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KEYS TO THE MOSQUITOES OF THE AUSTRALASIAN REGION

Including a Synopsis of Their Distribution and Breeding Habits

by

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FOREWORD

This manual brings together for the first time, in a single reference work, keys to the Culicidae which include both previously described species of the Australasian area, and several undescribed species. The senior author, Lieutenant Kenneth L. Knight, H-V(S), U.S. Naval Reserve, has been in a peculiarly favorable position to compile these keys having just completed some eighteen months of entomological investigations in the regions concerned. In addition to his own collection, he has had full access to other collections sent to the National Museum by entomologists working in various parts of Australasia. The junior authors, Lieutenant (jg) Richard M. Bohart, H-V(S), U.S. Naval Reserve and Lieutenant George E. Bohart, H-V(S), U.S. Naval Reserve, have assisted in all phases of the work, especially by their research into the huge backlog of literature concerning the Culicidae of this part of the world.

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(Mosquitoes known only from New Zealand, Tasmania, Victoria, South Australia, or Western Australia, are excluded from this manual.)

INTRODUCTION

The concept of the Australasian area used in this paper is that proposed by Wallace and modified by Swellengrebel and Rodenwalt (1932). According to the latter works the mosquito fauna of the Celebes and the Lesser Sunda Islands has much more affinity with that of the Oriental Region than with the Australasian. The Moluccas occupy a marginal position with strong affinities in both directions. Because of the possibility of encountering in western New Guinea some of the Oriental species known from the Moluccas, the latter area is included here.

The southwestern portion of the Australasian Region, namely New Zealand, Tasmania, Victoria, South Australia, and West Australia, has been excluded because of its distance from the zone of military activity. In addition this section possesses a large endemic fauna of mosquitoes which has little in common with the remainder of the Australasian area.

To the north, the Australasian area includes the Marianas and the Hawaiian Islands, and to the east, the Tuamoto Archipelago.

Concerning the general characteristics of the Australasian mosquito fauna, the following statement of Edwards (1924) adequately summarizes the situation: "As regards the general features of the fauna it may be remarked that the genera Topomyia, Harpagomyia, Mimomyia, Orthopodomyia, Haemagogus, Heizmannia and Pardomyia, and the subgenera Leicesteria and Acalleomyia, all of which are represented in the Oriental Region, are apparently absent; while some other genera and subgenera, particularly Anopheles and Stegomyia, are comparatively poor in species. The Pacific Islands on the whole support an extremely poor mosquito fauna -- in regard

to species, though individuals are only too numerous. Even in New Zealand there are no representatives of any of the endemic American genera, such as Sabethes, Goeldia, Psorophora, Deinocerites and Carollia. The only suggestion of any affinity between the Australasian and Neotropical Faunas seems to be in the presence in both areas of species of Ochlerotatus of the taeniorhynchus group; when the mosquitos of Patagonia are better known, it may be possible to make a more instructive comparison between the two regions. On the other hand, the genera Bironella and Opifex, two of the most interesting genera of mosquitos, are endemic in the Australasian region." Since the publication of the above quotation, Heizmannia and Orthopodomyia have been reported from the Moluccas by Brug (1932, 1934) and Pardomyia (now treated under the subgenus Mucidus of Aedes) has been found in Queensland by Taylor (1927).

In the construction of the keys to the 238 described species and subspecies of the area, specimens from the collection of the United States National Museum have been used, but as the collection includes only about half of the described species, it has been necessary to depend heavily upon the literature. Because of the inadequacy and lack of uniformity of published descriptions there must inevitably be errors in the keys which can only be corrected after more complete collections are studied. Consequently this paper must be considered of a preliminary nature.

Owing to the present imperfect knowledge of mosquito relationships and in order to use characters easily discernible, the keys are largely

artificial in their groupings. In general they apply only to females except where species distinctions depend upon male characters. However, it is suggested that an attempt be made to key out males, for in many cases they should go through successfully.

The keys to the genera Aedes, Culex, Tripteroides, Uranotaenia, Megarhinus, Aedeomyia, Ficalbia, Culiseta, Heizmannia, Hodgesia, and Armigeres are largely original. The key to tribes has been taken directly from Edwards (1932). The key to Bironella has been modified from Swellengrebel and Rodenwalt (1932). The key to Anopheles has been taken partly from Russell, Rozeboom and Stone (1943). Bonne-Wepster (1930, 1930a) has been used as a source work for Mansonia.

We wish to acknowledge the invaluable assistance of Dr. Alan Stone, Division of Insect Identification, Bureau of Entomology and Plant Quarantine, who has aided us greatly in all phases of this work. To Dr. E. A. Chapin, Curator of Insects, National Museum, we owe our opportunity to use the museum collection and laboratory facilities. Credit is also due Lieutenant (jg) D. S. Farner, H-V(S), USNR, Section of Epidemiology, Bureau of Medicine and Surgery, especially for aid in the location and translation of important Dutch publications.

This work was done under the direction of Captain Thomas E. Rivers (MC), USNR, Commanding Officer of US Naval Medical Research Unit No. 2 and Commander J. J. Sapero (MC), USN, in charge of the section on malaria investigations of the same unit.

KEYS TO THE MOSQUITOES OF THE AUSTRALASIAN REGION

KEY TO THE TRIBES

1. Subcosta long and reaching costa, vein 1 four-branched, vein 2 forked, vein 3 simple, no cross vein connecting veins 1 and 2, vein 4 two-branched, cross veins 3-4 and 4-5 both present, vein 5 forked, vein 6 long and reaching wing margin, axillary vein absent or very faint, (family Culicidae)..... 2

   Not with the above combination of characters.....remaining DIPTERA

2. Antennal flagellum 14-segmented; subcosta ending above or before base of vein 2; mouthparts short; no scales ..... subfamily DIXINAE

   Antennal flagellum 13-segmented; subcosta ending much beyond base of vein 2; scales present 3

3. Mouthparts short, palpi incurved; scales largely confined to wing fringe ..... subfamily CHAOBORINAE

   Mouthparts modified to form a long proboscis, palpi not incurved; wing veins and legs scaly, (subfamily Culicinae) 4

4. Abdomen without scales, or at least with the sternites largely bare..... tribe ANOPHELINI (page 5)

   Abdomen with both tergites and sternites completely clothed with scales 5

5. Proboscis rigid, outer half more slender and bent backwards ..... tribe MEGARHININI (page 12)

   Proboscis more flexible, of uniform thickness (unless swollen at tip), outer half not bent backwards ..... tribe CULICINI (Page 12)

KEY TO THE GENERA OF ANOPHELINI

1. Stem of second fork cell wavy, first fork cell shorter than its stem (except in subgenus Brugella); dark species, devoid of ornamentation, without scales..... Bironella Theobald (page 5)

   Stem of second fork cell straight, first fork cell longer than its stem; wings and body generally with light and dark markings.. ..... Anopheles Meigen (page 6)

KEY TO THE SPECIES OF BIRONELLA

1. First fork cell very short (about one-third the length of the stem), or absent; palpi same length as proboscis (subgenus Bironella) 2

   First fork cell of normal length; palpi in both sexes very short, about one-fourth length of proboscis; antenna of male same as that of female (subgenus Brugella) 6

2. First fork cell present ..... gracilis Theobald*

   First fork cell not developed; only the apical portion of vein 2.2 present 3

3. Sidepiece of male genitalia very short, compact, with 4 to 5 tooth-like setae on the end ..... soesiloi Strickland and Chowdhury*

   Sidepiece of male genitalia long 4

4. Lower half of the sidepiece broad, apical half attenuated, ending in a head, not covered with hair ..... derooki Soesilo and van Slooten

   Sidepiece extended, cone-shaped, covered with hair 5

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* All species marked with an asterisk have been keyed from specimens.

5. Sidepiece with 4 long lancet-like processes at the apex ..... papuae papuae Swellengrebel

   Sidepiece without these processes .... papuae brugi Soesilo and van Slooten

6. Pleurae dark; curvature of the stem of first fork cell not pronounced, curvature of basal portion of vein 5.1 conspicuous; sidepiece of genitalia with 8 spines on a small lobe at its base; hind femora entirely dark anteriorly ..... hollandi Taylor

   Pleurae with at least lower sternopleural area and mesepimeron pale; curvature of stem of first fork cell pronounced, that of basal portion of vein 5.1 not conspicuous..... 7

7. Sidepiece with about 15 spines on a small basal lobe; clasper bent strongly inwards for its outer third which is conspicuously narrow and tapered; anterior surface of hind femur pale except for apical fifth; at least upper sternopleural area brown..... Bironella sp.*[1]

   Sidepiece with about 4 long basal spines, apparently not on a lobe; clasper not strongly bent or narrowed for its apical third ..... travestitus Brug

KEY TO THE SPECIES OF ANOPHELES

1. Brown or black species; costa with at most 3 white spots (subgenus Anopheles) 2

   Brightly marked species; costa with at least 4 conspicuous white spots (subgenus Myzomyia)..... 11

2. Small, brown, concolorous species; wing scales uniform 3

   Larger, blackish species; wings with areas of light scales 7

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[1] The description of this species from the Solomons is in manuscript by Dr. Alan Stone.

Note: The species B. (Brugella) walchi Soesilo is known only from the larva.

3. Basal four-fifths of hind femora creamy to yellow anteriorly 4

   Hind femora uniformly brown anteriorly 5

4. Hind femora pale yellow on about basal three-fourths, this area without a dark dorsal line; wing scales (except those on costa and fringe) slightly pale on apical half of wing; a slight gray cloud on membrane towards costa in middle ..... stigmaticus stigmaticus Skuse

   Hind femora pale yellow on about basal three-fourths, with a dark dorsal line nearly to base; wing scales uniformly dark and wing membrane uniformly clear .... stigmaticus corethroides Theobald

5. Mesosome with some 5 spinous projections laterally towards apex; outer part of dorsal lobe of claspette usually with 3 spines..... insulaeflorum (Swellengrebel and Swellengrebel)[2]

   Mesosome without any spicular projections 6

6. Outer part of dorsal lobe of claspette usually with 3 spines..... aitkenii aitkenii James
   aitkenii palmatus (Rodenwalt)[3]

   Outer part of dorsal lobe of claspette usually with 2 spines ..... aitkenii bengalensis Puri[3]

7. Palpi normal; costa without a white spot beyond middle; hind tarsi entirely dark ..... atratipes Skuse

   Palpi with bushy outstanding scales; wing with a white spot beyond the middle of the costa; hind tarsi with white markings 8

8. Hind tarsi with broad white bands on segments II to IV, with V entirely pale; femora dark ..... albotaeniatus Theobald

   Hind tarsi with narrow white rings 9

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[2] The species in the insulaeflorum-aitkenii group can be distinguished on male characters only.

[3] This species can be identified only in the larval stage.

9. Post-apical fringe spot about twice as broad as the length of the fringe..... ..... barbumbrosus Strickland and Chowdhury*[4]

Post-apical fringe spot not broader than the length of the fringe 10

10. Hind femora with scattered pale scales; fringe scales of wing with white patches at the ends of 4.1, 4.2, 5.1 and 5.2..... bancroftii Giles*

Hind femora entirely dark; fringe scales of wing with white patches only at the apices of veins 2.1, 2.2, 3 and 5.2 ..... barbirostris Wulp*

11. Legs without white tarsal rings, only with a row of pale spots on femora and tibiae; palpi entirely dark except for two narrow pale rings on antepenultimate segment ..... Anopheles sp.[5]

Legs with distinct white tarsal rings; palpi not marked as described above 12

12. Tibiae mostly dark or with a diffuse and sometimes interrupted pale streak 13

Tibiae conspicuously ringed, spotted, or speckled with pale scales 14

13. Apical pale area of palpus at least 3 times as long as preapical dark area ..... vagus Doenitz*

Apical pale area of palpus not more than 2 times as long as preapical dark area ..... subpictus Grassi*

14. All abdominal tergites (first tergite often excepted) with numerous conspicuous light-colored scales; abdominal sternite with scales 15

Abdominal tergites with at most scattered light-colored scales, increasing in number posteriorly, abdominal sternites bare 20

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[4] This species is very close to barbirostris and may be synonymous with it. There are many records of barbumbrosus from the Dutch East Indies and the Moluccas but none from India or the Philippine Islands. However, we have seen specimens with a broad post-apical fringe spot from these last two areas.

