

# Mosquito Genera Identification Key



Southern Command Area of Responsibility

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## Introduction

### How to use this key:

Identifying local mosquito genera is essential when establishing and carrying out control measures. This key uses characters to differentiate between mosquito genera found in the U.S. Southern Command (SOUTHCOM) area and insects that are not mosquitoes. Start at step 1 on page 6, and select the choice that matches your insect. Each selection will lead you to a specific mosquito genus or will send you to a new set of choices. Every numbered step is followed by a number in parentheses. This number in parentheses is the step number that sent you to your current choice. Continue through the key until you have identified your specimen.

## Limitations

Characteristics in this key must be viewed with a dissecting microscope. This key is intended for field use; it will separate mosquito specimens into genera but will not identify mosquitoes to the species level. Mosquito genera contain both medically important species and species that do not transmit disease. Additional keys are required to identify the species within genera. Photos of characteristics used in this key have been selected for clarity of the character and may not be of the actual genus. Images of all mosquitoes are not readily available. Where photos of characteristics are not available for a specific genera, photos of other genera have been substituted. Substituted images may not be representative of the actual genera or from a genera found in the SOUTHCOM area.



**Identifying local mosquito genera is essential** when establishing and carrying out control measures.



Fig. 1. Map of SOUTHCOM area

# Mosquito Morphological Structures

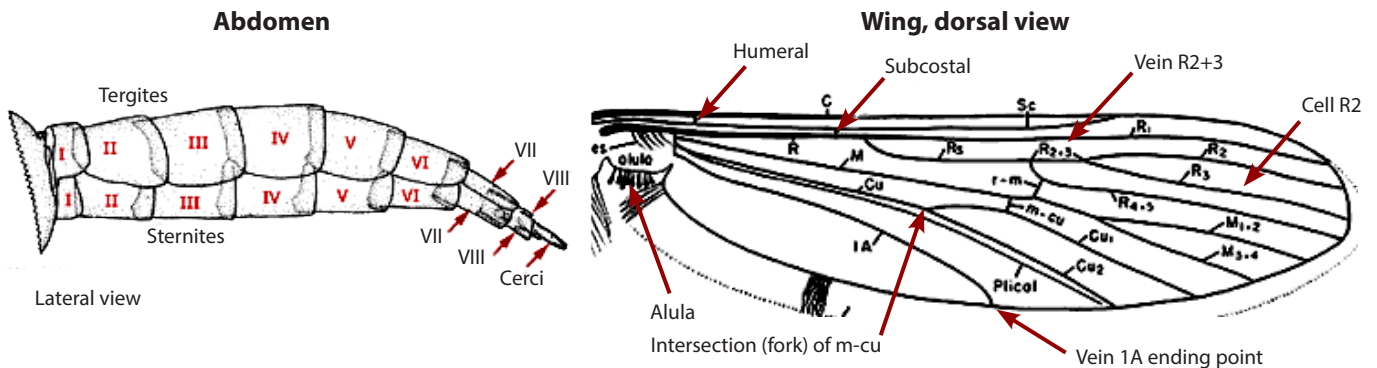
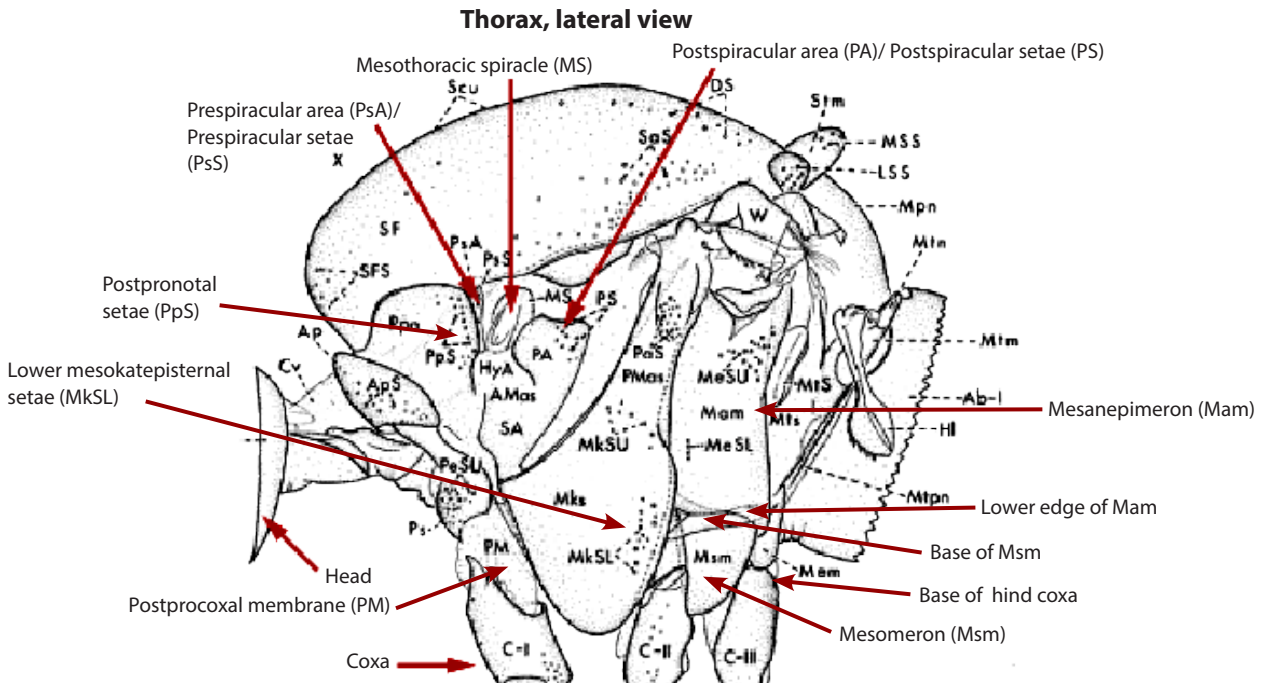
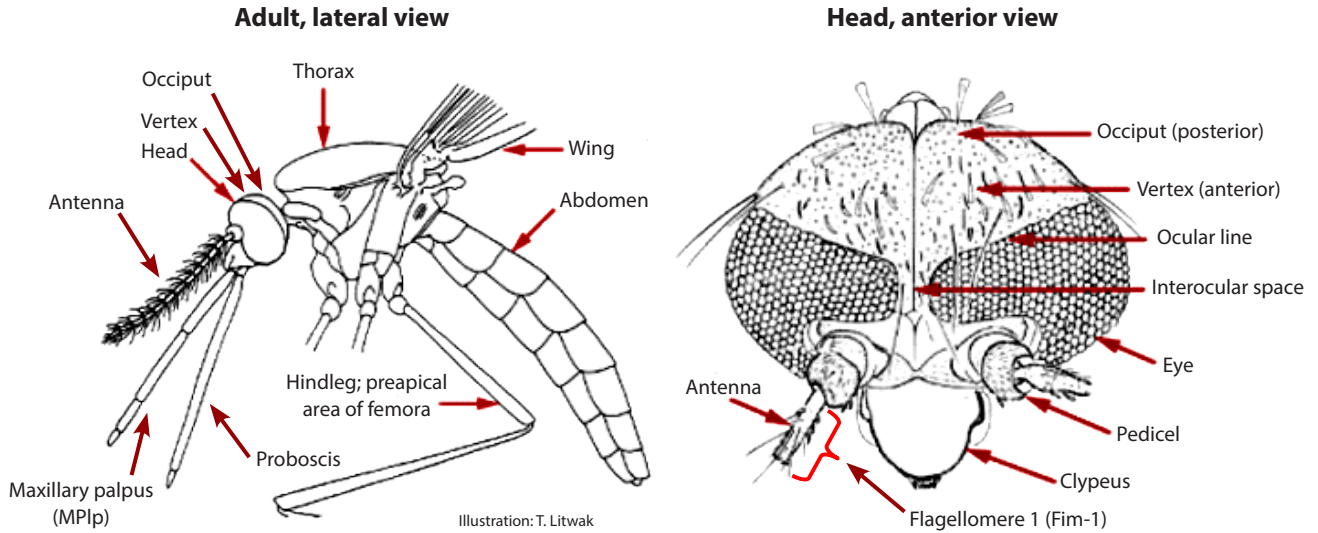


