

17. Pitcairn Island 3 spp.
3, 9, 30

18. Easter Island 1 sp.
3

19. Marquesas Islands 3 spp.
3, *6*, 30

20. Line Islands (unknown)
3?, 25?, 30?

21. Hawaiian Islands 6 spp.
3, 24, 25, *26*, *40*, 41 (There were no mosquitoes in the Hawaiian Islands until 1898 when a Spanish ship introduced the first species.)

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[1]Excluding the New Zealand faunal area covered by Belkin (1962).

[2]Numbers under each island or island group correspond to the numbering of the mosquito species listed in Table 1; italicized numbers (e.g. *1*, *15*) indicate that the species is restricted to that island or island group.

*New distribution records (J. C. Hitchcock, personal communication).

**New distribution records (I. M. Rakai, personal communication to J.C. Hitchcock in "Report on mosquito survey - Rotuma", 17-19 August 1972).

KEYS TO GENERA, SUBGENERA, AND SPECIES IN POLYNESIA[1]

A. *Adults*

1. Apical half of proboscis bent sharply downward and backward and conspicuously more slender than basal half; posterior margin of scutellum evenly rounded . . . . . *Toxorhynchites*

Apical half of proboscis not sharply bent downward and backward; posterior margin of scutellum distinctly trilobed 2

2(1). Cell R_2 always shorter than vein R_{2+3}; wing membrane without distinct microtrichia . . . . . *Uranotaenia*

Cell R_2 always at least as long as vein R_{2+3}; wing membrane with distinct microtrichia 3

3(2). Spiracular setae present 4

Spiracular setae absent 5

4(3). Vertex of head with azure blue scales . . . . . *Tripteroides (Tripteroides) purpuratus* (Edwards)

Vertex of head without azure blue scales . . . . . *Tripteroides (Rachionotomyia) rotumanus* (Edwards)

5(3). Flagellomeres 12 and 13 relatively short and thick . . . . . *Aedeomyia (Aedeomyia) catasticta* Knab

Flagellomeres 12 and 13 normal, neither short nor thick 6

6(5). Postspiracular setae usually absent 7

Postspiracular setae usually present 8

7(6). Claws of hindleg very small and inconspicuous; pulvilli present on all legs . . . . . *Culex*

Claws of hindleg quite large and conspicuous; pulvilli absent . . . . . *Mansonia (Coquillettidia) fijiensis* Belkin

8(6). Wing scales broad; wings spotted; scutellum with broad scales on all lobes . . . . . *Aedes (Finlaya) kochi* group

Wing scales narrow 9

9(8). Head with decumbent scales largely broad, erect forked scales not numerous, restricted to occiput. *Aedes (Stegomyia)*

Head with decumbent scales largely narrow, erect forked scales numerous, not restricted to occiput 10

10(9). Pleural scaling restricted to posterior pronotum and sternopleuron . . . . . *Aedes (Levua) suvae* Stone and Bohart

Pleural scaling not restricted to posterior pronotum and sternopleuron 11

11(10). Lower prealar scale patch present . . . . . *Aedes (Ochlerotatus)*

Lower prealar scale patch absent . . . . . *Aedes (Aedimorphus) vexans* (Meigen)

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[1]Excluding the New Zealand faunal area covered by Belkin (1962).

Aedes (Finlaya) kochi group

1. Tibiae with contrasting dark and light scales 2

Tibiae with all whitish scales . . . . . Fiji albino form

2(1). Halter largely dark scaled . . . . . *fijiensis* Marks

Halter largely pale, yellow scaled 3

3(2). Hind tarsomere 4 with all dark scales . . . . . *burnetti* Belkin

Hind tarsomere 4 with at least some yellow scales ventrally or white scales apically . . . *freycinetiae* Laird

Aedes (Ochlerotatus)

Anterior pronotum, propleuron and paratergite with scales . . . . . *vigilax* (Skuse)

Anterior pronotum, propleuron and paratergite without scales . . . . . .*edgari* Stone and Rosen

Culex (Culex)

1. Lower mesepimeral setae present; proboscis without a distinct complete median light ring; tarsi without distinct light rings 2

Lower mesepimeral setae absent; proboscis with a distinct complete median light ring; tarsi with distinct basal or basal and apical light rings 5

2(1). Abdominal tergites with transverse basal pale bands connecting basolateral pale spots on some segments 3

Abdominal tergites with basolateral pale spots not connected by transverse basal pale bands on any segment 4

3(2). Female: ventral surface of proboscis extensively pale scaled; male: palpus with white scales on ventral surface of segments 4 and 5 . . . . . *quinquefasciatus* Say

Female: ventral surface of proboscis uniformly dark; male: palpus without white scales on ventral surface of segments 4 and 5 . . . *marquesensis* Stone and Rosen

4(2). Dorsal surface of hindfemur with basal 0.4 or more white . . . . . *kesseli* Belkin

Dorsal surface of hindfemur with basal 0.1 or less white . . . . . *atriceps* Edwards

5(1). Abdominal tergites without any indication of transverse pale bands . . . . . *samoaensis* (Theobald)

Abdominal tergites with complete transverse pale bands on some segments 6

6(5). A more or less conspicuous patch of broad erect scales in front of supraalar bristles . . . . . *albinervis* Edwards

No broad erect scales in front of supraalar bristles. 7

7(6). Foretibia usually with a line of small pale spots on anterior surface along dorsal row of bristles . . .*annulirostris* Skuse

Foretibia usually without any pale spots on anterior surface along dorsal row of bristles 8

8(7). Midfemur usually with some pale speckling on anterior surface . . . . . .*sitiens* Wiedemann

Midfemur usually without pale speckling on anterior surface . . . . . *roseni* Belkin

Uranotaenia

Propleuron with scales; vein R_2 at most 0.6 length of vein M_{1+2} . . . . . *colocasiae* Edwards

Propleuron without scales; vein R_2 at least 0.80 length of vein M_{1+2} . . . . . *painei* Edwards

Toxorhynchites (Toxorhynchites)

Females

1. Fore tarsomere 1 largely dark scaled; upper posterior pronotum largely with bluish and purplish scales . . . . . *brevipalpis* Theobald

Fore tarsomere 1 largely light scaled 2

2(1). Upper posterior pronotum largely with bluish green scales . . . . . *inornatus* (Walker)

Upper posterior pronotum largely with white scales 3

3(2). Lateral scale tuft of abdominal segment VI largely yellow . . . . . *splendens* (Wiedemann)

Lateral scale tuft of abdominal segment VI largely pale . . . . . *amboinensis* (Doleschall)

Males

1. Lateral scale tuft of abdominal segment VIII black; upper posterior pronotum largely with white scales . . . . . *amboinensis* (Doleschall)

Lateral scale tuft of abdominal segment VIII orange yellow 2

2(1). Flagellomere 1 with dark scales on mesal surface; upper posterior pronotum largely with bluish and purplish scales . . . . . *brevipalpis* Theobald

Flagellomere 1 with light scales on mesal surface 3

3(2). Abdominal tergum I with dark scales medially and yellowish scales laterally . . . . . *splendens* (Wiedemann)

Abdominal tergum I with greenish scales medially and white scales laterally . . . . . *inornatus* (Walker)

B. *Larvae*

1. Median dorsal valve of siphon long, fixed, and with serrated dorsal margin . . . . . *Mansonia (Coquillettidia) fijiensis* Belkin

   Median dorsal valve of siphon short, movable, and without serrated dorsal margin 2

2(1). Siphon with more than one pair of subventral (1-S) tufts 3

   Siphon with a single pair of subventral (1-S) tufts 5

3(2). Siphon with acus . . . . . *Culex*

   Siphon without acus 4

4(3). Comb scales arising from a sclerotized plate . . . . . *Tripteroides (Tripteroides) purpuratus* (Edwards)

   Comb scales free, not arising from a sclerotized plate . . . . . *Tripteroides (Rachionotomyia) rotumanus* (Edwards)

5(2). Abdominal setae in groups of 3-5 on large common sclerotized plates . . . . . *Toxorhynchites*

   Abdominal setae arising separately and without strong sclerotized plates 6

6(5). Antenna greatly swollen from base to setae 2-4 A . . . . . *Aedeomyia (Aedeomyia) catasticta* Knab

   Antenna at most slightly swollen proximad of seta 1-A 7

7(6). Maxillary suture of head capsule at most barely indicated on anterior margin, never reaching posterior tentorial pit . . . . . *Uranotaenia*

   Maxillary suture of head capsule always complete and reaching posterior tentorial pit 8

8(7). Abdominal segment I with seta 12 present 9

Abdominal segment I with seta 12 absent 11

9(8). Ventral brush with 5 pairs of setae, each seta with long basal stalk, all arising from basal boss, without distinct bars, and no precratal tufts . . . . . *Aedes (Finlaya) kochi* group

Ventral brush with 5-7 pairs of setae on grid, and with 2-4 precratal tufts 10

10(9). Saddle large, extending on lateral surface; seta 1-X on or adjacent to saddle . . . . . *Aedes (Ochlerotatus)*

Saddle small, restricted to dorsal surface; seta 1-X distinctly removed from saddle . . . . *Aedes (Levua) suvae* Stone and Bohart

11(8). Ventral brush with 6-7 pairs of setae on grid, and with 2-4 precratal tufts . . . . . *Aedes (Aedimorphus) vexans* (Meigen)

Ventral brush with 4 or 5 pairs of setae, and no precratal tufts . . . . . *Aedes (Stegomyia)*

Aedes (Finlaya) kochi group

1. Comb scales in middle of posterior row without fringe . . . . . *burnetti* Belkin

Comb scales in middle of posterior row with fringe 2

2(1). Comb scale with 1, 2 pairs of sharp denticles on basal part, distal part flattened, slightly expanded, rounded apically and fringed . . . . . *fijiensis* Marks

Comb scale without basal denticles, with a slender long stem and a broad spatulate apex, and fringed . . . . . *freycinetiae* Laird

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The larva of Albino form is unknown.