[5] The description of this species is in manuscript by A. R. Woodhill and D. J. Lee.

15. Flagellar segments of antennae without easily detected white scales except on the first segment 16

    Flagellar segments of antennae having white scales easily detected on several segments 17

16. Light colored scales of abdominal sternites in a series of definite rounded patches toward the lateral margins..... meraukensis Venhuis

    Light colored scales of abdominal sternites scattered; dark scales forming prominent tufts on sternites II to VII posteriorly..... kochi Doenitz*

17. Proboscis all dark, except for the labella; scales of abdominal tergites conspicuously yellow, broad 18

    Proboscis pale on apical half; scales of abdominal tergites creamy white, narrow 19

18. Tarsal segments with narrow apical pale rings only ..... amictus amictus Edwards*

    Tarsal segments with pale apical and basal rings, forming relatively broad bands across the joints ..... amictus var.[6]

19. Fringe spots absent; palpi do not show three small white patches of scales on basal half..... perplexus persimilis Taylor

    Fringe spots present; palpi with three small white patches of scales on basal half.. ..... perplexus perplexus Taylor
    annulipes Walker

20. Apical segment of palpi completely light-colored 21

    Apical segment of palpi banded basally; last 3 palpal segments with broad white apical bands 22

21. Veins 3 and 6 with no more than 3 spots; 9 to 10 fringe spots, not only at or near the apices of the veins but also between the branches of vein 5 and between 5 and 6...parangensis(Ludlow) *

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[6] The description of this subspecies is in manuscript by A. R. Woodhill and D. J. Lee.

Veins 3 and 6 with at least 4 small spots; wing with 7 to 8 fringe spots at or near the apices of the veins..... derricki Taylor

22. Scutum with scales very slender and confined to the anterior and antero-lateral margins, knob of halter with pale yellow scales only 23

Scutum fairly uniformly covered with pale scales; knob of halter covered with dark scales 25

23. Third from last palpal segment all dark except at extreme apex; proboscis slightly longer than palpi and with basal two-thirds dark..... Anopheles sp.*[7]

Third from last palpal segment with apical two-fifths or more white, proboscis almost half pale 24

24. Proboscis about one-fifth longer than the palpi, strongly decurved ..... longirostris Brug*

Proboscis only slightly longer than palpi, slightly decurved ..... tesselatus Theobald*

25. Palpus with white apical band on the third from last segment covering one-third to one-half of the segment and without dark scales 26

Palpus with pale apical band on third from last segment always with dark scales, which may form a ring subdividing the pale band into 2 parts 27

26. Proboscis all dark except for labella; wings with appearance of being dark scaled, except for costal margin, which has distinct white areas..... annulipes Walker[8]
breinli Taylor [8]
punctulatus novaguinensis Venhuis[8]

Proboscis pale on apical half; wings with conspicuous areas of light scaling throughout..... annulipes Walker*

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[7] The description of this Solomon Island species is in manuscript by J. N. Belkin and R. J. Schlosser.

[8] These three forms cannot be satisfactorily distinguished in the female from available descriptions.

27. Proboscis in most or all specimens dark except for labella ..... farauti farauti Laveran*

Proboscis in most or all specimens pale apically or subapically, at least on ventral surface 28

28. Proboscis in most specimens with a ventral area of pale scales on apical half... ..... farauti moluccensis (Swellengrebel and Swellengrebel)*[9]

Proboscis with apical half completely pale or with only a ring of dark scales before the labellum ..... punctulatus punctulatus Doenitz*[9]

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[9] The three forms, farauti, moluccensis, and punctulatus, have been generally treated as subspecies of punctulatus. Because of the fact that punctulatus can be distinguished on both larval and adult characters, it is treated here as a species distinct from farauti. As pointed out by Knight and Farner (1944), farauti farauti occurs in the New Hebrides, Solomons, and eastern New Guinea. On the mainland of New Guinea it appears to intergrade with moluccensis so that populations from some localities will be difficult to assign to subspecies. It is possible that further studies may result in the placing of moluccensis as a synonym of farauti. However, the more westerly distribution of forms with pale-spotted proboscis is an argument in favor of retention of the name. A clear picture of the relationships in the punctulatus group will probably require careful work on rearing and interbreeding. This whole question has been discussed with Dr. Alan Stone and Dr. D. S. Farner, and they are in general accord with the views expressed above.

Note: The following species are omitted: A. (Myzomyia) incognitus Brug which is known from larvae only; A. (Myzomyia) maculatus Theobald with a very doubtful record from the Aroe Islands; A. (Anopheles) hyrcanus pseudopictus Grassi and A. (Anopheles) umbrosus Theobald with single records from the Moluccas, the former from Ternate, the latter from Boeroe.

TRIBE MEGARHININI

KEY TO THE SPECIES OF MEGARHINUS

1. Lateral hair tuft of abdominal tergite VIII all black ..... amboinensis Doleschall*

   Lateral hair tuft of abdominal tergite VIII largely yellow to orange 2

2. Segment I of fore tarsus all dark, or occasionally some pale scales near the base ..... splendens (Wiedemann)*[10]
   inornatus Walker
   splendens subulifer (Doleschall)

   Segment I of fore tarsus all white scaled, or nearly so ..... speciosus Skuse*

KEY TO THE GENERA OF CULICINI

1. Vein 6 not reaching beyond base of fork of vein 5; squama bare, or rarely with 1 to 4 short hairs 2

   Vein 6 reaching well beyond base of fork of vein 5; squama fringed (fringe usually complete, rarely interrupted) 3

2. Wing-membrane without microtrichia (or these only visible under a high magnification); first fork cell noticeably shorter than its stem; sternopleural bristles well developed ..... Uranotaenia Lynch-Arribalzaga (page 15)

   Wing-membrane with distinct microtrichia which are visible under a magnification of 50 as dark spots; stem of first fork cell scarcely, or not shorter than its stem, outstanding scales on outer part of wing notched apically; sternopleural bristle absent, or small and weak ..... Hodgesia Theobald (page17)

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[10] This key is written entirely to the males. The females of all the described Australasian species intergrade and vary to such an extent as to render separation nearly or completely impossible. The females, as they are described at present for all these species, would seem to be only variants of the ubiquitous Oriental M. splendens.

3. Pleural bristles reduced, upper sternopleural either single or absent, not more than two proepimerals; on the other hand at least one or two spiraculars are nearly always present ..... Tripteroides Giles (page 17)

Pleural bristles less reduced, at least either upper sternopleurals or several proepimerals present 4

4. Dorsocentral and prescutellar bristles absent; prothoracic lobes approximated; postnotum usually with a distinct group of bristles ..... Heizmannia aurea Brug

Dorsocentral and prescutellar bristles usually well developed; prothoracic lobes well separated; postnotum without a group of bristles 5

5. Postspiracular bristles present 6

Postspiracular bristles absent 8

6. Wing scales all very broad and more or less asymmetrical in shape, stem vein bare; female claws simple ..... Mansonia Blanchard (page 22)

Wing scales generally mostly narrow, when rarely all are broad, the female claws are toothed; usually a few hairs on upper surface of stem vein 7

7. Proboscis rather stout, more or less recurved at tip in repose; dark species with flat scales on the vertex and scutellum...Armigeres Theobald[11] (page 24)

Proboscis rather slender, seldom recurved in repose..... Aedes Meigen (page 24)

8. Spiracular bristles present, usually numerous, pale in color..... Culiseta inconspicua Lee

Spiracular bristles absent 9

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[11] Since this genus is so difficult to separate from the genus Aedes in the adult form, the species of Armigeres are keyed out in the Aedes key.

9. All segments of female antenna and last two of male antenna short and thick; middle femur with a scale tuft; most of wing scales very broad and dense..... Aedeomyia Theobald (page 40)

Antennae normal, slender in both sexes; middle femur without a scale tuft 10

10. First segment of front tarsus longer than last 4 together, fourth segment very short in both sexes; costa with 3 white spots on apical half and 1 to 3 on basal half; hind tarsi with second segment narrowly white at tip, following segments white .. ..Orthopodomyia anopheloides andamanensis Brug

First segment of front tarsus not longer than last 4 together, fourth segment not shortened in female 11

11. Proboscis of male much swollen apically, of female slightly so, or else the first fork cell is shorter than its stem ..... Ficalbia Theobald (page 40)

Proboscis not swollen apically (slightly so in some Culex); first fork cell at least as long as its stem 12

12. First hind tarsal segment shorter than tibia ..... Mansonia Blanchard (page 22)

First hand tarsal segment at least as long as tibia ..... Culex Linnaeus (page 41)

KEY TO THE SPECIES OF URANOTAENIA

1. Wings with some white dorsal scales at least basally 2

   Wings all dark-scaled dorsally (ventral scales sometimes whitish or transparent)..... 6

2. Wings largely white-scaled, the scales at the tip being all pale or transparent; scutum with antero-lateral area creamy-white scaled, remainder brown-scaled; pleura clothed with dense creamy-white scales continuous with the pale scutal area ..... nivipes (Theobald)*

   Apex of wing not all pale-scaled; scutum largely dark-scaled 3

3. Abdominal tergites entirely dark-scaled ..... tibialis Taylor

   Abdominal tergites with some white scales 4

4. Hind tarsi dark to the tips; abdominal tergites II to VI with narrow apical white bands..... pygmaea Theobald

   Hind tarsi apically white 5

5. Last 3 hind tarsal segments white ..... argyrotarsis Leicester*

   Basal third of third hind tarsal segment dark..... albescens Taylor*

6. Two conspicuous black pleural spots, one on the posterior pronotal lobe and the other in front of the wing root 7

   Pleural area not marked by conspicuous black spots 8

7. A patch of small flat whitish scales on anterior margin of scutum immediately above anterior pronotal lobe; posterior pronotal lobe pale yellowish anteriorly, posterior half or more black; pleura pale yellowish ..... quadrimaculata Edwards*

   No patch of whitish scales on scutum above anterior pronotal lobe; posterior pronotum almost entirely black, its anterior margin only, narrowly pale; upper portion of sternopleura and most of mesepimera blackish-brown ..... nigerrima Taylor*

8. A short narrow prealar line of white or pale scales on the scutum 9

   Scutum not marked by a line of pale scales above the base of the wing 10

9. Fine pubescence of antennal flagellum confined to tips of segments; scutal prealar line of scales silvery-white ..... antennalis Taylor

   Fine pubescence of antennal flagellum spread evenly along all of the segments; scutal prealar line of scales blue, or gray in some lights ..... atra Theobald*

10. Pleura pale yellowish, bare, with a well-marked broad dark brown integumental line beginning just under the anterior spiracle and obliquely crossing to the posterior lower edge of the mesepimeron ..... diagonalis Brug

    Pleura without integumental ornamentation 11

11. Pleura grayish-yellow; scutal scales narrow brown, anterior border with a row of gray flat scales that are somewhat bluish in some lights..... papua Brug

    Pleura uniformly dark brown; scutal scales all narrow, dark brown 12

12. Head with a narrow and rather ill-defined border of cream-colored scales around the eyes; all of scutum scaled; last 2 or 3 tarsal segments of all legs becoming pale brownish to creamy white; wing length 3 mm. ..... colocasiae Edwards

    Head scales all dark; anterior margin of scutum not scaled; legs uniformly dark brown ..... painei Edwards

KEY TO THE SPECIES OF HODGESIA

1. Abdomen with silvery markings 2

   Abdomen without silvery markings; thoracic integument almost entirely black ..... spoliata Edwards