Fig. 2. Diagrams of Mosquito Morphological Structures

Source: WRBU web site (2015); illustration adapted from Darsie & Ward (1981)

# Key to Female Mosquito Genera in SOUTHCOM, with Figures

## Genera covered in this key:

- *Aedeomyia*      • *Culex*      • *Isostomyia*      • *Onirion*      • *Shannoniana*
- *Aedes*      • *Culiseta*      • *Johnbelkinia*      • *Orthopodomyia*      • *Toxorhynchites*
- *Anopheles*      • *Deinocerites*      • *Limatus*      • *Psorophora*      • *Trichoprosopon*
- *Chagasia*      • *Galindomyia*      • *Lutzia*      • *Runchomyia*      • *Uranotaenia*
- *Coquillettidia*  
(*Rhynchotaenia*)      • *Haemagogus*      • *Mansonia*      • *Sabethes*      • *Wyeomyia*

### Step: 01

A fly with needle-like mouthparts (**fig. 3**); scales covering the body (**fig. 4**); and scales on the wings (**fig. 5**) **Mosquito - go to step 2**

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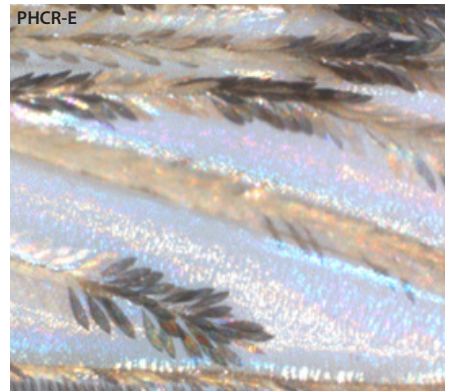
No needle-like mouthparts (**figs. 6 & 7**); body without scales (**fig. 8**); wings usually without scales (**fig. 9**) **Not a Mosquito**



**Fig. 3.** Needle-like mouthparts: *Cq. crassipes*



**Fig. 4.** Lateral view of thorax: *Ae. tormentor*



**Fig. 5.** Wing with scales



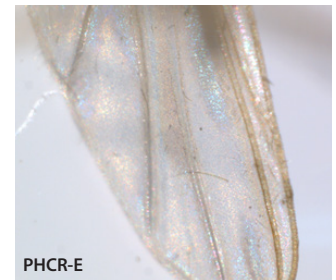
**Fig. 6.** No needle-like mouthparts: Sand fly



**Fig. 7.** No needle-like mouthparts: Sand fly



**Fig. 8.** Body without scales



**Fig. 9.** Wing usually without scales

**KEY:** **APHC** - Army Public Health Center      **PHCR-E** - Public Health Command Region Europe      **WRBU** - Walter Reed Biosystematics Unit

**Step: 02 (1)**

Antennae bushy or feather-like, palpi (MP1p) as long as proboscis and bushy or with paddles (figs. 10-12)

**Male**

Antennae not bushy or feather-like, palpi (MP1p) shorter than proboscis, proboscis with apical half not strongly recurved and not more slender than basal half (not tapering to a point) (figs. 13 & 14), wing not emarginated just beyond tip of vein CuA (fig. 15)

**Female Subfamily Culicinae - 3**

Antennae not bushy or feather-like, palpi (MP1p) as long as proboscis, not bushy and without paddles. Proboscis not tapering to a point (figs. 16-18). Wing not emarginated (fig. 15)