Aedes (Ochlerotatus)

Siphon index more than 2.0; seta 5-C usually with 3-5 branches . . . . . .*edgari* Stone and Rosen

Siphon index less than 2.0; seta 5-C usually with 1-2 branches . . . . . *vigilax* (Skuse)

Culex (Culex)

1. Antenna less than 0.35 head length; setae 4, 6-C placed far forward on head capsule 2

   Antenna more than 0.40 head length; setae 4, 6-C placed farther back on head capsule 4

2(1). Seta 1-C thick, spiniform . . . . . *marquesensis* Stone and Rosen

   Seta 1-C very thin 3

3(2). Pecten tooth usually with 1-2 strong basal denticles . . . . . *atriceps* Edwards

   Pecten tooth usually simple . . . . . *kesseli* Belkin

4(1). Seta 1-C markedly flattened, its apex rounded or irregular 5

   Seta 1-C very slender or moderately thickened, its apex acuminate or filamentous 6

5(4). Saddle complete . . . . . *sitiens* Wiedemann

   Saddle incomplete . . . . . *roseni* Belkin

6(4). Seta 1-III-VI poorly developed, usually shorter than seta 3-III-VI . . . . . *albinervis* Edwards

   Seta 1-III-VI well developed, usually longer than seta 3-III-VI 7

7(6). Seta 1-C very slender, filamentous distally, usually very lightly pigmented . . . . . *quinquefasciatus* Say

   Seta 1-C thickened, not filamentous distally, usually very strongly pigmented . . . . . *annulirostris* Skuse

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The larva of *samoaensis* (Theobald) is unknown.

Uranotaenia

Seta 9-M, T single . . . . . *colocasiae* Edwards

Seta 9-M, T multiple . . . . . *painei* Edwards

Toxorhynchites (Toxorhynchites)

1. Seta 2-II-VI usually attached to large dorsal plate . . . . . *inornatus* Walker

Seta 2-II-VI free from large dorsal plate 2

2(1). Seta 11-IV, V usually with 3-4 branches . . . *splendens* (Wiedemann)

Seta 11-IV, V usually single or double 3

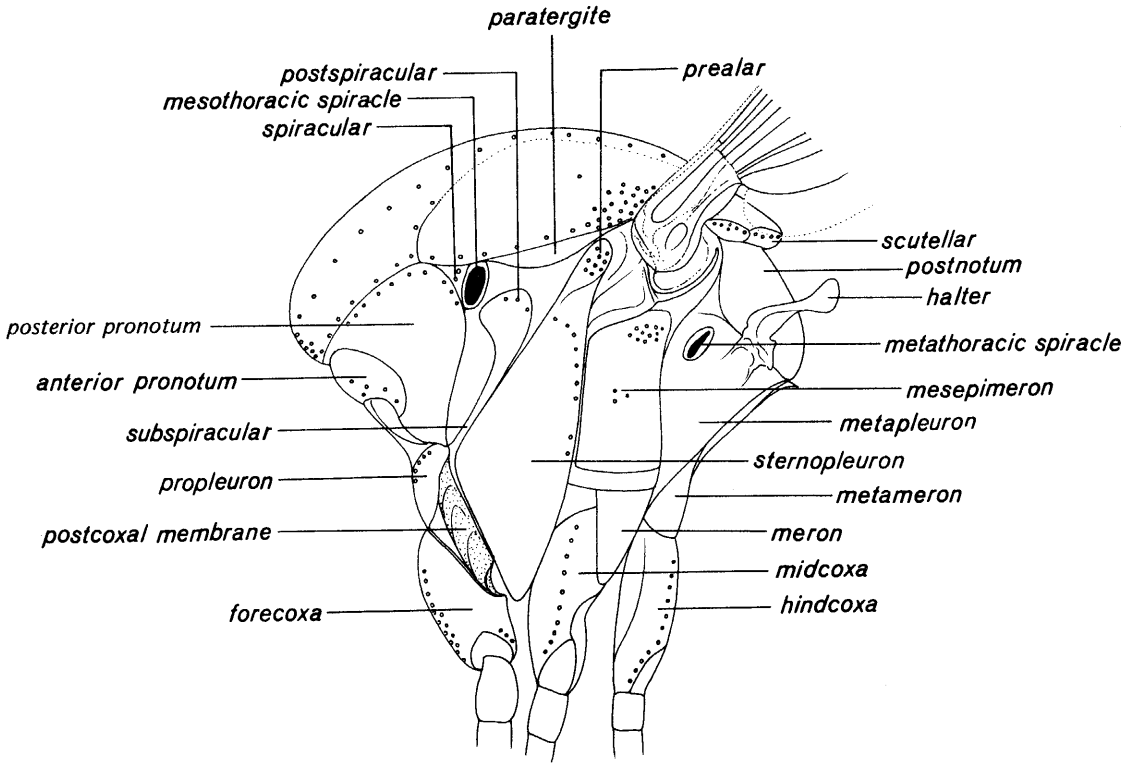
3(2). Seta 9-C with 2-4 branches; 12-C with 3-5 branches . . . . . *brevipalpis* Theobald

Seta 9-C with 5 or more branches; 12-C with 6 or more branches . . . . . *amboinensis* (Doleschall)

MORPHOLOGICAL FEATURES USED IN IDENTIFICATION

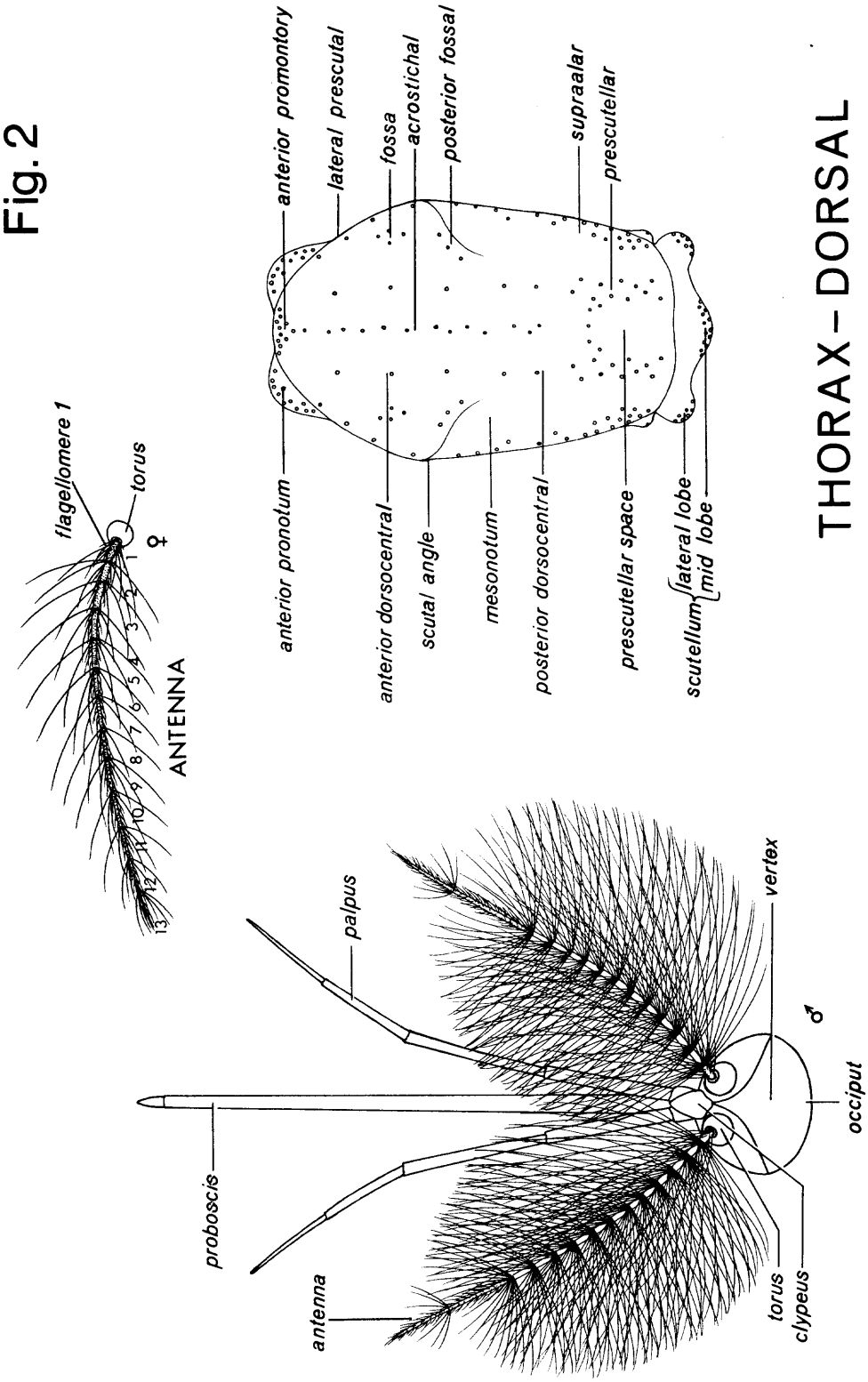
A. ADULT

Fig.1



THORAX - LATERAL

Fig. 2


flagellomere 1
torus
♀
1
2
3
4
5
6
7
8
9
10
11
12
13
ANTENNA
anterior promontory
lateral prescutal
fossa
acrostichal
posterior fossal
supraalar
prescutellar
anterior pronotum
anterior dorsocentral
scutal angle
mesonotum
posterior dorsocentral
prescutellar space
scutellum
lateral lobe
mid lobe
THORAX-DORSAL
palpus
proboscis
antenna
vertex
♂
occiput
torus
clypeus
HEAD-DORSAL