2. Thoracic integument mostly ochreous, with a large oval black spot above each wing base and a blackish-brown longitudinal area between these two spots..... cairnsensis Taylor*

   Thoracic integument shining black (specimens from Darwin, N. T. have the pleura and the front of the scutum more or less ochreous)..... quasisanguinea Leicester*

KEY TO THE SPECIES OF TRIPTEROIDES

1. Scutum mainly clothed with straight, hair-like greenish scales, a rounded spot of broad appressed black scales in front of each wing; abdomen without silvery markings..... distigma (Edwards)

   Scutum usually without such a spot; if with a spot, abdomen with silvery markings 2

2. Femora with white or silvery spots on outer surface, usually on apical half 3

   Femora not spotted on outer surface 9

3. Femora with only 1 distinct spot; scales of prothoracic lobe and of proepimeron narrow..... magnesiana (Edwards)

   Femora (at least middle pair) with 2 distinct spots; scales of prothoracic lobe and of proepimeron broad 4

4. The greater portion of the scutal integument brown or black 5

   Scutal integument uniformly yellowish or orange 7

5. Mesepimeron bare, shining black; very large median silvery areas on abdominal tergites II, IV, and V, and small silvery paramedian lines on III, VI, and VII; head uniformly grayish (blue or silvery in different lights)..... littlechildi (Edwards)

Mesepimeron with silvery scales; abdominal tergites without median silvery markings; head clothed with small appressed bright iridescent blue scales on anterior half, black scales on posterior half 6

6. Scutal integument deep shining blackish-brown, bright testaceous in front, a patch of broad appressed black scales in front of each wing; fore femora with 2 round silvery spots (pale blue in some lights), one median, one subapical, and with a thin yellowish, basal streak; midfemora similar except basal streak replaced by a small silver spot; hind femora with basal and median spot drawn out into a long, silvery streak, the subapical spot typical.... bimaculipes (Theobald)*

Scutal integument black, shining bluish; fore femora with 2 white patches on basal half and a white line on apical half (blue in some lights); mid and hind femora with 2 white patches on the basal half (not blue in any position)..... elegans Brug

7. Abdominal tergites with a strong purple gloss, prominent baso-lateral black triangles present; scutum clothed mostly with greenish scales ..... purpurata (Edwards)

Abdominal tergites without a strong purple gloss, ornamentation silvery or white 8

8. Fore femora with narrow golden line on apical half and 2 silvery patches on basal half; mid femora with 2 silvery patches apically and a silver line basally; hind femora with a preapical silvery patch and a broad silvery stripe at about the middle; female palpi exceed clypeus by its length..... brevipalpis Brug

Femora creamy beneath, with 2 white spots above on apical third; female palpi same length as clypeus ..... quasiornata (Taylor)*

9. A light stripe across pleural integument clothed with white scales, the darker parts nearly bare 10

   Pleural integument of uniform color, usually densely clothed with light-colored scales 11

10. Abdominal tergites III to VII each with lateral basal creamy spots; no lower sternopleural bristles ..... rotumana (Edwards)

    Abdominal tergites with apical transverse white to cream-colored banding; lower sternopleural bristles present .... caledonica (Edwards)*

11. Veins 2, 3 and 4 with wing scales largely narrow 12

    Veins 2, 3 and 4 with wing scales distinctly broadened and somewhat truncate 25

12. Proboscis distinctly longer than abdomen 13

    Proboscis not longer than abdomen 15

13. Head black, without a line of lighter-colored scales around the eyes; prothoracic lobes and proepimera with broad appressed brown scales, a few scattered white scales elsewhere ..... ornata (Taylor)

    Head deep brown or black, with a line of lighter colored scales around the eyes; prothoracic lobe and proepimeron with broad appressed white scales 14

14. Scutal scales bronze-colored, large, curved and irregularly disposed; one upper sternopleural bristle; abdominal tergites unornamented ..... argenteiventris (Theobald)

    Scutal scales dark reddish-brown, extremely small, narrow and curved, a few narrow white scales centrally on anterior margin; 2 upper sternopleural bristles; abdominal tergites with apical lateral yellowish triangles..... microlepis (Edwards)

15. At least the median upright scales of the head distinctly yellow 16

    None of the upright scales of the head distinctly yellow 18

16. All of the upright scales on the vertex yellow; spiracular bristles yellow; 2 to 3 pairs of prescutellar bristles..... sudnudipennis (Edwards)

    Most of upright scales black but with a few median yellow ones; spiracular bristles dark; 1 pair of prescutellar bristles 17

17. Three to 4 spiracular bristles; prothoracic lobe with scales all white; 1 upper sternopleural bristle..... brugi (Edwards)

    Six to 8 spiracular bristles; prothoracic lobe with scales light brownish above, shading to white below; no upper sternopleural bristle ..... vanleeuweni (Edwards)

18. Scales of head dark, with a narrow border of lighter-colored scales around the eyes in front 19

    Scales of head dark but without a border of lighter-colored scales around the eyes in front 24

19. An oblong silvery-white lateral patch on lateral margin of scutum just before base of each wing; conspicuous bare prescutellar space 20

    No oblong silvery-white lateral patch before base of wings; no conspicuous bare prescutellar space 23

20. A conspicuous margin of pure white scales around the bare prescutellar space; a conspicuous group of white scales along anterior margin of scutum; scutal scales black; an extremely dark-colored species. solomonis (Edwards)*

    Only a few white scales around the bare prescutellar space; line of white scales along anterior margin of scutum sparse, not conspicuous; scutal scales bronze-colored; light-colored species..... 21

21. Palpi and proboscis (male only known) basally pale-scaled; vertex with pale greyish-brown appressed scales; scutellum clothed with creamy-white scales; lateral apical spots of abdominal tergites forming complete bands on the apical segments.... ..... atripes occidentalis Brug

Palpi and proboscis not pale-scaled basally; vertex with brown to blackish appressed scales; scutellum grey to brown-scaled; lateral apical spots of abdominal tergites not prominent, seldom forming complete bands 22

22. One proepimeral and 1 upper sternopleural bristle; 3 to 5 pairs of prescutellar bristles; smaller and darker than following form, and the patch of broad appressed white scales above wing base is more conspicuous...atripes atripes (Skuse)*

No proepimeral or upper sternopleural bristles; 6 to 8 pairs of prescutellar bristles.... ..... atripes punctolateralis (Theobald)

23. Scales of head brown; a few grayish-white scales at anterior margin of scutum; border-line between markings on abdomen serrate; ninth tergite of male with lobes fused, not emarginate in the center ..... brevirhynchus Brug

Scales of head black; no grayish-white scales at anterior margin of scutum: border-line between colors on abdomen straight; ninth tergite of male with lobes separated, not fused ..... digoelensis Brug

24. Scales of head brown; colors on abdomen separated by a serrate line; male palpi exceeding the clypeus by a bit more than its length; ninth tergite of male with lobes fused, not emarginate in the middle..... simplex Brug

Scales of head black; colors on abdomen separated by a straight line; male palpi one-third as long as proboscis; ninth tergite of male with lobes separated, not fused ..... obscurus Brug

25. Scales of abdominal tergites jet black, with violet reflections; legs black, coxae and trochanters ochreous, no prescutellar bristles 26

Scales of abdominal tergites dark brown; legs dark brown to blackish; at least 1 pair of prescutellar bristles 27

26. Male palpi one-third as long as proboscis..... filipes (Walker)[12]

Male palpi approximately two-thirds as long as proboscis ..... sylvestris (Theobald)

27. Pleural scales small, yellow; 5 to 6 dark spiracular bristles; 4 to 6 pairs of prescutellar bristles; femora yellow beneath, especially the middle pair, on which the yellow color extends to the tip ..... latisquama (Edwards)

Pleural scales creamy, except on both the prothoracic lobe and proepimeron which are brown-scaled dorsally; 2 to 3 spiracular bristles; 1 pair of prescutellar bristles ..... papua Brug

KEY TO THE SPECIES OF MANSONIA

1. Wing scales nearly all very broad and asymmetrical; eighth tergite of female small and armed with hooks or teeth; postspiracular bristles present (subgenus Mansonioides Theobald) 2

Wing scales narrow and lanceolate; eighth tergite of female larger, without teeth; postspiracular bristles absent (subgenus Coquillettidia Dyar).. 7

2. Wings not mottled; legs without distinct banding; small species ..... papuensis (Taylor)*

Wings mottled; legs with bands and spots; larger species 3

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[12] Tripteroides atra Taylor, 1914 (Stegomyia) is considered a synonym of filipes (Walker).

3. Midlobe of scutellum with broad silvery-white scales, much broader than those on the lateral lobes; strikingly pale-colored species, yellow to light brown ..... annulifera (Theobald)

Midlobe of scutellum with small scales; not strikingly pale-colored species 4

4. Scutum with longitudinal stripes of greenish white scales ..... uniformis (Theobald)*

Scutum with distinct white spots, sometimes 2, usually 5, 6 or 7 5

5. Tibia of foreleg with about 6 well-defined bands ..... longipalpis (Wulp)*

Tibia of foreleg with 10 to 15 scattered small white dots, beneath white from base to apex 6

6. Abdominal sternite VIII as seen laterally is somewhat pointed; only hind femora broadly white scaled, the fore femora having distinct spots ..... septempunctata Theobald[13]

Abdominal sternite VIII as seen laterally is truncate; femora broadly-white scaled on all the legs ..... indiana Edwards

7. Wings largely yellow-scaled 8

Wings dark-scaled 10

8. Thoracic integument bright yellow anteriorly, a few dark markings posteriorly ..... ochracea (Theobald)

Thoracic integument dark, or pale with numerous black markings 9

9. Thoracic integument black ..... nigrochracea Bonne-Wepster

Thoracic integument dusky yellowish with numerous black markings over the complete area, pleura with 3 rather broad black longitudinal lines; mid lobe of scutellum yellowish, lateral lobes black .... giblini (Taylor)

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[13] There is some question as to the validity of this species. From Theobald's (1905) original description it would appear to be synonymous with longipalpis but following Edwards, (1930) it is nearly identical to indiana.

10. Thoracic integument brown 11

    Thoracic integument bright orange yellow 12

11. Scutum golden scaled ..... memorans Bonne-Wepster

    Scutum clothed with dark brown scales, marked by 4 rows of creamy-white to golden scales, lateral margins also pale-scaled..... linealis (Skuse)

12. Sidepiece bears a broad flat subapical lobe projecting inwards, square-ended and bearing a dense apical fringe of dark hair; abdominal tergites only scantily purple-scaled ..... xanthogaster (Edwards)*

    Sidepiece without a broad flat subapical lobe; abdominal tergite abundantly purple-scaled ..... crassipes (Wulp)*

KEY TO THE SPECIES OF AEDES

1. Tarsi all dark or unicolorous 2

   Tarsi marked with white or yellow 29

2. Scutellar scales all broad and appressed 3

   Scutellum with some narrow curved scales 8

3. Scutellum with white or cream-colored scales only 4

   Scutellum with some pale brown to dark scales 5

4. Scutellar scales brilliantly silvery....alboscutellatus (Theobald)*

   Scutellar scales not brilliantly silvery ..... daliensis (Taylor)

5. Scutum not bordered anteriorly with pale scales; first hind tarsal segment about as long as tibia 6

   Scutum with a narrow anterior and sometimes antero-lateral margin of pale scales (genus Armigeres) 7

6. Palpi in both sexes hardly longer than clypeus, much less than one-fourth the proboscis length; hind tarsal segment I at least as long as tibia ..... longirostris (Leicester)

Palpi in both sexes about one-fourth the proboscis length; hind tarsal segment I slightly shorter than tibia, hind tibia in male with long hairs and bristles ..... fimbripes Edwards

7. Clypeus with 2 white-scaled patches; venter with narrow basal and apical black bands.... breinli (Taylor)*

Clypeus naked, dark ..... lacuum Edwards*[14/]
denbesteni Brug*
obturbans (Walker)*

8. Abdominal tergites with some pale bands unbroken medially 9

Abdominal tergites unbanded or with pale bands broken medially 15

9. Bands of abdominal tergites not basal 10

Bands of abdominal tergites basal 11

10. Scutum with indistinct median and lateral golden lines ..... funereus ornatus (Theobald)*

Scutum without these markings ..... funereus funereus (Theobald)*

11. Scutum conspicuously yellow-scaled laterally; wings with pale yellow scales on vein 1 and stem of vein 5; abdominal tergites with pale yellow basal bands ..... lineatopennis (Ludlow)*

Scutum not yellow-scaled laterally 12

12. Fore and mid femora black (usually with some violet reflections) with some scattered white scales anteriorly; scutum bright reddish to purplish-brown, clothed with small bright pale golden scales, sometimes tending to a linear arrangement, but without any special ornamentation ..... nivalis Edwards

Fore and mid femora pale beneath but not speckled anteriorly 13

[14/] These species are at present indistinguishable in the female. Armigeres lacuum can be distinguished from obturbans in the male by the dense tuft of hair on the basal lobe of the basistyle of the former.