**Female Subfamily Anophelinae - 4**

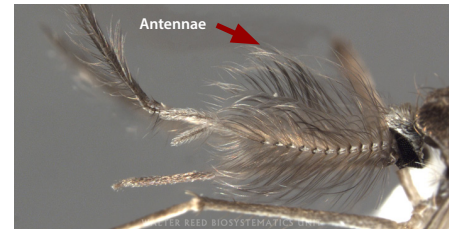
Antennae not bushy or feather-like, proboscis (P) with apical half strongly recurved and more slender than basal half (tapering to a point) (fig. 19), wing with posterior edge emarginated just beyond tip of vein CuA (fig. 20) **Female - Toxorhynchites**



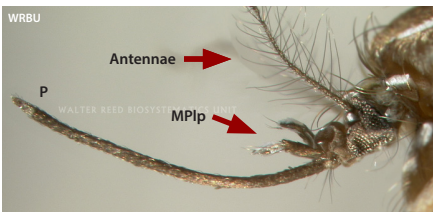
**Fig. 10.** Palpi as long as proboscis: Male *Ae. caspius*



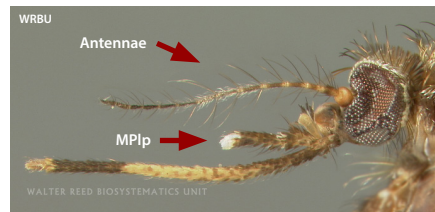
**Fig. 11.** Palpi with paddles: Male *An. dthai*



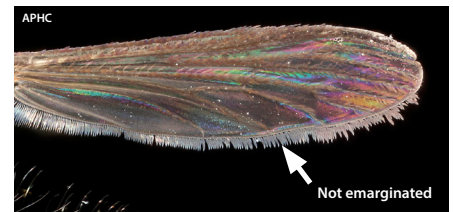
**Fig. 12.** Antennae feather-like: Male *Cx. univittatus*



**Fig. 13.** Palpi shorter than proboscis: *Ae. aegypti*



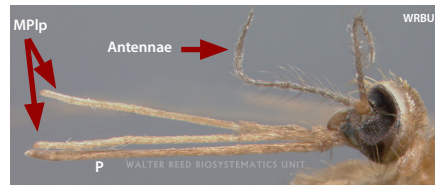
**Fig. 14.** Antennae not bushy or feather-like: *Ma. africana*



**Fig. 15.** Wing not emarginated beyond tip of CuA



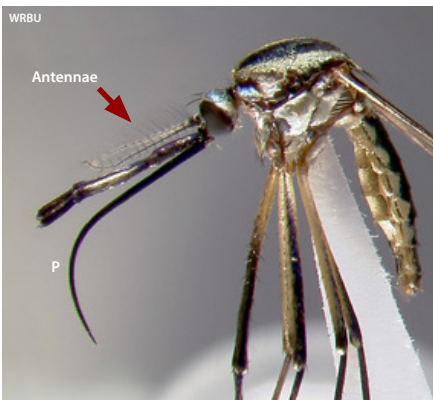
**Fig. 16.** Palpi as long as proboscis: *An. aquasalis*



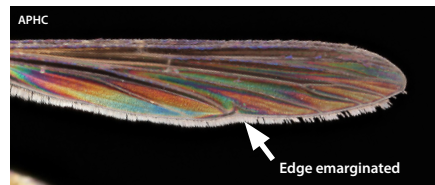
**Fig. 17.** Palpi without paddles: *An. aztecus*



**Fig. 18.** Antennae not bushy or feather-like: *An. dirus*



**Fig. 19.** Proboscis strongly bent and tapering: *Tx. rutilus*



**Fig. 20.** Wing emarginated beyond tip of CuA (V-shaped thickening in hindmargin of wing)

**Step: 03 (2)**

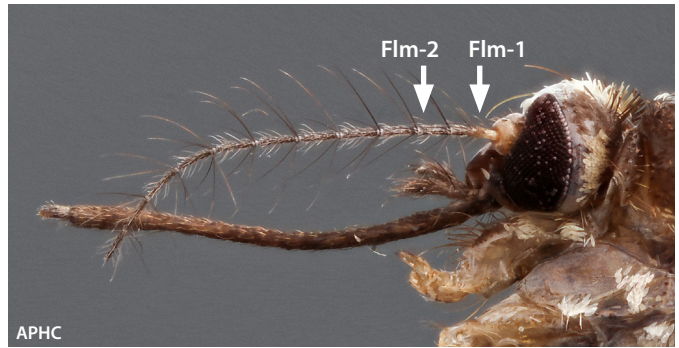
Antennal flagellomere 1 (Flm-1) more than twice as long as flagellomere 2 (Flm-2) (**fig. 21**); antenna longer than proboscis **18**