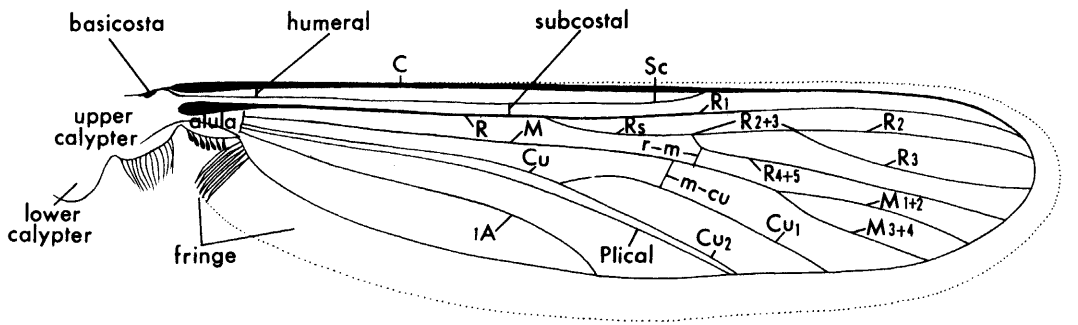
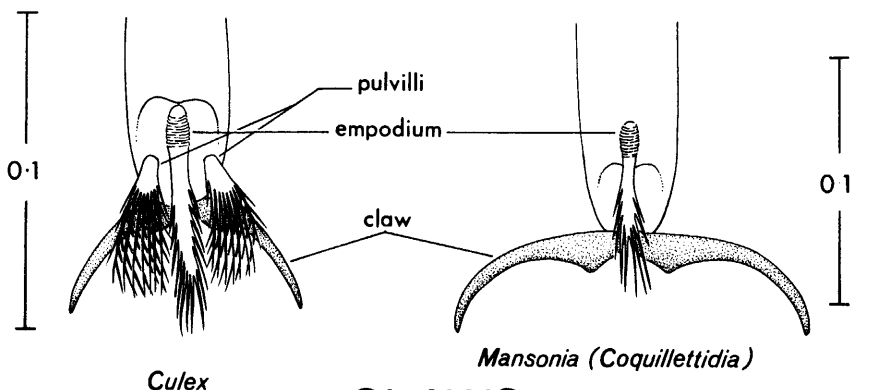
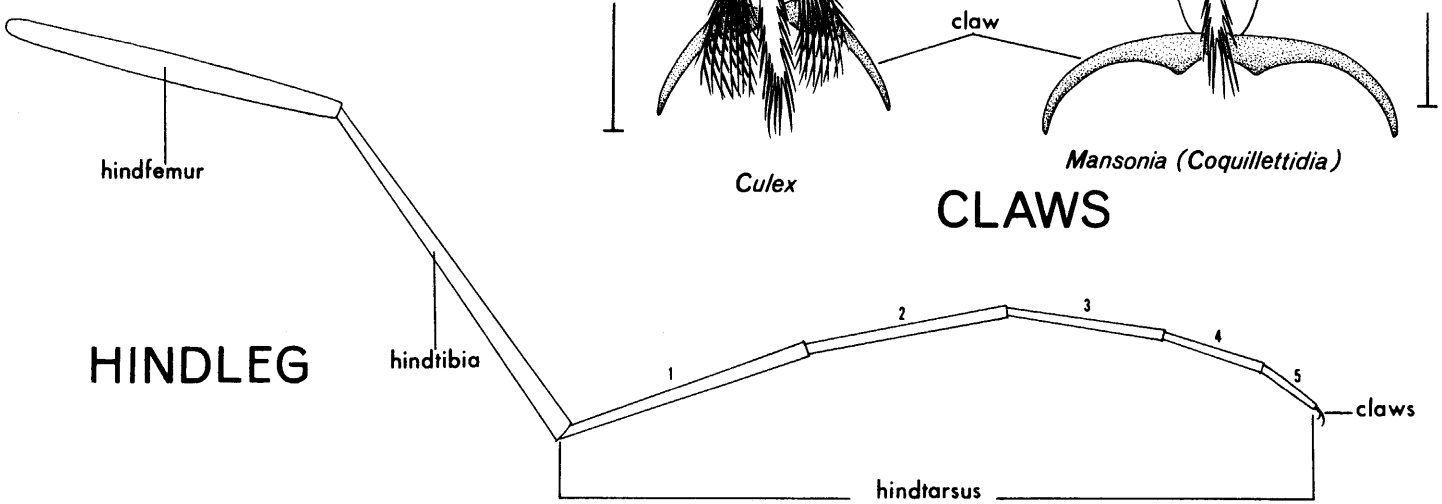


Fig. 3

WING–DORSAL



CLAWS



HINDLEG

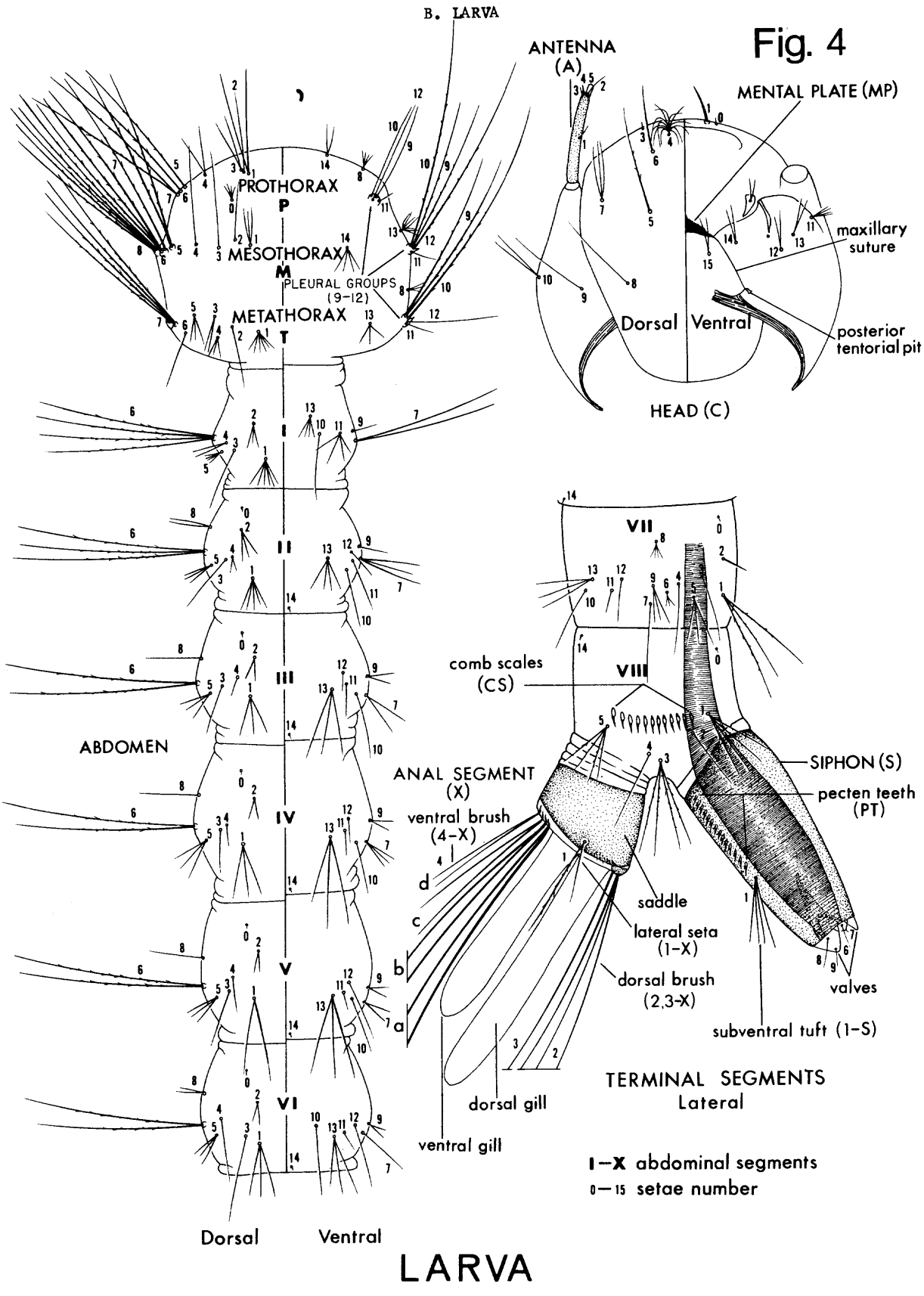
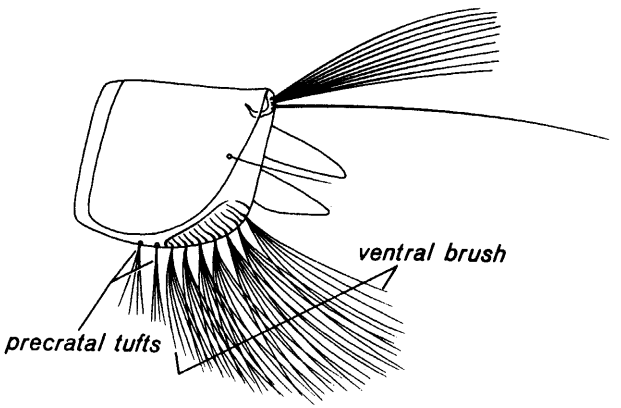
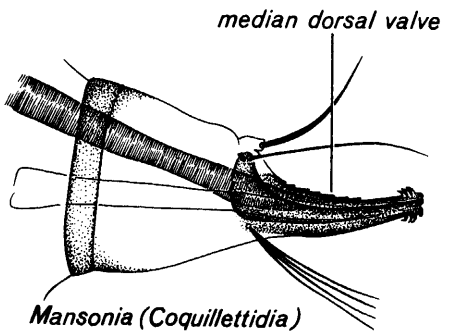

B. LARVA
Fig. 4
ANTENNA (A)
MENTAL PLATE (MP)
maxillary suture
posterior tentorial pit
Dorsal
Ventral
HEAD (C)
PROTHORAX
P
MESOTHORAX
M
METATHORAX
T
PLEURAL GROUPS (9-12)
ABDOMEN
I
II
III
IV
V
VI
VII
VIII
comb scales (CS)
ANAL SEGMENT (X)
ventral brush (4-X)
SIPHON (S)
pecten teeth (PT)
saddle
lateral seta (1-X)
dorsal brush (2,3-X)
valves
subventral tuft (1-S)
dorsal gill
ventral gill
TERMINAL SEGMENTS
Lateral
I–X abdominal segments
0–15 setae number
Dorsal
Ventral
LARVA

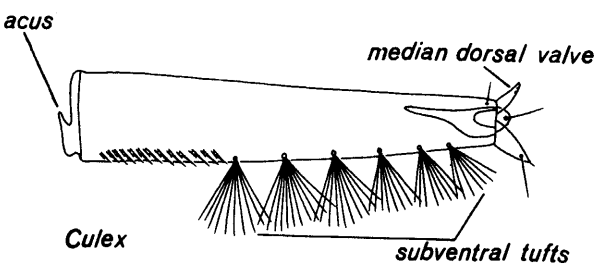
Fig. 5



ANAL SEGMENT (X)



SIPHON

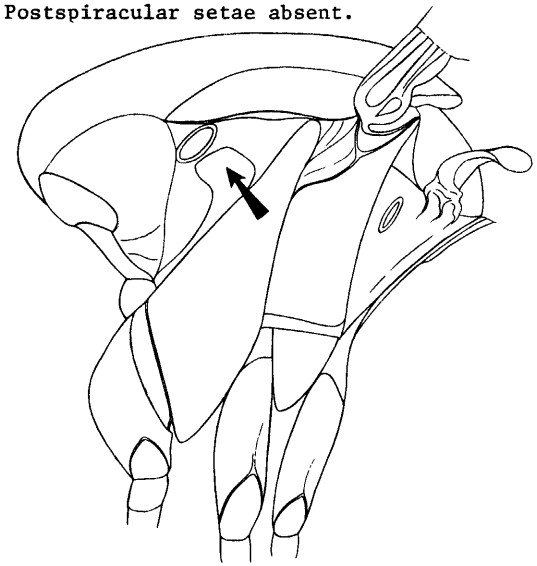


SIPHON

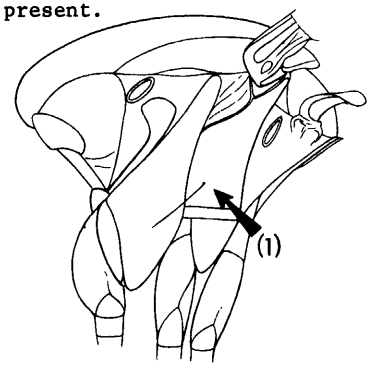
PICTORIAL KEY

A. ADULTS

Postspiracular setae absent.