13. Vertex almost entirely covered with broad appressed scales of brown to cream-color; abdominal bands complete on tergites II to IV ..... bancroftianus Edwards*

Vertex with slender scales at least in median area; abdomen with broad white basal bands on tergites II to VI 14

14. Scutum pale with a broad chestnut brown stripe extending to the base of the wing, clothed with small black and creamy narrow curved scales; prothoracic lobes brown with pale narrow curved and broad appressed scales ..... concolor Taylor

Scutum reddish brown with darker brown lines, clothed with fawn-colored to bronzy scales; prothoracic lobes brown, unscaled ... incertus Edwards

15. Scutum without a marked contrasting pattern of scales 16

Scutum with a marked contrasting pattern of scales 25

16. Dorsum of abdomen and wings clothed with uniform tawny scales having a pale, pearly iridescence ..... macrodixoa Dyar and Shannon*

Dorsum of abdomen and wings with mostly dark brown to blackish scales having dark purplish iridescence 17

17. Upper sternopleural area with patch of white scales strongly contrasting with the dark ones 18

Upper sternopleural area mostly dark scaled, pale scales, when present, appearing dingy and translucent 19

18. Lateral abdominal pale spots basal ..... cairnsensis Taylor

Lateral abdominal pale spots not..... basal ..... funereus funereus (Theobald)*

19. Abdominal tergites with large oblique latero-basal whitish spots ..... carmenti Edwards*

Abdominal tergites with very small latero-basal whitish spots (species apparently distinguishable only in the male) 20

20. Sidepiece of male genitalia less than 3 times as long as broad; clasper without a long straight spine-like terminal appendage 21

Sidepiece of male genitalia more than 3 times as long as broad; clasper with a long straight spine-like terminal appendage 22

21. Sidepiece with 4 leaf-like subapical appendages, basal lobe of sidepiece small and with 2 long hairs ..... quadrifolium Brug

Sidepiece with a stout spine at the inner apex; basal lobe of sidepiece large and with 2 groups of 5 hairs ..... ceramensis Brug

22. Sidepiece without a ventral lobe toward the middle or with a small untufted lobe; hind tibia without a long hair fringe 23

Sidepiece with a distinct ventral lobe toward the middle 24

23. Sidepiece without a ventral lobe toward the middle ..... longiforceps Edwards*

Sidepiece with a small ventral lobe ..... tonsus Edwards

24. Hind tibia of male with a long fringe of about 20 hairs; sidepiece with basal half scaled only ..... fimbripes Edwards[15]

Hind tibia of male not unusually fringed; sidepiece with hairs and scales on the basal half..... Aedes (Geoskusea) sp.*[16]

25. Scutum marked by a transverse patch of pale scales 26

Scutum not marked by a transverse patch of pale scales 27

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[15] Although Edwards does not mention the presence of narrow scutellar scales in the original description of fimbripes, we have placed it at this point in the key to distinguish it from closely related species.

[16] This species from the New Hebrides and Solomon Islands is described in manuscript by Dr. Alan Stone.

26. Fore and mid tarsal claws equal and simple; transverse pale patch on anterior margin ..... similis (Theobald)

Fore and mid tarsal claws equal, with a single tooth; transverse pale patch median..... multiplex (Theobald)

27. Scutum with creamy yellow scales, a large triangular-shaped patch of brown scales based on the posterior margin and with the apex at about center of scutum ..... purpuraceous Brug

Scutum not predominantly pale scaled, nor marked by a triangular-shaped patch of brown scales 28

28. Scutal scales black, scutum marked by a complete narrow longitudinal golden line and by a shorter pair of golden lines just anterior to scutellum, lateral areas rather broadly golden ..... aurimargo Edwards

Scutal scales golden except for two addorsal longitudinal lines of dark scales...burpengaryensis (Theobald)

29. Wings with a tuft of very long scales on the small chitinised piece at the extreme base, subgenus Chaetocruiomyia 30

Wings without a tuft of very long scales on the small chitinized piece at the extreme base 33

30. White scaled area on anterior half of scutum divided into two portions by a rather broad light-brown band ..... humeralis Edwards*

Pale scaled area on anterior half of scutum not divided into two portions by a brown band 31

31. Fourth segment of hind tarsus without a basal white band ..... spinosipes Edwards, moloiensis (Taylor)[17], tulliae (Taylor)[17]

Fourth segment of hind tarsus with basal white band; anterior half of scutum covered with snow-white scales 32

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[17] These two species are not separable from spinosipes on the basis of available descriptions.

32. Appressed broad scales of vertex white; mid lobe of scutellum with dark brown scales ..... wattensis (Taylor)

Appressed broad scales of vertex dark brown; mid lobe of scutellum with white scales... elchoensis (Taylor)

33. Last hind tarsal segment dark, occasionally a few basal pale scales 34

Last hind tarsal segment marked with white or yellow 55

34. Scutum with distinct stripes, lines or spots; or front half largely pale-scaled in contrast to the posterior half 35

Scutum without distinct stripes, lines or spots; nor with the front half largely pale-scaled in contrast to the posterior half 47

35. Scutum marked only with a longitudinal median line or stripe 36

Scutum with longitudinal median and lateral fine lines, or with spots and lines; or with front half mainly pale-scaled 38

36. Tarsal segments I to III of hind legs with white streaks or bands; scutellum with black and white broad appressed scales, mid lobe silvery; femur with a small white apical spot ..... albolineatus (Theobald)*

Tarsal segments I to IV of hind legs with complete bands; scutellum with only narrow curved brown and white scales; femora with a narrow white basal band 37

37. Abdominal tergites II to V with basal white bands; median thoracic stripe narrow and silvery; prothoracic lobes with broad appressed white scales ..... albitarsis (Taylor)

Abdominal tergites unbanded; median thoracic stripe fairly broad and golden; prothoracic lobes with broad appressed black scales ..... palmarum Edwards

38. Front half of scutum largely pale scaled in contrast to posterior half 39

Scutum with longitudinal median and lateral fine lines, or with spots and lines 42

39. Anterior two-thirds of scutum with a broad central area of slender white scales margined by slender golden scales and with golden brown scales at the extreme sides of the scutum, 2 small black submedian spots anteriorly ..... anggiensis Bonne-Wepster

Anterior two-thirds of scutum with scales nearly unicolorous, no black submedian spots 40

40. Scales of anterior two-thirds of scutum deep golden; abdominal tergites VI to VII almost entirely golden scaled; palpi of female equaling nearly 3 segments of antennal flagellum ..... auridorsum Edwards

Scales of anterior two-thirds of scutum whitish or pale golden; palpi of female equaling 2 segments of antennal flagellum 41

41. Wing with large subbasal and subapical areas yellow scaled; abdominal tergites VI and VII with only narrow apical dark rings..... biocellatus (Taylor)*

Wing with brown scales and only traces of ochreous ones, abdominal tergites mostly dark with basal creamy bands and basal lateral spots ..... australiensis (Theobald)

42. Proboscis with a median ventral white mark 43

Proboscis dark 44

43. Hind femur with a white subapical ring; scutum with patches and fine lines of white scales including a median line; scutellum with narrow curved scales; mid tarsal segments I to III white banded basally..... alboannulatus (Macquart)*

Hind femur with an apical knee-spot; scutum with five distinct lines of golden narrow curved scales; scutellum with broad white appressed scales; mid tarsal segments I and II with basal pale bands ..... quinquelineatus Edwards

44. Scutellum with narrow curved scales; scutum golden brown with 3 narrow lines of creamy-white scales, the median line broken and forked posteriorly, the lateral lines obsolete at the middle and at each end ..... gracilelineatus Bonne-Wepster

Scutellum with broad appressed white scales 45

45. Vertical head bristles golden; mid tarsal segments I to III white-banded; scutum with a double median row of appressed white scales, and with other lines and patches of white..... pecuniosus Edwards

Vertical head bristles black; mid tarsal segments I and II white-banded; tergites with median and lateral basal spots 46

46. Scutum with 3 short posterior silvery lines but without a continuous median line..... purpureus (Theobald)

Scutum with a median stripe of pale scales as well as other lines and patches ..... priestleyi (Taylor)

47. Wings mottled with pale and dark scales 48

Wing scales all dark 50

48. Wings with numerous large broad truncate white scales on all veins 49

Wing scales normal, white ones relatively few ..... normanensis (Taylor)

49. Pale bands of abdominal tergites nearly straight posteriorly; scutum with golden and dark scales mixed.... theobaldi theobaldi (Taylor)*

Pale bands of abdominal tergites broad and angularly produced posteriorly; scutum with golden scales only.... ..... theobaldi eidsvoldensis Mackerras

50. Tarsi mottled, but without distinct pale bands; scutal scales mixed, coppery brown and creamy 51

Tarsi with distinct pale bands on some segments 52

51. Scutellum covered with broad appressed pale yellow scales; outer third of proboscis conspicuously darker than basal two-thirds ..... oakleyi Stone*

Scutellum covered with narrow pale scales; femur mottled with pale scales anteriorly; thoracic integument very dark; proboscis uniformly dark, extreme tip somewhat darker ..... sagax (Skuse)*

52. Femora light to dark brown, but not mottled; hind tarsal segments I to III or I to IV with basal pale bands; palpi one-seventh to one-ninth as long as proboscis; head with some black upright forked scales ..... mackerrasi Taylor

Femora mottled with pale scales 53

53. Palpi about one-fourth as long as proboscis; head and sides of scutum with appressed oval yellow scales; scutellum without narrow curved scales..... aculeatus (Theobald)

Palpi about one-sixth as long as proboscis 54

54. Anterior two-thirds of scutum mainly white-scaled, bordered by golden scales, extreme sides brown-scaled, 2 small black submedian spots anteriorly; vertex with only pale narrow curved scales ..anggiensis Bonne-Wepster

Anterior two-thirds of scutum covered with uniformly golden brown scales ..... occidentalis (Skuse)*

55. Crossveins clouded, 4-5 outside 3-4 (subgenus Mucidus) 56

Crossveins clear, 4-5 well inside 3-4 (except in individual aberrations) 60

56. Approximately 20 proepimeral bristles; female palpi one-half to two-thirds as long as proboscis; wing scales dense 57

Approximately 5 proepimeral bristles; female palpi less than one-half as long as proboscis; wing scales scanty; brown species, marked with gold 58

57. Scales of abdomen and legs appressed ..... kermorganti (Laveran)

Scales of abdomen and legs long and outstanding ..... alternans (Westwood)*

58. Tarsal segments basally banded with golden scales (V of mid legs all golden), segments III and IV of hind legs with white basal bands, segment V of hind legs entirely creamy-white; abdominal segment I with narrow median patch of golden scales ..... aurantius chrysogaster (Taylor)*