Antennal flagellomere 1 (Flm-1) less than twice as long as flagellomere 2 (about the same length) (**fig. 22**); antenna not longer than proboscis. These are the common features for most mosquitoes. **5**

All antennal flagellomeres of females are unusually short and thick (**fig. 23**); Hindfemur with a tuft of suberect scales at apex (**fig. 24**) **Aedeomyia**



**Fig. 21.** Antennal flagellomere 1 (Flm-1) more than twice as long as flagellomere 2 (Flm-2); antenna longer than proboscis: *De. pseudes*



**Fig. 22.** Antennal flagellomere 1 (Flm-1) less than twice as long as Flm-2 (about the same length): *Ae. tormentor*



**Fig. 23.** All antennal flagellomeres of females are unusually short and thick: *Ad. catastica*



**Fig. 24.** Hindfemur with a tuft of suberect scales at apex: *Ad. fufurea*



**Step: 04 (2)**

Posterior margin of scutellum (Stm) evenly rounded or slightly trilobed, with setae more-or-less evenly distributed (**fig. 25**); paratergite (Pa) without scales (**fig. 26**)

**Anopheles**

Posterior margin of scutellum (Stm) trilobed, with setae in three distinct groups (**fig. 27**); paratergite (Pa) with scales (PaSc) (**fig. 28**)

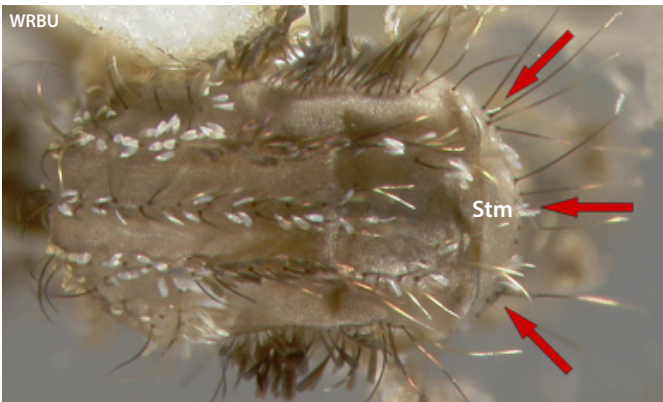
**Chagasia**



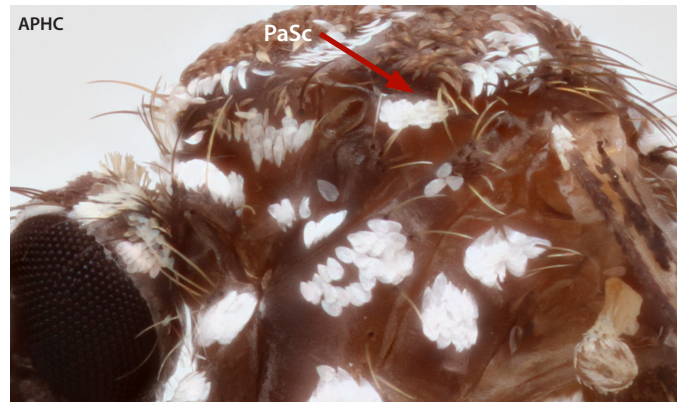
**Fig. 25.** Scutellum evenly rounded: *An. crucians*