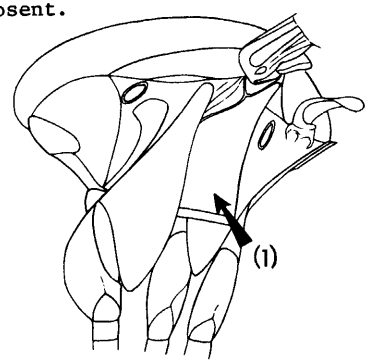


(1) Lower mesepimeral setae present.



Culex quinquefasciatus Say

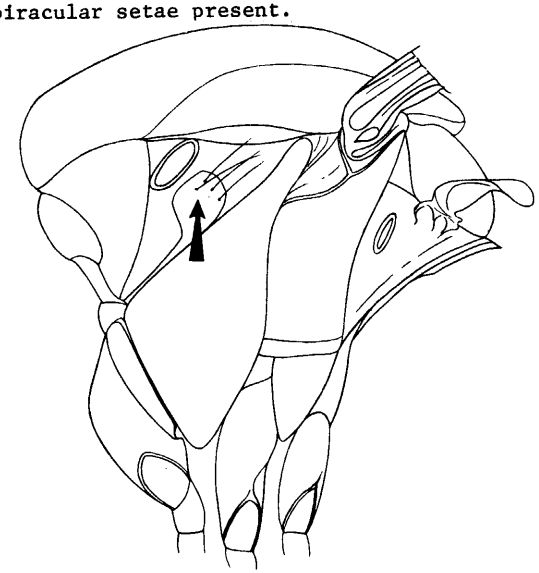
(1) Lower mesepimeral setae absent.



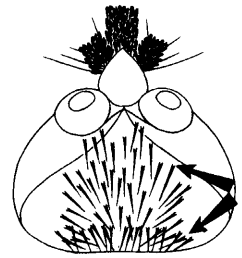
** (2) Foretibia usually with a line of small pale spots on anterior surface along dorsal row of bristles.

Culex annulirostris Skuse

Postspiracular setae present.



Erect forked scales numerous, not restricted to occiput.



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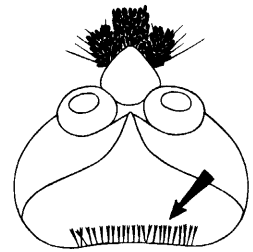
Erect forked scales not numerous, restricted to occiput.



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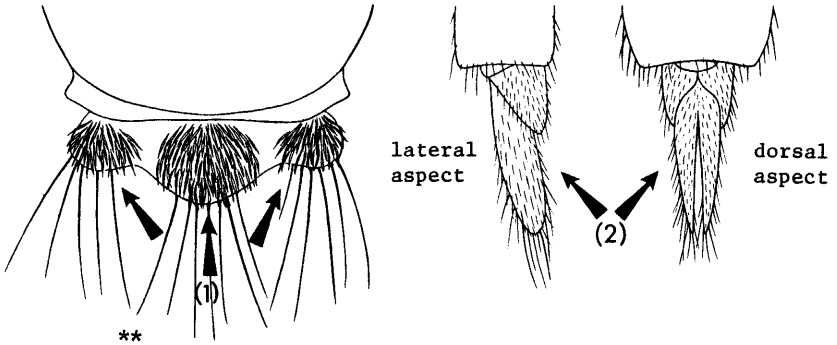
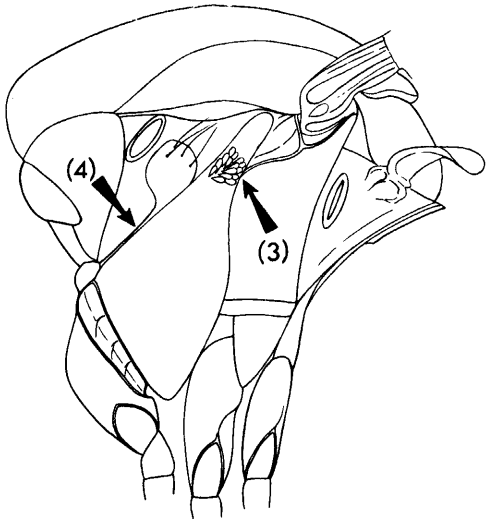
(1) Scutellum with all narrow scales.

(2) ♀ cercus long and slender.



**
(3) Lower prealar scale patch present.

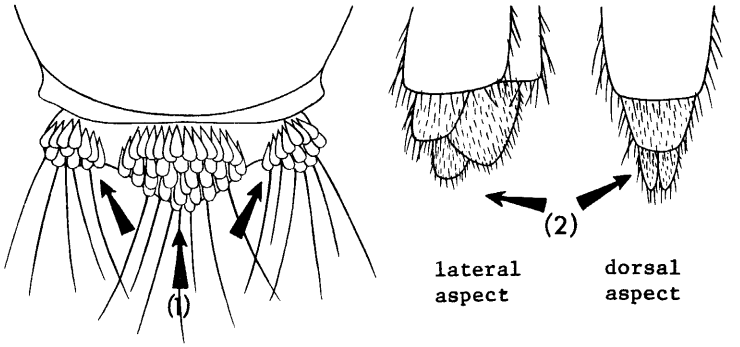
(4) Subspiracular area without scales.



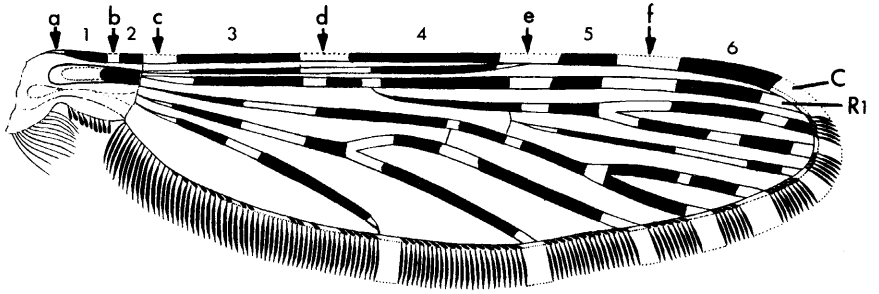
Aedes vigilax (Skuse)

(1) Scutellum with all broad scales.

(2) ♀ cercus short and broad.



**
(3) Dorsal wing scales in contrasting pattern of dark and light scales.



Pale areas
a - Basal
b - Prehumeral
c - Humeral
d - Sectoral
e - Subcostal
f - Accessory subcostal