Tarsal segments of fore and mid legs unbanded, brown, segments I, II and often III of hind legs basally yellow banded, segment V entirely white 59

59. Golden-yellow scales of abdominal tergites confined to pairs of dots on II to IV, and median patches on V to VII ...aurantius nigrescens Edwards

Abdominal tergites I and II almost entirely black, III with some median spots of golden scales, IV to VII with gradually more golden scales until the last segments are brilliant golden.. aurantius aurantius (Theobald)

60. Scutum with uniformly colored scales or with pale scales not arranged in longitudinal lines, sometimes a variegated pattern with short, indistinct pale bars 61

Scutum dark scaled with pale scales arranged in longitudinal lines 74

61. Scutellar scales entirely broad and appressed 62

Scutellum with some narrow curved scales 65

62. Wings clothed with light and dark scales, giving the wing a mottled appearance 63

Wings not with a mottled appearance; scutellum covered with white scales; scutal scales dark, with a small oval median white spot near the anterior margin ..... edwardsi tulagiensis Edwards

63. Median ring and apical spot on proboscis, and flat scales on prothoracic lobes yellow; hind tarsal segment I with two narrow yellow rings and 3 white ones; II and III mainly white with a narrow black basal ring followed by a narrow yellow ring ..... wallacei Edwards

Median ring and apical spot on proboscis white; appressed scales on pronotal lobes white 64

64. Outstanding black scales present on the apical portions of abdominal sternites V to VII ..... kochi (Doenitz)*

Outstanding scales present only on the apical portions of abdominal sternites VI and VII..... ..... samoanus (Gruenberg)*

65. Anterior two-thirds of scutum densely clothed with white narrow curved scales, posterior third with brown narrow curved scales..papuensis (Taylor)*

Anterior two-thirds of scutum not clothed with white scales 66

66. Wings with at least some white (or yellowish-white) scales 67

Wings entirely dark scaled 69

67. Scutal integument dark, nearly black; wing membrane without dark blotch..... vigilax (Skuse)*

Scutal integument reddish or pale chocolate brown 68

68. Wing scales arranged in variegated pattern of brown, yellow, and white; legs elaborately blotched and banded with brown, yellow and white scales; wing membrane without a dark blotch ..... flavipennis (Giles)*

Wing scales mostly violet-brown, sparingly interspersed with yellow scales; wing membrane usually with a dark blotch in middle below costa ..... flavifrons (Skuse)

69. Anterior surface of mid femur entirely dark brown or merely margined with pale scales, not with a mottled or speckled appearance 70

Anterior surface of mid femur speckled with pale scales 73

70. Median lobe of scutellum with a central stripe of broad white scales flanked by broad dark scales, some narrow pale scales laterally; fore legs with tarsal segment III all dark ..... tremulus (Theobald)*

Median lobe of scutellum without appressed dark scales 71

71. Scutellum with broad white scales on lateral lobes and narrower white ones medially; thoracic integument dark brown; fore legs without pale ring on tarsal segment III .... caecus (Theobald)

Scutellum with uniformly narrow golden scales approximately unicolorous with scutal ones; fore legs with at least a narrow pale ring on segment III 72

72. Thoracic integument dark brown, not reddish; vein 4 sparsely scaled; anterior surfaces of femora with brilliant green and purple reflections ..... brugi Edwards *

Thoracic integument rich reddish brown; vein 4 well scaled; anterior surface of femora with only uniform dull metallic reflections.....rubrithorax (Macquart)*

73. Pale scales of scutellum and abdomen golden; scutum with dark brown and rich golden scales but no silvery or white ones; palpi entirely dark ..... imprimens (Walker)*

Pale scales of scutellum and abdomen silvery to white; scutum with scattered white scales in addition to golden and brown ones; palpi tipped with white or yellow scales .... vexans (Meigen)*

74. Without a distinct median pale longitudinal scutal stripe reaching one-half the length of the scutum; sometimes with a central single or double line of scattered scales 75

Scutum with a distinct median pale longitudinal stripe reaching one-half or more its length 78

75. Scutum with 2 narrow submedian lines and a lateral stripe curved inwardly toward the rear, the whole forming a distinct lyre-shaped pattern; head with broad median scales; scutellum with silvery white broad scales at sides and broad dark scales in middle; last hind tarsal wholly white 76

Scutum without a distinct lyre-shaped pattern of white lines; head with slender median scales only 77

76. Scutellum with brown median scales; abdomen with basal bands and lateral subbasal spots on most tergites..... aegypti aegypti (Linnaeus)*

Scutellum with some purplish median scales; most abdominal tergites with basal and apical pale bands, and a broad pale median longitudinal line, or the whole dorsum may be almost entirely pale ... . aegypti queenslandensis (Theobald)

77. Scutellum with dense mat of appressed silvery scales; last hind tarsal segment wholly white ..... quasirubithorax (Theobald)*

Scutellum with scattered silvery or golden scales not forming a dense mat; last hind tarsal segment not wholly white..camptorynchus (Thomson)*

78. Scutellum with some narrow curved scales 79

Scutellar scales all broad and appressed 85

79. Pale markings of thorax yellow 80

Pale markings of thorax white or creamy-white 82

80. Hind femur banded with yellow near its apex at about one-fifth its length; an additional patch of yellow scales at the outer side basally occupying about three-fifths of the femur; hind tarsal segments I to IV with white basal bands only ..... medialis Brug

Hind femur without a complete subapical band on hind femur; basal half of hind femur largely pale 81

81. Hind tarsi with white bands apically and basally on I to IV; hind femur with a small white knee-spot; scutum anteriorly with 3 parallel golden lines, posteriorly with 2 oblique lines ..... aureostriatus (Doleschall)

Hind tarsi with basal bands only; hind femur with a small yellow knee-spot; scutum anteriorly with a central wedge-shaped stripe reaching half the scutal length and 2 small shoulder spots, posteriorly with 2 narrow dorso-lateral lines diverging in front; male palpi about one-half proboscis length ..... lauriei Carter

82. Median scutal stripe reaching only as far as wing bases, not forked posteriorly; all hind tarsal segments with broad basal white bands 83

Median scutal stripe reaching almost to scutellum where it bifurcates 84

83. Scutellum with black and white curved scales; scutal stripe one-fifth as broad as scutum; lateral white spots on tergites II to VI ..... argenteitarsis Brug

Scutellum with brown to golden scales; scutal stripe one-fourth as broad as scutum; lateral and submedian creamy spots on tergites II to IV ..... derooki Brug

84. Fourth hind tarsal dark; mid lobe of scutellum with white and brown broad appressed scales; scutum with a lateral line which curves inward posteriorly; last hind tarsal entirely white ..... littlechildi Taylor

Fourth hind tarsal with white; mid lobe of scutellum with narrow curved pale scales; scutum with 5 creamy stripes separated by 4 bronzy-black, scaled stripes; last hind tarsal tipped with black ..... vittiger (Skuse)*

85. Wings with white and dark brown scales; proboscis, femur and tibia with many white spots ..... gani Bonne-Wepster

Wings with brown scales only 86

86. Proboscis with a median white band 87

Proboscis not banded 88

87. Vertex with a longitudinal median stripe of narrow silvery scales, continuous with the white scutal line and extending forward to eye margin; lateral white lines of scutum interrupted at the sutural angle, the inwardly-bent portion being usually obsolete ..... albilabris Edwards*

Vertex with a median patch of silvery scales but not a continuous stripe reaching to eye margin; lateral lines of scutum continuous at the sutural angle ..... notoscriptus (Skuse)*

88. Scutellar scales pale yellow except for a small patch of dark scales on each lateral lobe; scutal markings golden-yellow ..... pandani Stone*

Scutellar scales white (some dark scales may be present also); scutal markings white or silvery 89

89. Scutum marked by a continuous longitudinal lateral lyre-shaped line in addition to the median line ..... pulcherrimus (Taylor)

Scutum not marked with a lateral lyre-shaped line 90

90. Scales of pleura arranged in two well-marked lines, one just below the margin of the scutum, the other across the middle; lateral white markings of abdominal tergites median and somewhat crescent-shaped 91

Scales of pleura in irregular patches; abdominal tergites with two disconnected white spots, the upper of which is quite basally placed ..... albopictus (Skuse)*[18]

91. Dorsal abdominal white bands interrupted 92

Dorsal abdominal white bands complete on some segments 93

92. White lateral abdominal marks visible dorsally as small spots on segments II to VII ..... scutellaris horrescens Edwards[19]

White lateral abdominal marks usually not visible on II, and very frequently not visible on III..... scutellaris pseudoscutellaris (Theobald)*

93. Dorsal abdominal white bands one-third distance from bases of segments in the center..... scutellaris hebrideus Edwards*

Dorsal abdominal white bands nearly touching bases of segments in the center 94

94. Dorsal abdominal white bands complete on segments III to VII, some trace on II; white band on IV tarsal segment occupying almost basal four-fifths; hind femur with a large white spot at tip ..... scutellaris scutellaris (Walker)*

Dorsal abdominal white bands less distinct, with yellowish tinge, sometimes broadly interrupted or absent; especially in the female; nearly always absent on VII as well as on II ..... scutellaris tongae Edwards

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[18] This Oriental species, which occurs in Hawaii, has been confused with a very similar undescribed species from the Solomon Islands. The new species, in manuscript by Dr. Alan Stone, differs primarily in having the 9th male tergite evenly convex instead of angularly produced. The females appear to be indistinguishable.

[19] This subspecies can be safely identified only in the larval stage.

KEY TO THE SPECIES OF AEDEOMYIA

1. Wings with four large white costal spots, the third from base oblong and extending half across the wing; abdominal tergites with a pair of round subapical spots on III to VI, with a narrow lateral band of yellow scales on III and subsequent segments, and a pair of oblique white patches on basal half of each segment...*catasticta* Knab*

   Wings with only 3 small rounded costal spots; abdomen brown, irregularly mottled with creamy scales which do not form any definite pattern, no prominent yellow markings ..... *venustipes* (Skuse)

KEY TO THE SPECIES OF FICALBIA

1. Scutellar scales broad and flat; scutal scales laterally black, with a broad band of golden ones extending from anterior margin about to level of the wing bases; wing with first fork cell as long as, or longer than its stem; veins densely clothed with very broad scales ..... *elegans* (Taylor)*

   Scutellar scales all narrow; wing with first fork cell shorter than its stem; veins nearly bare, except towards tip of wing, where they carry a few small broad .... scales ..... *metallica* (Leicester)

KEY TO THE SPECIES OF CULEX

1. Tarsi and proboscis with distinct white to yellow rings; lower mesepimeral bristle absent 2

   Tarsi, and almost always proboscis, not pale-ringed; tarsi sometimes with extremely small yellowish or ochreous bands at the joints 18

2. Wings with cross veins white, membrane slightly smoky, leaving clear areas at base of Rs and surrounding the cross veins; scutum usually brown, but sometimes with anterior two-thirds pale-scaled..... albinervis Edwards

   Wings with cross veins dark, membrane clear 3

3. Wings with some pale scales, at least along anterior border 4

   Wing scales all dark 9

4. Wings without distinct spots but with a sprinkling of pale scales 5

   Wings with distinct pale spots along anterior border 6

5. Posterior abdominal tergites with numerous apical pale scales; anterior surface of front femur with a few pale scales..bitaeniorhynchus Giles*

   Posterior abdominal tergites dark apically; anterior surface of front femur with abundant pale scales; anterior two-thirds of scutum usually covered with pale scales ..... squamosus (Taylor)*

6. Abdominal tergites without dorsal bands, but with small basal creamy-white lateral spots which nearly form a complete dorsal band on tergite VII ..... samoaensis (Theobald)

   Abdominal tergites with dorsal bands 7

7. Costa with only 2 distinct pale spots, one at the base and one at the apex; scutum with a definite pattern of golden-yellow scales which is nearly lyre-shaped.. miraculosus Bonne-Wepster

Costa with 3 distinct pale spots, at base, middle and apex; scutum with an indefinite arrangement of golden scales 8

8. First pale costal spot (at middle of wing) extending only on to subcosta .... solitarius Bonne-Wepster and Brug

First pale costal spot extending over vein 1 ..... mimulus Edwards*

9. Anterior half of scutum dark-scaled, or with narrow golden scales, not largely covered with white or creamy scales 10

Anterior half or more of scutum largely clothed with white or cream-colored scales in contrast to remainder of scutum 14

10. Anterior surface of mid femur mottled with pale and dark scales 11

Anterior surface of mid femur dark-scaled only 13

11. Median forked scales of vertex all cream-colored; proboscis distinctly shorter than front femur; abdominal tergites IV to VI usually with apical and basal pale bands ..... basicinctus Edwards*

Median forked scales of vertex pale and dark 12

12. Fore tibia distinctly spotted; dorsal abdominal pale bands more or less broadly V-shaped; proboscis as long as front femur; abdominal tergites IV to VI usually with apical and basal pale bands..annulirostris Skuse*

Fore tibia unspotted; dorsal abdominal pale bands with straight margins, at least on tergites III and IV; proboscis slightly shorter than front femur; abdominal tergites IV to VI with basal bands only..... jepsoni Theobald*[20]

[20] Australasian records of sitiens Wied. are considered to belong to jepsoni.