**Fig. 26.** Paratergite without scales: *An. punctipennis*



**Fig. 27.** Scutellum trilobed with setae in three distinct groups: *Chagasia fajardi*



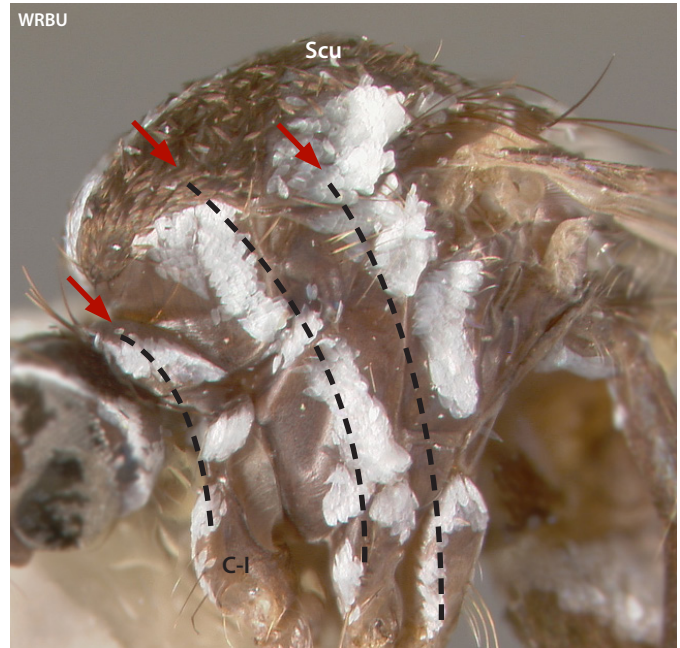
**Fig. 28.** Paratergite with scales: *Ae. aegypti*

**Step: 05 (3)**

Arrangement of silvery scales extending from scutum (Scu) to coxae in a single broad, vertical band ( <b>fig. 29</b> )	<b>19</b>
Arrangement of silvery scales extending from scutum to coxae in three vertical arcs ( <b>fig. 30</b> )	<b><i>Haemagogus</i></b>
Not as described above ( <b>fig. 31</b> )	<b>6</b>



**Fig. 29.** Single broad vertical band: *Hg. janthinomys*



**Fig. 30.** Three vertical arcs: *Hg. leucocelaenus*



**Fig. 31.** Horizontal bands: *Orthopodomyia* spp.

**Step: 06 (5)**

Base of hind coxa (C-III) in line with, or slightly above, base of mesomeron (Msm) (**fig. 32**); AND wing scales narrow (**fig. 35**), but if broad, then not strongly asymmetrical (**fig. 36**)

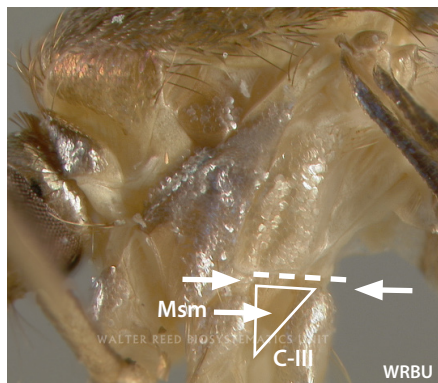
7

Base of hind coxa (C-III) distinctly ventral to base of mesomeron (Msm) (**fig. 33**); AND wing scales broad, strongly asymmetrical (**fig. 37**)

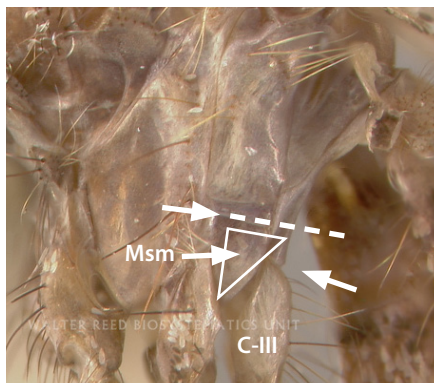
**Mansonia**

Base of hind coxa (C-III) distinctly ventral to base of mesomeron (Msm) (**fig. 34**); AND wing scales narrow (**fig. 35**), but if broad, then not strongly asymmetrical (**fig. 36**)