Dark spots
1. basal
2. prehumeral
3. subbasal
4. median
5. preapical
6. apical

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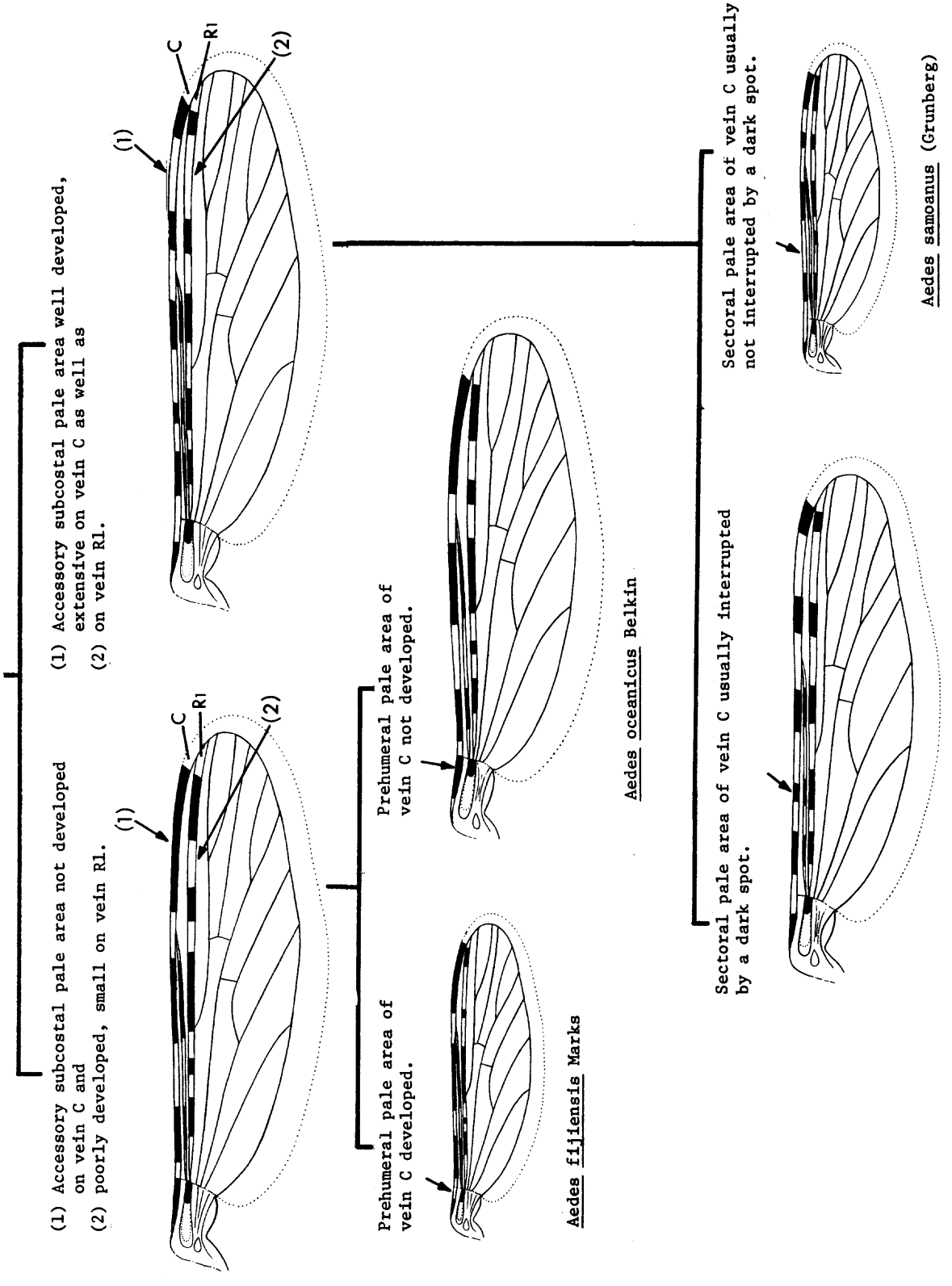
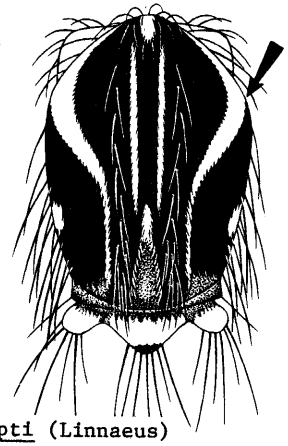
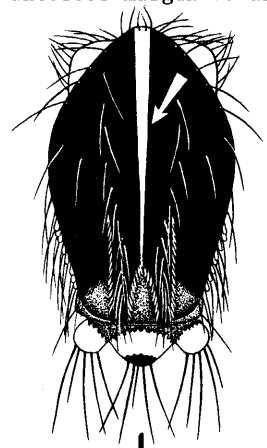

(1) Accessory subcostal pale area not developed on vein C and
(2) poorly developed, small on vein R1.
(1) Accessory subcostal pale area well developed, extensive on vein C as well as
(2) on vein R1.
C
R1
(1)
(2)
Prehumeral pale area of vein C developed.
Prehumeral pale area of vein C not developed.
Sectoral pale area of vein C usually interrupted by a dark spot.
Sectoral pale area of vein C usually not interrupted by a dark spot.
Aedes filiensis Marks
Aedes oceanicus Belkin
Aedes tutuilae Ramalingam & Belkin
Aedes samoanus (Grunberg)

Scutum with lyre-shaped white markings.

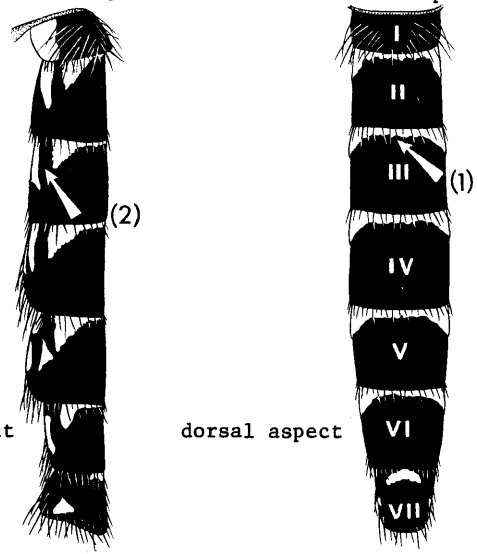


Aedes aegypti (Linnaeus)

Scutum with a long median longitudinal white stripe extending from anterior margin to about level of wing root.

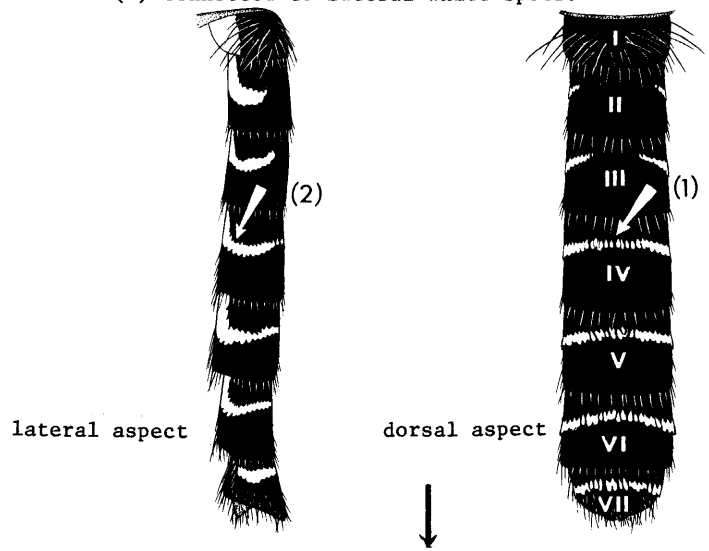


(1) Abdominal tergites with complete basal transverse white bands and
(2) with separate basolateral white spots.



Aedes albopictus (Skuse)

(1) Abdominal tergites without transverse white bands or with complete or incomplete subbasal white bands
(2) connected to lateral white spots.



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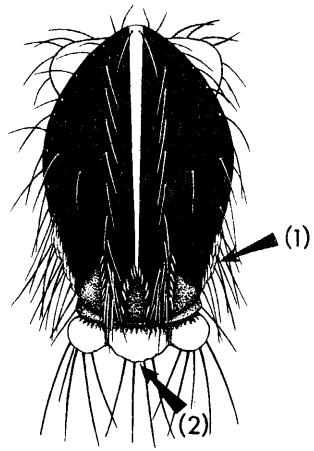
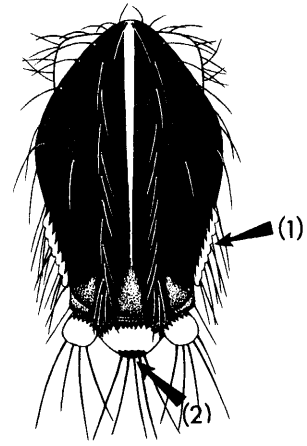
(1) Supraalar white line more or less complete, with only narrow scales over wing root;
(2) midlobe of scutellum with all broad white scales and without dark scales apically.

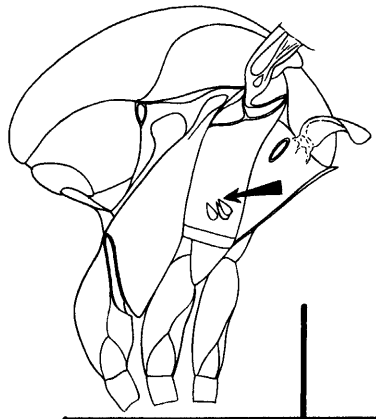


Aedes futunae Belkin

(1) Supraalar white line complete, with broad flat scales over wing root;
(2) midlobe of scutellum with broad white scales and with dark scales apically.



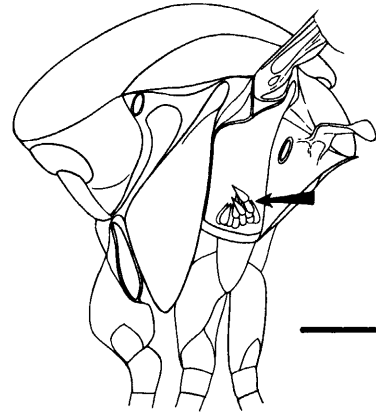
Lower mesepimeral white scale patch absent or very small, with no more than 3 scales.



Hind tarsomere 4 with basal 0.75 or more white.

Aedes rotumae Belkin

Lower mesepimeral white scale patch well developed, with at least more than 3 scales.



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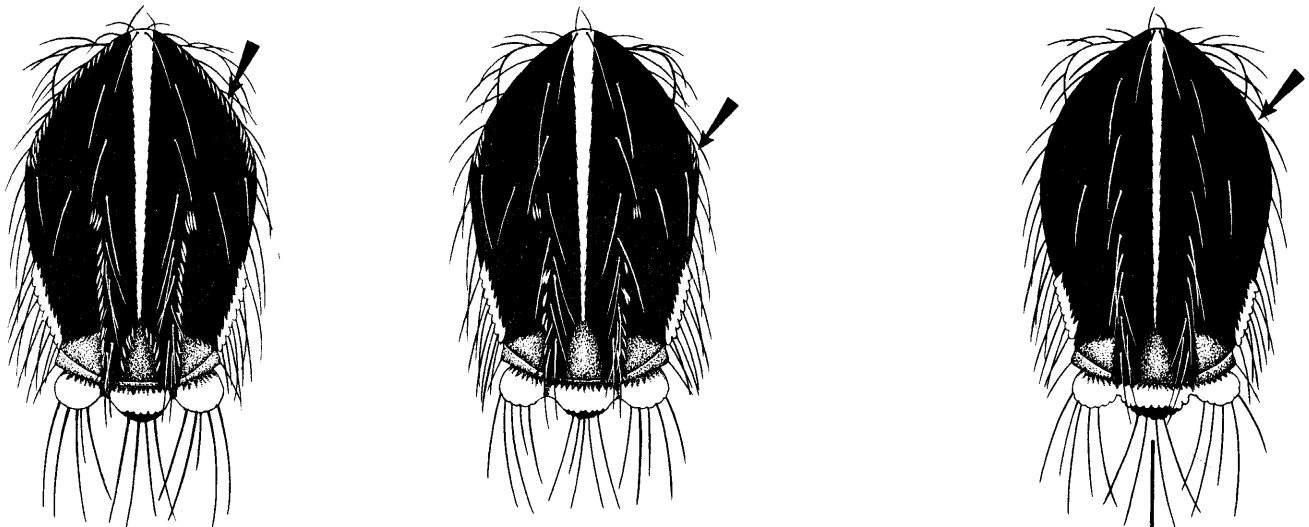
Hind tarsomere 4 with basal 0.60-0.70 white.