13. Male genitalia with clasper usually broad and with a dense basal hair tuft; sidepiece filament next to the sidepiece leaf very long, flattened and directed caudally.... crinicauda Edwards[21]

Male genitalia with moderately broad clasper, no basal hair tuft; sidepiece filament next to the sidepiece leaf slender, normal ..... vishnui Theobald*[21]

14. The white-scaled anterior area of scutum with a pair of prominent oval contrastingly-scaled spots ..... alis Theobald

The white-scaled anterior area of scutum without contrastingly-scaled spots 15

15. At least mid tibia with distinct pale lines anteriorly, and/or, dorsally; femora mottled with patches of dark and light scales or with light scales scattered among solid masses of dark ones 16

Tibiae without distinct anterior, pale lines; femora not so mottled 17

16. Scutum covered with white or grayish-white scales as far posteriorly as the level of the wing-bases, the pale area continued posteriorly in four lines of yellowish-white scales ..... whitmorei (Giles)*

Scutum with the anterior two-thirds mostly covered with whitish or dull ochreous scales, the anterior one-third with a variable amount of darker brown scaling.. basicinctus Edwards*

17. Tarsal segments II to IV apically and basally banded; abdominal tergites with narrow basal bands usually triangularly produced centrally nearly to apical margin..... gelidus Theobald*

Tarsal segments II to IV basally banded only; abdominal tergites basally banded, VII and VIII also apically pale-scaled ..... vicinus (Taylor)*

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[21] From available descriptions, these species cannot be separated in the female.

18. Abdomen without white or creamy spots or bands on tergites II to VI; less than 4 lower mesepimeral bristles 19

Abdomen with white or creamy bands or spots on tergites II to VI; or with 4 or more lower mesepimeral bristles 27

19. Vertex with a patch of broad appressed white scales behind the eyes, or vertex largely pale-scaled 20

Vertex without pale (white or creamy) scales or with only a narrow line of them bordering the eyes 23

20. Male palpi about one-fifth as long as proboscis; female palpi about one-seventh as long as proboscis; male genitalic claspers forked ..... malayi (Leicester)*

Male palpi longer than proboscis; female palpi about one-fifth to one-sixth as long as proboscis; male genitalic claspers not forked 21

21. Head in both sexes almost entirely covered with pale broad appressed scales; male antenna without a large tuft of long scales on the sixth segment ..... pallidiceps Theobald*

Head not completely covered with pale broad appressed scales; male antenna with a large tuft of long scales on the sixth segment 22

22. Antennal tuft of male with 12 or more scales; vertex dark toward the center .... fraudatrix fraudatrix Theobald*[22]

Antennal tuft of male with about 6 scales; vertex with median pale broad appressed scales ..... fraudatrix solomonis Edwards[22]

23. Pleura with small patches of pale scales 24

Pleura without pale scales 25

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[22] These species cannot be separated in the females from descriptions in the literature.

24. Palpi of male about three-fifths as long as proboscis ..... brevipalpis (Giles)*[22]

Palpi of male about as long as proboscis ... . pseudomelanconia Theobald[22]

25. Palpi of both sexes about twice the length of the clypeus ..... cataractarum Edwards[22]

Palpi, at least of male, much longer than above 26

26. Antennal segments VIII and IX in male with small scale tufts; upright forked scales of vertex black ..... digoelensis Brug[22]

Antennal segments VIII and IX in male without scale tufts; upright forked scales of vertex pale brown ..... papuensis Taylor[22]

27. Abdominal tergites II to VI with lateral spots only, or with interrupted apical markings 28

Abdominal tergites with median and lateral spots on at least some of the segments, or with complete bands 33

28. With 4 or more lower mesepimeral bristles; vertex with erect and decumbent creamy-grey scales which become deep brown at the sides ..... halifaxii Theobald*

At most 3 lower mesepimeral bristles 29

29. Femora with prominent apical pale bands or spots 30

Femora without apical pale bands or spots 31

30. Abdominal tergites with broad apical lateral white spots; head and scutum clothed with golden scales..... fergusoni (Taylor)

Abdominal tergites without broad apical lateral white spots; head and scutum not clothed with golden scales; vertex with erect black scales and close-lying dark brown ones, contrasting strongly with the anterior border of narrow white scales .....atriceps Edwards*

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[22] These species cannot be separated in the females from descriptions in the literature.

31. Abdominal tergites with somewhat rectangular basal lateral cream-colored bands; male palpi very short, no longer than in ... females ..... femineus Edwards*

Abdominal tergites with very small basal lateral spots; male antenna with modified hairs on segments VI to IX 32

32. Antennal segment VI of male with about 12 very narrow but blunt-ended scales, which are fully half as long as the hairs of the verticils; last two segments subequal in length.... fraudatrix fraudatrix Theobald*[23]

Antennal segment VI of male with 4 or 5 rather short and inconspicuous scales, the uppermost one rather longer and broader than the others which are almost hairlike; penultimate segment twice as long as the apical segment..... hilli hilli Edwards*

33. Pleura without patches of pale scales, sometimes a few scattered ones 34

Pleura with patches of pale scales 38

34. Scutal scales brown, 2 pale-scaled lines on the posterior half which extend to scutellum, a line of golden scales laterally beginning in front of wings and extending forward and along the anterior margin ..... ornatus (Theobald)

Scutal scales uniformly colored 35

35. Scales of scutum uniformly pale, fawn-colored ..... pallidothorax Theobald*

Scales of scutum golden to brown, not pale or fawn-colored 36

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[23] From specimens and descriptions available we cannot separate this species from hilli buxtoni Edwards described from the New Hebrides.

36. Head with narrow curved cream-colored scales, and black forked ones, laterally broad appressed creamy scales extend medially as a border to the eyes 37

Head with brown narrow curved scales medially, rest small appressed and pale ..... fraudatrix fraudatrix Theobald*[24]

37. A distinct velvety black spot on upper part of mesepimeron, two less distinct dark areas, one posterior to the pro-epimeron and another in the middle of the sternopleural area ..... pullus (Theobald)*

Upper part of mesepimeron without a distinct velvety black spot, pleural integument brownish to black ..... crassistylus Brug

38. With 4 or more mesepimeral bristles; pale bands of abdominal tergites narrow and apical only (Australian form)..... halifaxii Theobald*

With not more than 3 mesepimeral bristles; abdominal tergites with complete or incomplete basal bands 39

39. Basal pale bands of abdominal tergites interrupted medially, except on segments II to IV where it is narrowed at that point; scutal scales golden-brown, paler laterally and anteriorly ..... chaetoventralis (Theobald)

Bands on abdominal tergites not interrupted or conspicuously narrowed medially, sometimes with tergites II to VII with complete basal white bands 40

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[24] The form of fraudatrix having complete abdominal bands was named annulata by Taylor, 1916 (nec Theobald, nec Schrank).

40. Scutum brown-scaled, marked on anterior half by a pair of large black-scaled areas (each area usually appears triangular in shape); proboscis of male with a narrow ill-defined pale ring just beyond median suture ..... pacificus Edwards*

Scutal scales rather uniform in color; proboscis of male without a median pale band 41

41. Head clothed with narrow curved dull yellow scales medially, black on either side, and with a few white scales laterally ....cylindricus Theobald

Head covered with narrow golden-brown scales, a patch of broad pale scales low down on either side ..... quinquefasciatus Say*

DISTRIBUTION AND LARVAL HABITAT OF AUSTRALASIAN MOSQUITOES

Species	Distribution	Recorded larval habitat
GENUS AEDEOMYIA		
catasticta Knab	N. Territory, Queensland. Oriental Region.	Extensive swamp. Clings to submerged stems of Pistia, Nitella.
venustipes (Skuse)	New South Wales.	
GENUS AEDES		
aculeatus (Theobald) (Ochlerotatus)	Queensland, New South Wales.	
aegypti aegypti (Linnaeus) (Stegomyia)	Queensland, N. Territory, New South Wales, W. Australia, New Guinea, Solomons, New Britain, New Ireland, Carolines, New Caledonia, New Hebrides, Palau, Guam, Gilberts, Samoa, Hawaii, Tonga, Societies, Fiji, tropical and subtropical regions generally.	Almost entirely in domestic water containers, neutral or alkaline.
aegypti queenslandensis (Theobald)	Queensland, India(?).	
albilabris Edwards (Finlaya)	Solomons.	Tree holes, coconut husks.
albitarsis (Taylor) (Finlaya)	New Guinea.	
alboannulatus (Macquart) (Finlaya)	Queensland, New South Wales, Victoria, Tasmania, New Britain, New Ireland.	Rock pools, wells, grassy rainwater pools.

Species	Distribution	Recorded larval habitat
GENUS AEDES continued		
albolineatus (Theobald) (Stegomyia)	New Britain, New Ireland, Solomons, Oriental Region.	Tree holes, bamboo, leaf axils, rarely in artificial receptacles or rock holes.
alboscutellatus (Theobald) (Aedimorphus)	N. Territory, Queensland, New Guinea, New Britain, Oriental Region.	Jungle pools.
alternans (Westwood) (Mucidus)	N. Territory, Queensland, New South Wales, Victoria, New Guinea, New Caledonia, Ellice Is.(?).	Mangrove swamps, salt marshes, rarely fresh marshes, predaceous.
anggiensis (Bonne - Wepster) (Finlaya)	New Guinea.	
argenteitarsis Brug (Finlaya)	New Guinea.	
aurantius chrysogaster Taylor (Mucidus)	Queensland.	Shallow rock pools with decaying vegetation.
aurantius nigrescens Edwards (Mucidus)	New Guinea, Solomons.	Muddy algal ditch, hoof print; predaceous.
aureostriatus (Doleschall) (Finlaya)	Ceram, Timor, Amboina.	
auridorsum Edwards (Finlaya)	Queensland, New South Wales.	
aurimargo Edwards (Leptosomatomyia)	Queensland, New Guinea.	
australiensis (Theobald) (Finlaya)	Queensland.	

Species	Distribution	Recorded larval habitat
GENUS AEDES continued		
bancroftianus Edwards (Pseudoskusea)	Queensland.	
biocellatus (Taylor) (Finlaya)	New South Wales.	
brugi Edwards (Banksinella)	New Guinea.	
burpengaryensis (Theobald) (Ochlerotatus)	Queensland, New South Wales.	Well.
caecus (Theobald) (Aedimorphus)	New Guinea, Oriental Region.	Open jungle pools.
cairnsensis (Taylor) (Pseudoskusea)	Queensland.	
camptorhynchus (Thomson) (Ochlerotatus)	New South Wales, W. Australia, Victoria, S. Australia, Tasmania.	Shady brackish river overflow.
carmenti Edwards (Aedes)	Queensland, Solomons, New Guinea.	
ceramensis Brug (Aedes)	Solomons(?), Moluccas.	
concolor Taylor (Pseudoskusea)	New South Wales, Tasmania, Norfolk I.	
culiciformis (Theobald) (Pseudoskusea)	Queensland, New Guinea, New Ireland, New Britain.	
daliensis (Taylor) (Geoskusea)	N. Territory.	
derooki Brug (Finlaya)	New Guinea, Moluccas.	River bed rock pool.
edwardsi tulagiensis Edwards (Stegomyia)	Solomons.	

Species	Distribution	Recorded larval habitat
GENUS AEDES continued		
elchoensis (Taylor) (Chaetocruiomyia)	N. Territory.	
fimbripes Edwards (Stegomyia)	New Britain.	Crab holes(?), ground pools.
flavifrons (Skuse) (Ochlerotatus)	New South Wales, Victoria, Tasmania.	
flavipennis (Giles) (Finlaya)	Solomons, Philippines, Singapore.	Banana stumps.
funereus funereus (Theobald) (Aedes)	Queensland, N. Territory, New Guinea, Amboina.	
funereus ornatus (Theobald) (Aedes)	N. Territory, New Guinea, New Britain, Solomons, New Hebrides, Admiralties, Moluccas.	Irrigation ditches, partially shaded rainwater pools, hoof marks.
gani Bonne-Wepster (Finlaya)	New Guinea.	Pitcher plant.
gracilelineatus Bonne-Wepster (Finlaya)	New Guinea.	
humeralis Edwards (Chaetocruiomyia)	Queensland.	
imprimens (Walker) (Aedimorphus)	Solomons, New Guinea, Amboina, Malaya(?).	
incertus Edwards (Aedes)	New Guinea, Malaya.	
kermorganti (Laveran) (Mucidus)	New Caledonia, New Guinea.	
kochi (Doenitz) (Finlaya)	Queensland, New Guinea, New Britain, New Ireland, Fiji, Solomons.	Coconut husks, Pandanus and taro leaf axils.

Species	Distribution	Recorded larval habitat
GENUS AEDES continued		
lauriei (Carter) (Finlaya)	Lord Howe I.	Hollow of fallen tree.
lineatopennis (Ludlow) (Banksinella)	Queensland, Oriental Region, Ethiopian Region.	Open natural pools.
littlechildi Taylor (Finlaya)	New Guinea.	
longiforceps Edwards (Geoskusea)	Solomons.	Crab hole(?).
longirostris (Leicester) (Rhinoskusea)	N. Territory, Malaysia.	Crab hole(?), pools in mangrove swamps.
mackerrasi Taylor (Finlaya)	Queensland.	Grassy pool near creek.
macrodixoa Dyar and Shannon (Aedes)	New Guinea, Philippines	
medialis Brug (Leptosomatomyia)	New Guinea.	Pitcher plant.
moloiensis Taylor (Chaetocruiomyia)	Queensland.	
multiplex (Theobald) (Pseudoskusea)	Queensland, New Guinea(?).	
nivalis Edwards (Ochlerotatus)	New South Wales, Victoria, Tasmania.	Temporary snow pools at 6000 ft.
normanensis Taylor (Ochlerotatus)	Queensland.	Muddy rock pools and creek bed water holes.
notoscriptus (Skuse) (Finlaya)	Queensland, New South Wales, New Guinea, New Britain, New Caledonia, New Ireland, Admiralties, Ceram, New Zealand.	Artificial receptacles, tree holes, rock holes, leaf axils, bamboo, shady places.

Species	Distribution	Recorded larval habitat
GENUS AEDES continued		
oakleyi Stone (Aedimorphus)	Guam.	
occidentalis (Skuse) (Finlaya)	Queensland, New South Wales, W. Australia, S. Australia, Tasmania, Victoria.	Tree hole.
palmarum Edwards (Finlaya)	Queensland.	
pandani Stone (Stegomyia)	Guam.	
papuensis (Taylor) (Finlaya)	New Guinea.	
pecuniosus Edwards (Finlaya)	N. Territory.	Tree holes.
priestleyi (Taylor) (Finlaya)	Queensland.	
pulcherrimus (Taylor) (Finlaya)	Queensland.	Tree holes.
purpuraceous Brug (Ochlerotatus)	New Guinea.	
purpureus (Theobald) (Finlaya)	Queensland.	
quadrifolium Brug (Aedes)	New Guinea.	
quasirubithorax (Theobald) (Finlaya)	Queensland.	Tree hole.
quinquelineatus Edwards (Finlaya)	Queensland.	
rubrithorax (Macquart) (Ochlerotatus)	Queensland, W. Australia, New South Wales, Tasmania.	

Species	Distribution	Recorded larval habitat
GENUS AEDES continued		
sagax (Skuse) (Ochlerotatus)	Queensland, New South Wales, Victoria, Tasmania.	
samoanus (Gruenberg) (Finlaya)	Samoa, Tonga, Solomons.	Leaf axils of taro and related plants.
scutellaris scutellaris (Walker) (Stegomyia)	New Guinea, New Ireland, New Britain, Admiralties, Solomons, East Indies, Moluccas, Philippines.	Coconut shells, tree holes, wells, canoes, artificial containers.
scutellaris hebrideus Edwards (Stegomyia)	New Hebrides, Banks Is., Santa Cruz Is.	
scutellaris horrescens Edwards (Stegomyia)	Fiji.	
scutellaris pseudoscutellaris (Theobald) (Stegomyia)	Guam, Tuamotu Is., Ellice Is., Cook, Fiji, Samoa, Societies, Marianas.	Coconut husks, tree holes, tin cans, Vacao pods, concrete drains, small shaded water collections of high organic content.
scutellaris tongae Edwards (Stegomyia)	Tonga, Societies, Sikiara.	
similis (Theobald) (Aedes)	Queensland, New Guinea, Ceram.	
spinosipes Edward (Chaetocruiomyia)	Queensland.	
theobaldi (Taylor) (Ochlerotatus)	Queensland, New South Wales, Victoria, S. Australia.	
tonsus (Edwards) (Geoskusea)	Ceram.	
tremulus (Theobald) (Macleaya)	Queensland, N. Territory, New Guinea, New Britain.	Artificial containers, tree holes, wells.

Species	Distribution	Recorded larval habitat
GENUS AEDES continued		
tulliae Taylor (Chaetocruiomyia)	Queensland.	
vexans Meigen (Aedimorphus)	W. Australia, New Guinea, New Caledonia, New Hebrides, Fiji, Samoa, Tonga, Palearctic, Nearctic, and Oriental Regions.	Temporary ground pools, roadside ditches, foul water, grassy pools.
vigilax (Skuse) (Ochlerotatus)	Australian coasts, New Guinea, New Caledonia, Fiji, eastern Oriental Region.	Salt marshes, rarely freshwater marshes.
vittiger (Skuse) (Ochlerotatus)	Queensland, New South Wales.	Clean or muddy water in temporary ground pools.
wallacei Edwards (Finlaya)	New Guinea, New Ireland, Solomons.	Pandanus leaf axils.
wattensis Taylor (Chaetocruiomyia)	Queensland.	
GENUS ANOPHELES		
aitkenii aitkenii James (Anopheles)	New Guinea, Oriental Region.	Large or small bodies of running or stagnant fresh water, various elevations.
aitkenii bengalensis Puri (Anopheles)	New Guinea(?), India, Java(?), Malaya.	
aitkenii palmatus (Rodenwalt) (Anopheles)	New Guinea(?), East Indies.	
albotaeniatus Theobald (Anopheles)	Moluccas, Malaysia.	Deep clear shady forest pools with dead leaves and twigs.

Species	Distribution	Recorded larval habitat
GENUS ANOPHELES continued		
amictus Edwards (Myzomyia)	Queensland, N. Territory, W. Australia, New Guinea.	Muddy or clear hoofprints, grassy channels, clogged street gutters.
annulipes Walker (Myzomyia)	Queensland, N. Territory, New South Wales, Victoria, Tasmania, W. Australia.	Hoofprints, salt marshes, many types of water at various elevations, not foul water.
atripes Skuse (Anopheles)	Queensland, New South Wales.	Sluggish creeks; swamps; small peaty depressions.
bancrofti Giles (Anopheles)	Queensland, N. Territory, New Guinea, Admiralties, East Indies, Ceylon, Philippines.	Shallow stagnant or running water with much vegetation; not in small collections of water.
barbirostris Wulp (Anopheles)	New Guinea, Oriental Region.	
barbumbrosus Strickland and Chowdhury (Anopheles)	Moluccas, Oriental Region.	
breinli Taylor (Myzomyia)	Queensland.	
derricki Taylor (Myzomyia)	Queensland.	
farauti farauti (Laveran) (Myzomyia)	Eastern New Guinea, New Britain, Admiralties, Queensland, N. Territory(?), New Ireland, New Hebrides, Solomons.	Many types stagnant and slow water, sometimes brackish; artificial containers, coconut shells, prefers open country.
farauti moluccensis Swellengrebel and Swellengrebel (Myzomyia)	New Guinea, Moluccas, Misool.	All types water, brackish, fresh, running, stagnant, clean, dirty, artificial containers, coconut shells, in shade or sun.

Species	Distribution	Recorded larval habitat
GENUS ANOPHELES continued		
incognitus Brug (Myzomyia)	New Guinea.	
insulaeflorum Swellengrebel and Swellengrebel (Anopheles)	New Guinea, East Indies, India, Moluccas.	Among debris in stagnant parts of quiet shaded forest streams.
kochi Doenitz (Myzomyia)	Moluccas, Oriental Region.	Various types of fresh water, especially small open places; also in artificial containers, cut bamboo.
longirostris Brug (Myzomyia)	New Guinea, New Ireland.	Extensive swamps, river edges, wooded country.
meraukensis Venhuis (Myzomyia)	New Guinea.	Shallow open swamp, sunny algal road ruts; shallow ditches; fresh water.
parangensis (Ludlow) (Myzomyia)	Moluccas, Celebes, Philippines.	Muddy or clear, often algal, fresh or brackish, shady or sunny water.
perplexus perplexus Taylor (Myzomyia)	Queensland, N. Territory.	
perplexus persimilis Taylor (Myzomyia)	Queensland.	
punctulatus novaeguinensis (Venhuis) (Myzomyia)	Southern New Guinea.	
punctulatus punctulatus Doenitz (Myzomyia)	Queensland, N. Territory, New Guinea, Solomons, New Britain, Santa Cruz Is., Moluccas.	All types stagnant or slow water not saline or strongly acid. Prefers open country.
stigmaticus corethroides Theobald (Anopheles)	Queensland.	

Species	Distribution	Recorded larval habitat
GENUS ANOPHELES continued		
stigmaticus stigmaticus Skuse (Anopheles)	Queensland, New South Wales.	Small water holes or streams.
subpictus Grassi (Myzomyia)	New Guinea, Moluccas, Oriental Region.	Dirty or brackish water; large or small water collections, near habitations especially.
tesselatus Theobald (Myzomyia)	Moluccas, Oriental Region.	Dirty stagnant water, pools, rice fields, irrigation furrows, shade preferred.
vagus Doenitz (Myzomyia)	Moluccas, Oriental Region.	Pools, borrow pits, drains, hoof marks, grassy swamps, rice fields, occasionally brackish water.
GENUS ARMIGERES		
breinli (Taylor)	New Guinea, Solomons.	Hollow log, pool near village, beached canoe, coconut shell.
denbesteni Brug	Ceram.	Sago palm leaf axils.
lacuum Edwards	New Guinea, New Britain, New Ireland, Admiralties.	Tree holes, bamboo stems.
obturbans (Walker)	New Guinea, Oriental Region.	Pots, tubs of dirty water in sun or shade, tree holes, bamboo.