Aedes upolensis Marks

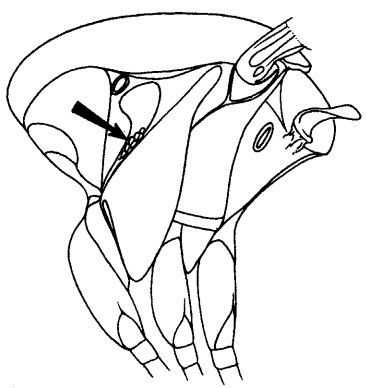
Lateral prescutal white line present, or at least with some narrow white scales on scutal angle area.

Lateral prescutal white line not present.



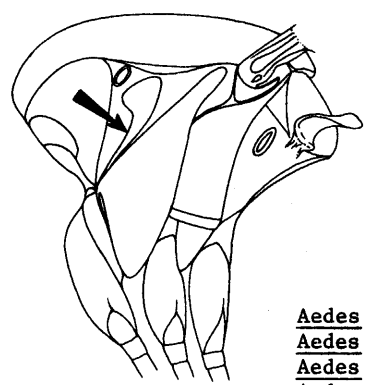
Aedes pseudoscutellaris (Theobald)

Subspiracular area with scales.



Aedes horrescens Edwards

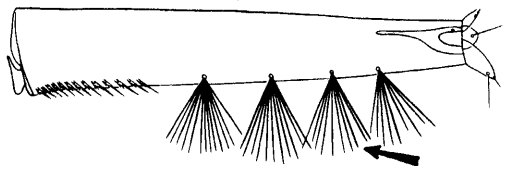
Subspiracular area without scales.



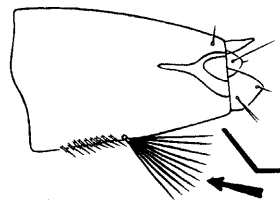
Aedes polynesiensis Marks
Aedes tongae Edwards
Aedes tabu Ramalingam & Belkin
Aedes cooki Belkin
Aedes sp. Tafahi form

B. LARVAE

Siphon with more than 3 pairs of subventral tufts.



Siphon with a single pair of subventral tufts.



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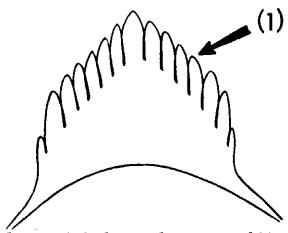
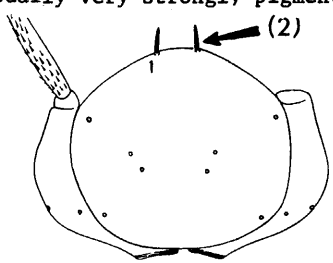
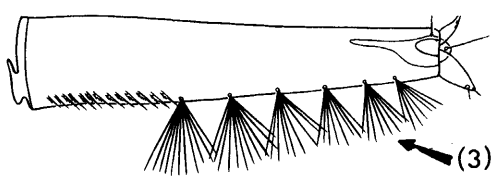
(1) Mental plate usually with 6-9 teeth on each side of median tooth.



(2) Seta 1-C thickened, not filamentous distally, usually very strongly pigmented.

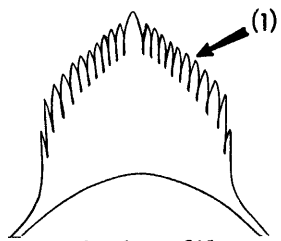


(3) Siphon with 5-7 pairs of subventral tufts.

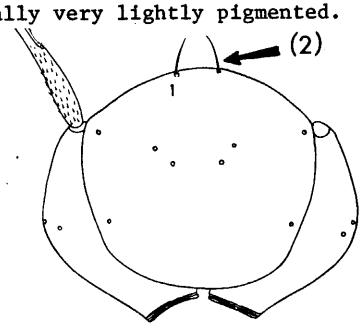


Culex annulirostris Skuse

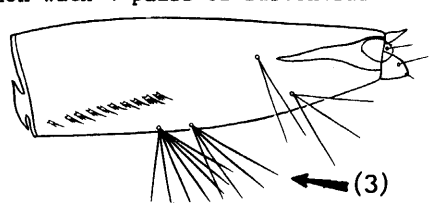
(1) Mental plate with at least 10 teeth on each side of median tooth.



(2) Seta 1-C very slender, filamentous distally, usually very lightly pigmented.



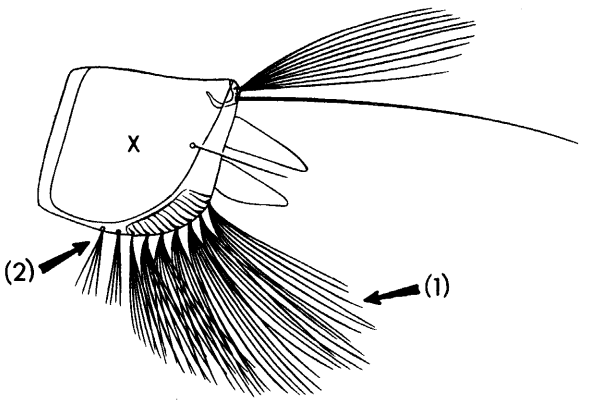
(3) Siphon with 4 pairs of subventral tufts.



Culex quinquefasciatus Say

(1) Ventral brush with 6-7 pairs of setae and

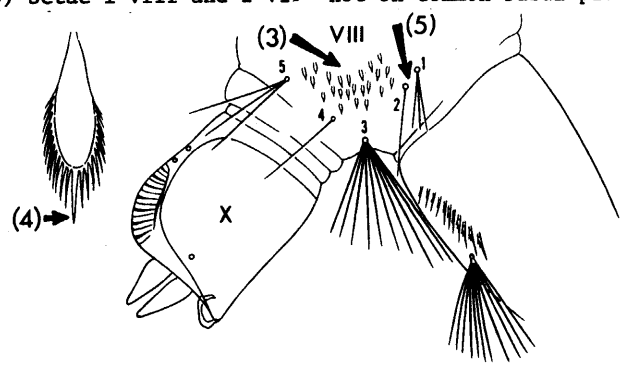
(2) with 2-4 precratal tufts.



**
(3) Comb in an irregular 2-3 rows,

(4) comb scale small, strongly fringed and usually with a differentiated apical spicule.

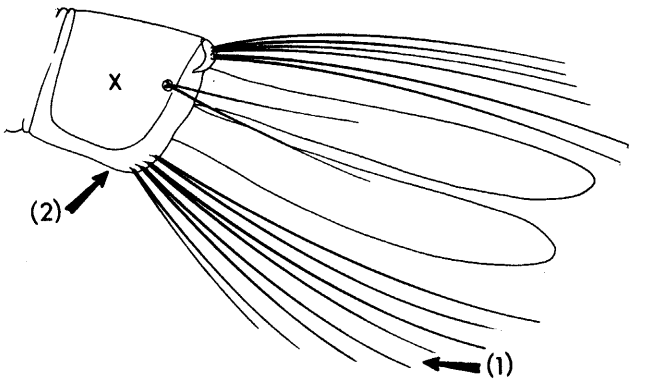
(5) Setae 1-VIII and 2-VIII not on common basal plate.

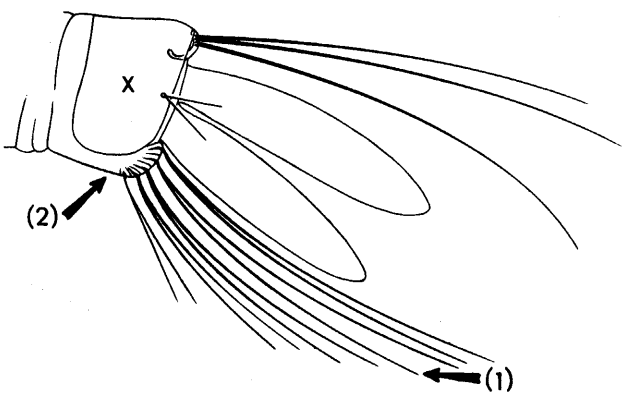


Aedes vigilax (Skuse)

(1) Ventral brush with 4 or 5 pairs of setae and

(2) no precratal tufts.





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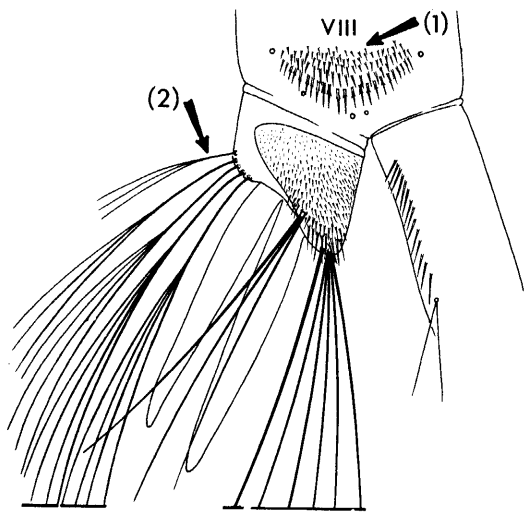
(1) Comb in a patch of several rows of scales, those of distal row elongate and varied in development.



**
(2) Ventral brush with 5 pairs of setae, each seta with long basal stalk, all arising from basal boss, without distinct bars.

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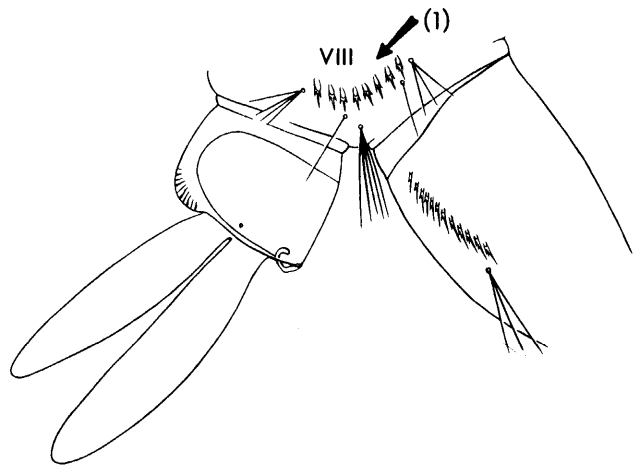
(1) Comb in a single row.