Species	Distribution	Recorded larval habitat
GENUS BIRONELLA		
derooki Soesilo and van Slooten	New Guinea	
gracilis Theobald	New Guinea, New Britain.	Small running stream.
hollandi Taylor	New Ireland	Native well 3 ft. deep.
papuae papuae Swellengrebel	New Guinea, New Britain.	
papuae brugi Soesilo and van Slooten	New Guinea, New Britain.	
soesiloi Strickland and Chowdhury.	New Guinea.	
travestitus Brug	New Guinea, Ceram.	
walchi Soesilo	New Guinea.	
GENUS CULEX		
albinervis Edwards (Culex)	Fiji.	Pools, stream edges with algae.
alis Theobald (Culex)	New Guinea, Christmas I.	Beached canoe, swamp.
annulirostris Skuse (Culex)	Queensland, New South Wales, N. Territory, Solomons, New Hebrides, New Ireland, Fiji, Samoa, Ellice Is., Tonga.	Barrel, coconut shell, stagnant or running, fresh or brackish, turbid or clear water.
atriceps Edwards (Culex)	Societies.	
basicinctus Edwards (Culex)	Queensland, New South Wales.	Rock pools.

Species	Distribution	Recorded larval habitat
GENUS CULEX continued		
bitaeniorhynchus Giles (Culex)	Queensland, N. Territory, New Guinea, Ethiopian and Oriental Regions.	Open weedy algal pools.
brevipalpus Giles (Neoculex)	New Britain, New Ireland, Oriental Region.	Tree hole, bamboo stem, iron tank with leaves.
cataractarum Edwards (Mochthogenes)	New Britain, New Guinea.	
chaetoventralis Theobald (Lophoceraomyia)	Queensland.	
crassistylus Brug (Neoculex)	New Guinea.	
crinicauda Edwards (Culex)	N. Territory.	Brackish water.
cylindricus Theobald (Lophoceraomyia)	Queensland, New South Wales.	
digoelensis Brug (Lophoceraomyia)	New Guinea.	
femineus Edwards. (Mochthogenes)	New Hebrides.	Root pocket with dead leaves, pool in stream bed.
fergusoni (Taylor) (Neoculex)	New South Wales.	
fraudatrix fraudatrix Theobald (Lophoceraomyia)	N. Territory, New South Wales, Queensland, New Guinea, New Britain, Solomons, New Hebrides, Malaysia, Philippines.	Shaded leafy pool, sunlit footprint, brackish mangrove or fresh water potholes.
fraudatrix solomonis (Edwards) (Lophoceraomyia)	Solomons, New Guinea(?).	Tree hole.
gelidus Theobald (Culex)	New Guinea, Oriental Region.	Weedy, marshy ground pools.

Species	Distribution	Recorded larval habitat
GENUS CULEX continued		
halifaxii Theobald (Lutzia)	N. Territory, Queensland, New South Wales, New Guinea, Solomons, New Britain, Oriental Region.	Rock pools, artificial containers, contaminated wells; predaceous.
hilli Edwards (Lophoceraomyia)	Queensland, N. Territory.	
jepsoni Theobald (Culex)	Coastal Australia, New Guinea, New Britain, New Hebrides, Fiji, Samoa, New Ireland.	Small coastal water collections, brackish or fresh.
malayi (Leicester) (Mochthogenes)	New Guinea, Oriental Region.	Rock pool.
mimulus Edwards (Culex)	Queensland, New Guinea, Oriental Region.	Ground Pools.
miraculosus Bonne-Wepster (Culex)	New Guinea.	
ornatus (Theobald) (Culex)	New Guinea.	
pacificus Edwards (Culex)	New Hebrides.	Root pockets, tree holes, artificial containers.
pallidiceps (Theobald) (Culiciomyia)	New Guinea.	
pallidithorax Theobald (Culiciomyia)	New Guinea, Moluccas, Oriental Region.	Tree holes, bamboo, shallow wells, stream and rock pools, ground pools, foul water.
papuensis (Taylor) (Culiciomyia)	New Guinea, Solomons, Amboina.	Coconut husks.
pseudomelanconia Theobald (Neoculex)	Queensland.	

Species	Distribution	Recorded larval habitat
GENUS CULEX continued		
pullus Theobald (Culiciomyia)	Queensland, New Guinea, New Britain, Solomons, Ceram, Amboina, India.	Horse trough, artificial containers, well, forest and jungle pools, tree hole, canoe.
quinquefasciatus Say (Culex)	Australia, Tasmania, New Guinea, New Britain, New Ireland, New Hebrides, Solomons, Guam, Samoa, Fanning Is., Tonga, Hawaii, Cook I., Societies, Gilberts, Easter I., Fiji, world wide distribution.	Artificial containers, other small water collections near habitations, dilute sewage.
samoaensis (Theobald)(Culex)	New Guinea, Samoa.	
solitarius Bonne-Wepster and Brug (Culex)	New Guinea, Java.	
squamosus (Taylor) (Culex)	Queensland, New Guinea, Solomons, Aroe Is., Moluccas.	Slow rivulet, brush swamp, canal.
vicinus (Taylor) (Culex)	Northern Territory, Queensland, New Guinea.	
vishnui Theobald (Culex)	New Guinea.	Ground pools, rice fields, salt marshes.
whitmorei (Giles (Culex)	New Guinea, Oriental Region.	Ground pools.
GENUS CULISETA		
inconspicua (Lee)	New South Wales.	

Species	Distribution	Recorded larval habitat
GENUS FICALBIA		
elegans (Taylor)	Queensland, New Britain, Sumatra.	Small ground hole.
metallica (Leicester)	Queensland, Malaya.	Large grassy swamp at edge of reservoir.
GENUS HEIZMANNIA		
aurea Brug	Moluccas.	
GENUS HODGESIA		
cairnsensis Taylor	Queensland, New Guinea, New Britain, New Ireland.	
quasisanguinea Leicester	Queensland, N. Territory, New Guinea, Malaya, Philippines.	
spoliata Edwards		
GENUS MANSONIA		
annulifera (Theobald) (Mansonioides)	New Guinea, Oriental Region.	Ponds, swamps overgrown with vegetation.
crassipes (Wulp) (Coquillettidia)	Queensland, N. Territory, New Guinea, New Ireland, New Caledonia, Fiji, India, Malaya.	Reedy abandoned drain in grassy swamp.
giblini (Taylor) (Coquillettidia)	Queensland, New Guinea, New Ireland, New Britain, eastern Oriental Region.	

Species	Distribution	Recorded larval habitat
GENUS MANSONIA continued		
indiana (Edwards) (Mansonioides)	New Guinea, Oriental Region.	Swamps and pools overgrown with vegetation.
linealis (Skuse) (Coquillettidia)	Queensland, New South Wales, Victoria.	
longipalpis (Wulp) (Mansonioides)	New Guinea, Oriental Region.	
memorans (Bonne - Wepster) (Coquillettidia)	New Guinea.	
nigrochracea (Bonne-Wepster) (Coquillettidia)	New Guinea.	
ochracea (Theobald) (Coquillettidia)	New Guinea.	
papuensis (Taylor) (Mansonioides)	New Guinea.	
septempunctata (Theobald) (Mansonioides)	Queensland, New Guinea, New Ireland.	
uniformis (Theobald) (Mansonioides)	Queensland, N. Territory, New South Wales, New Guinea, New Ireland, Solomons, Admiralties, Moluccas, Ethiopian and Oriental Regions.	Swamps and pools overgrown with vegetation.
xanthogaster (Edwards) (Coquillettidia)	Queensland, N. Territory, New Zealand.	

Species	Distribution	Recorded larval habitat
GENUS MEGARHINUS		
amboinensis Doleschall	Ceram, Amboina, Philippines.	Bamboo stem.
inornatus Walker	New Guinea, New Britain, New Ireland, Ellice Is.	Tree holes, tins, bottles.
speciosus Skuse	N. Territory, Queensland, New South Wales, New Guinea, Fiji.	Tree holes.
splendens splendens Wiedemann	New Guinea, Fiji, Ceram, Oriental Region.	
splendens subulifer Doleschall	New Guinea, East Indies, Amboina.	
GENUS ORTHOPODOMYIA		
anopheloides andamanensis Brug	Ceram, Andaman Is., Singapore(?).	Tree hole.
GENUS TRIPTEROIDES		
argenteiventris (Theobald)	New Guinea.	Leaf axils of Curcuma.
atripes atripes (Skuse)	Queensland, New South Wales, Victoria, W. Australia.	Tree holes, rainwater tanks, water barrels.
atripes occidentalis Brug	New Guinea, Timor.	
atripes punctolateralis (Theobald)	Queensland, New South Wales, Victoria, W. Australia.	Tree holes, artificial containers.
bimaculipes (Theobald)	New Guinea, New Britain, Moluccas.	Cut bamboo, coconut husks, tree holes, pitcher plant.

Species	Distribution	Recorded larval habitat
GENUS TRIPTEROIDES continued		
brevipalpis Brug	New Guinea, Moluccas.	Bamboo.
brevirhynchus Brug	New Guinea.	Pitcher plant.
brugi (Edwards)	New Guinea.	
caledonica (Edwards)	New Caledonia, New Hebrides.	Pitcher plant, tree holes, leaf axils of taro and sago palm.
digoelensis Brug	New Guinea.	Pitcher plant.
distigma (Edwards)	Solomons.	
elegans Brug	New Guinea.	Pitcher plant.
filipes (Walker)	N. Territory, New Guinea, New Britain, Solomons.	Leaf axils, tree holes, predaceous.
latisquama (Edwards)	New Guinea.	
littlechildi (Edwards)	New Guinea.	
magnesiana (Edwards)	Queensland.	
microlepis (Edwards)	New Guinea.	
obscura Brug	New Guinea.	Pitcher plant.
ornata (Taylor)	New Guinea.	
papua Brug	New Guinea.	
purpurata (Edwards)	New Guinea, Fiji.	Old kerosene can.
quasiornata (Taylor)	Queensland, New Guinea, New Britain, New Ireland, Solomons.	Tree holes, leaf axils of banana and taro.
rotumana (Edwards)	Fiji.	
simplex Brug	New Guinea.	Pitcher plant.

Species	Distribution	Recorded larval habitat
GENUS TRIPTEROIDES continued		
solomonis (Edwards)	Solomons.	Coconut husks.
subnudipennis (Edwards)	New Guinea.	
sylvestris (Theobald)	Queensland.	
tasmaniensis (Strickland)	New South Wales, Victoria, Tasmania.	
vanleeuweni (Edwards)	New Guinea.	
GENUS URANOTAENIA		
albescens Taylor	Queensland, Solomons.	Clear, shallow grassy pools, kerosene cans, water troughs.
antennalis Taylor	Queensland, New Guinea.	
argyrotarsis Leicester.	New Britain, New Ireland, Solomons, Malaya, Philippines.	Tree holes, small temporary ground pools.
atra Theobald	Queensland, New Guinea, New Ireland, Oriental Region.	Crab holes, stagnant pools, brackish water on coral inlet, swamps.
colocasiae Edwards	Fiji.	Taro leaf axils.
diagonalis Brug	New Guinea, New Britain(?).	Curcuma leaf axils.
nigerrima Taylor	New Guinea, New Britain, Solomons.	Water in large leaf.
nivipes (Theobald)	Queensland, N. Territory, Malaya, Philippines.	

Species	Distribution	Recorded larval habitat
GENUS URANOTAENIA continued.		
painei Edwards	Fiji.	Streambed rock pools with organic matter.
papua Brug	New Guinea.	
pygmaea Theobald	Queensland, Philippines(?).	
quadrimaculata Edwards.	New Guinea, New Britain, Solomons.	Coconut husks, taro leaf axils, fallen banana leaves.
tibialis Taylor	Queensland.	

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