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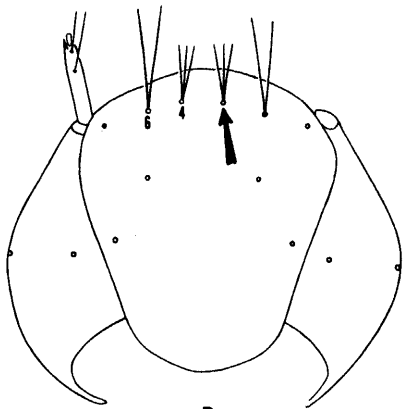
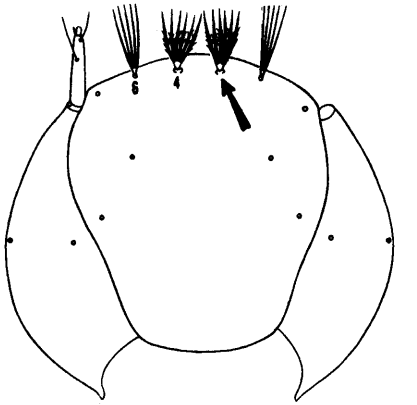
Seta 4-C usually with 2-5 branches, without enlarged base.

Seta 4-C usually at least with 6 branches, and always with enlarged base.



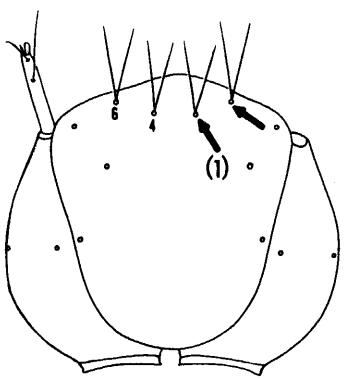


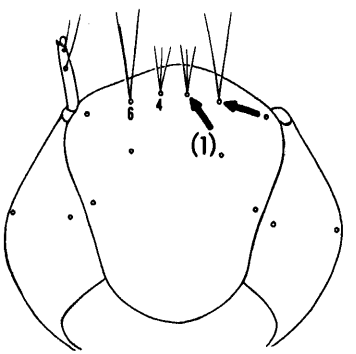
(1) Seta 4-C distinctly caudad of 6-C.

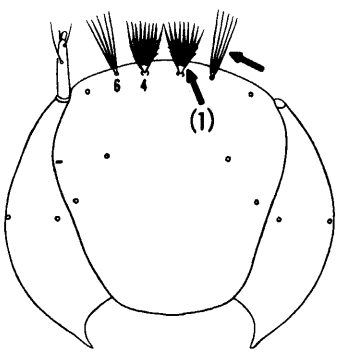
(1) Seta 4-C at about level, or slightly cephalad of 6-C.

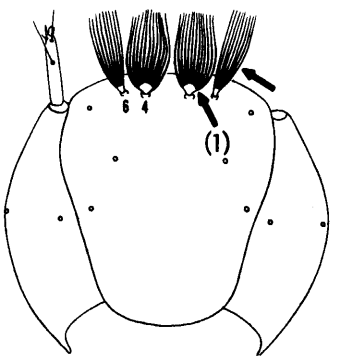
(1) seta 4-C usually no more than 12 branches; 6-C usually with 3-7 branches.

(1) Seta 4-C at least 13 branches; 6-C usually with 8-12 branches.







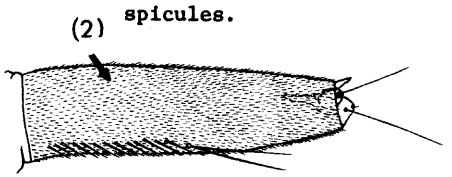


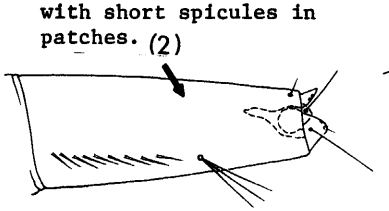
(2) Siphon with uniform, dense, short spicules.

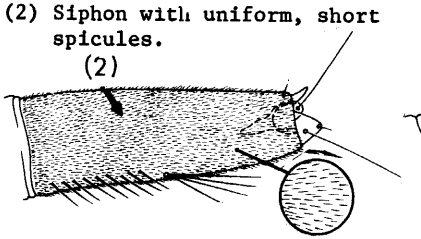
(2) Siphon largely bare or with short spicules in patches.

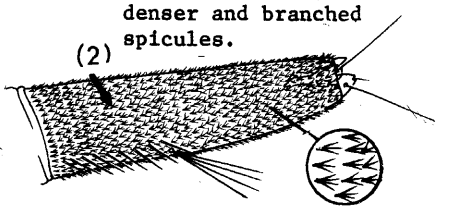
(2) Siphon with uniform, short spicules.

(2) Siphon with longer, denser and branched spicules.









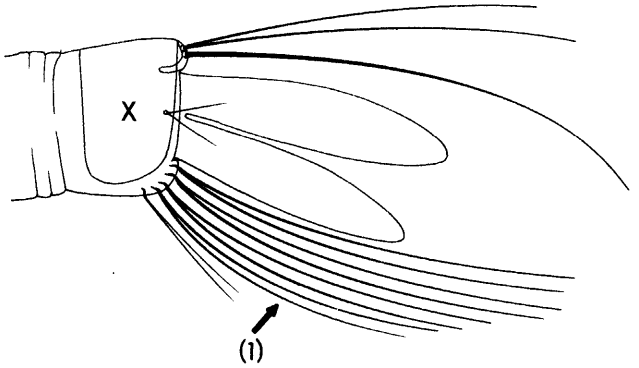
Aedes fijiensis Marks

Aedes oceanicus Belkin

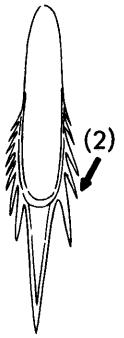
Aedes tutuilae Ramalingam & Belkin

Aedes samoanus (Grunberg)

(1) Ventral brush with 5 pairs of setae.

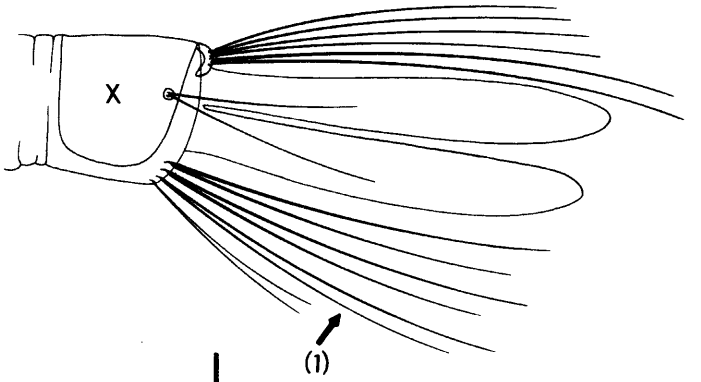


** (2) Comb scale with very strong denticles at base of apical spine.

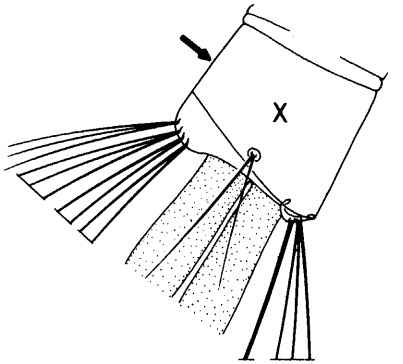


Aedes aegypti (Linnaeus)

(1) Ventral brush with 4 pairs of setae.



Saddle complete.



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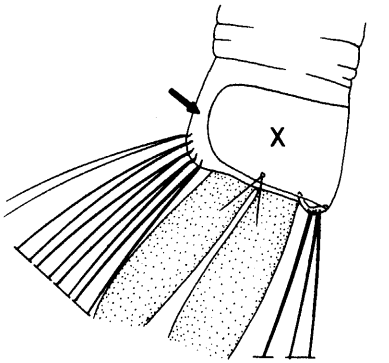
Saddle incomplete.



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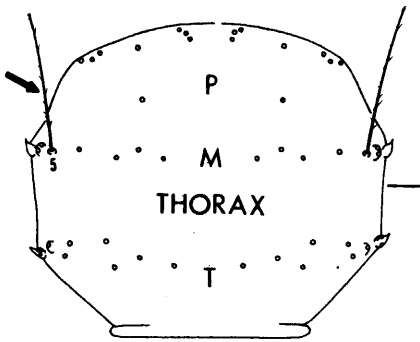
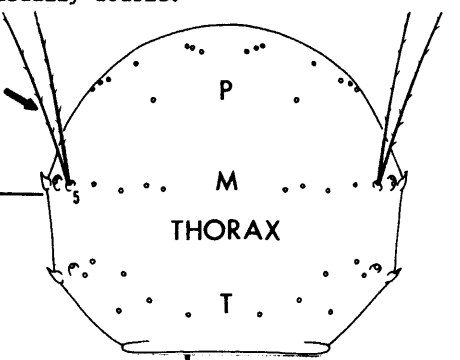
Seta 5-M usually single.

Seta 5-M usually double.



dorsal aspect

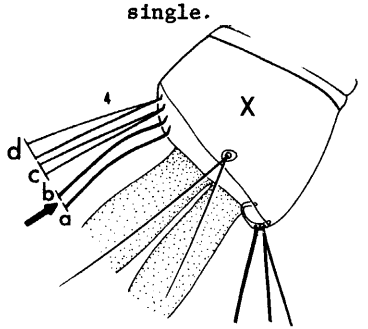


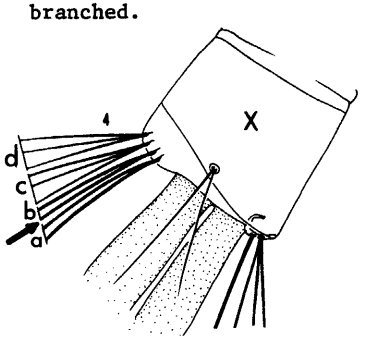
Seta 4a, b-X single.

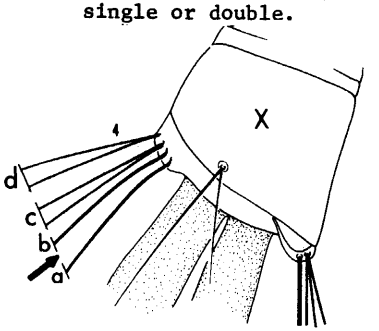
Seta 4a, b-X branched.

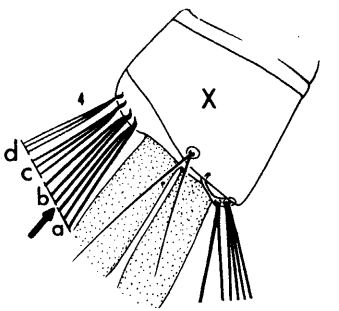
Seta 4a, b-X usually single or double.

Seta 4a, b-X usually with 3 branches (2-4).









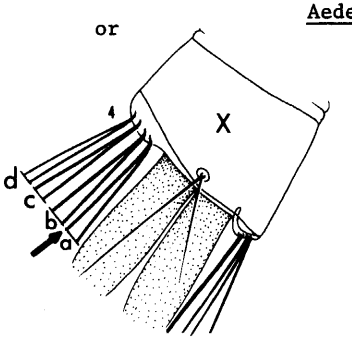
Aedes pseudoscutellaris (Theobald)

Aedes cooki Belkin

Comb scale with fine denticles or fringes at base of apical spine.

Comb scale with coarser denticles at base of apical spine

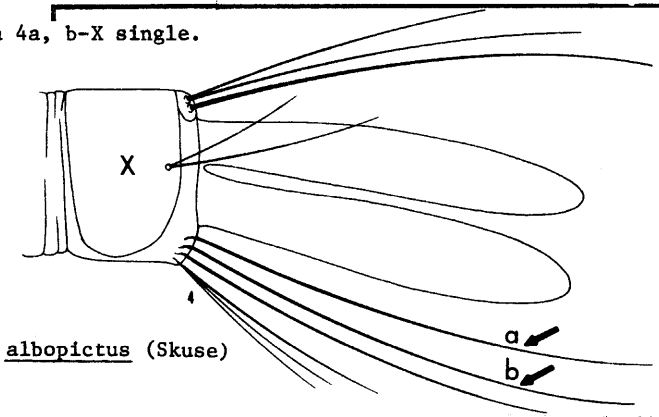
or



Aedes polynesiensis Marks

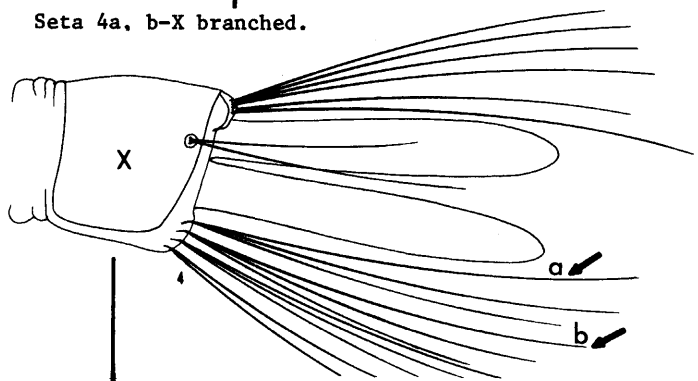
Aedes tabu Ramalingam & Belkin
Aedes tongae Edwards

Seta 4a, b-X single.



Aedes albopictus (Skuse)

Seta 4a, b-X branched.

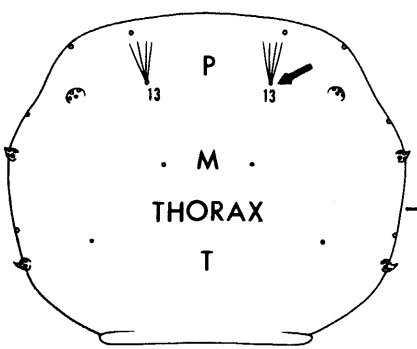


Pecten tooth with very slender main shaft and not frayed apically.

Pecten tooth with broad main shaft and frayed apically.

Aedes futunae Belkin

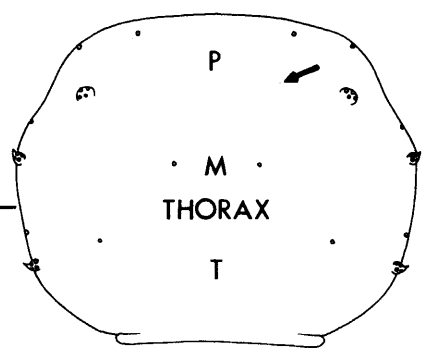
Seta 13-P present.



Aedes upolensis Marks

ventral aspect

Seta 13-P absent.



Aedes sp. Tafahi form

Pecten tooth with very strong basal anterior denticles.

Aedes horrescens Edwards

Pecten tooth with rather small basal anterior denticles.

Aedes rotumae Belkin

Footnote : Adults

Page 307 Culex sitiens Wiedemann, a widely distributed non-vector, is easily confused with Culex annulirostris, but does not have pale spots on the anterior surface of the foretibia (2).

Page 308 Aedes vexans (Meigen) [=Aedes nocturnus (Theobald)], a widely distributed non-vector, is easily confused with Aedes vigilax, but does not have a scale patch at (3) and does have a scale patch at (4). Aedes vigilax is only known from Fiji in Polynesia but is the major vector of subperiodic filariasis in New Caledonia and the Loyalty Islands.

Page 311 Aedes sp. Tafahi form which could easily be confused with Aedes upolensis especially when the lower mesepimeral white scale patch is absent, has the dorsal surface of hind-femur with basal 0.25 or more white while in Aedes upolensis the dorsal surface of the hindfemur has basal 0.12 or less white. Aedes sp. Tafahi form is only known from Tonga.

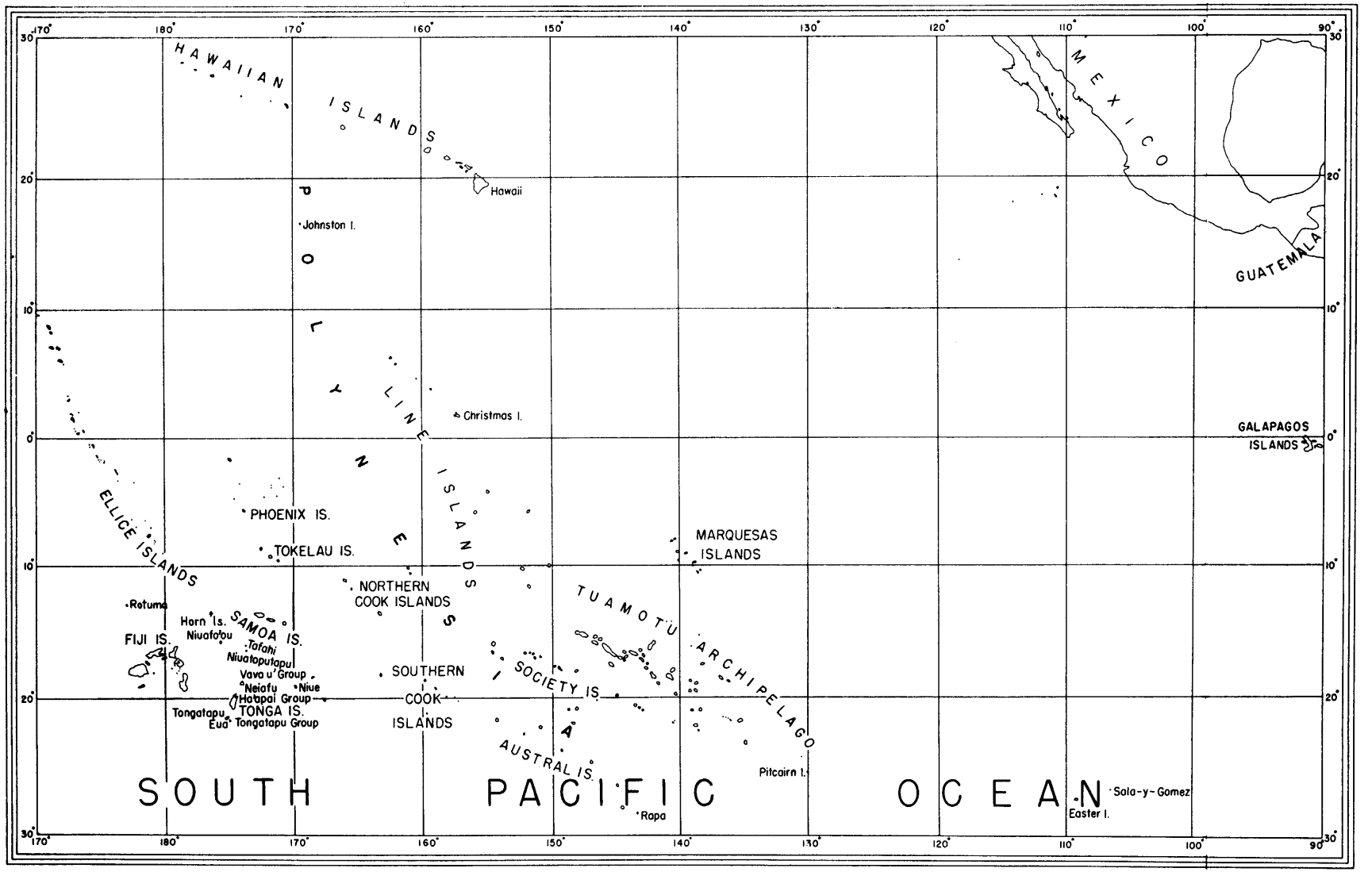
Larvae

Page 313 Culex sitiens Wiedemann has seta 1-C thickened but it is irregularly dorsoventrally flattened and usually blunt while in Culex annulirostris it is thickly tapering and pointed. The 2 species are often found associated in the same breeding site.

Page 314 Aedes vexans (Meigen) [=Aedes nocturnus (Theobald)] which could easily be confused with Aedes vigilax, has a single row of comb scales (3), a lightly fringed comb scale with a long apical spine (4), and setae 1-VIII and 2-VIII are on a common basal plate (5).

Page 318 Aedes sp. Wallis form which could easily be confused with Aedes polynesiensis, has the saddle incomplete. Aedes sp. Wallis form is only known from the Wallis Islands.

MAP I. AREA OF THE SOUTH PACIFIC COVERED BY THE PICTORIAL KEY



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