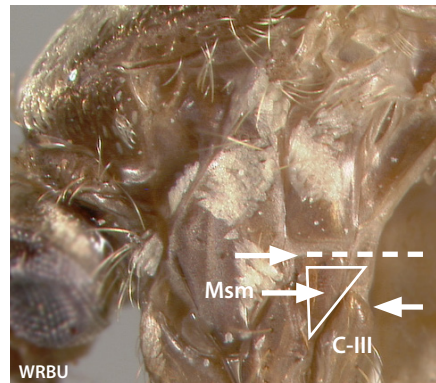
14



**Fig. 32.** C-III in line with base of Msm: *Tr. digitatum*



**Fig. 33.** C-III below base of Msm: *Ma. titillans*



**Fig. 34.** C-III below base of Msm: *Ae. scapularis*



**Fig. 35.** Wing scales narrow: *Cx. sitiens*



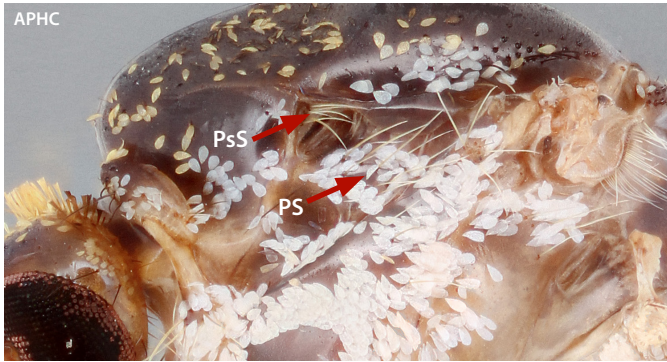
**Fig. 36.** Wing scales broad



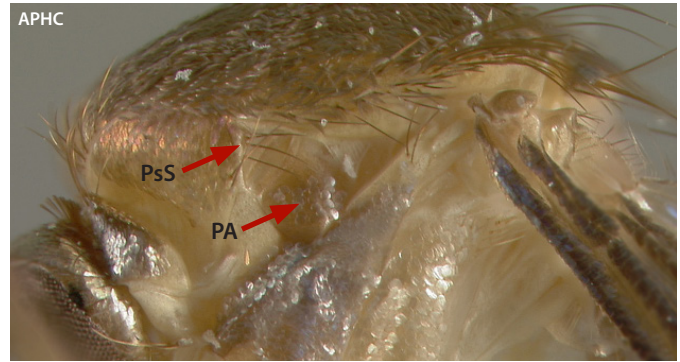
**Fig. 37.** Wing scales broad, strongly asymmetrical: *Mansonia*

**Step: 07 (6)**

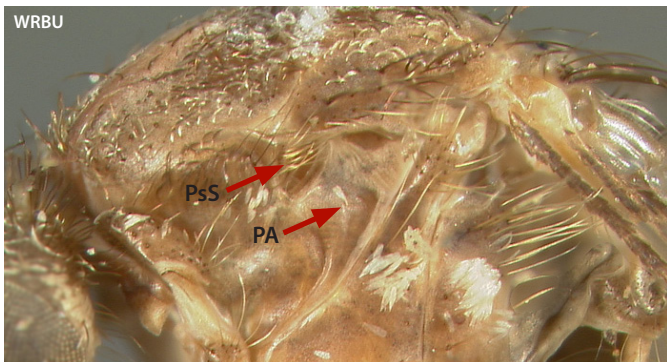
Prespiracular setae (PsS) present AND postspiracular setae (PS) present ( <b>fig. 38</b> )	<b><i>Johnbelkinia</i></b>
Prespiracular setae (PsS) present AND postspiracular setae absent [no setae in the postspiracular area (PA)] ( <b>figs. 39 &amp; 40</b> )	<b>8</b>
Prespiracular setae absent [no setae in the prespiracular area (PsA)], prespiracular scales (PsSc) present AND postspiracular setae absent [no setae in the postspiracular area (PA)] ( <b>fig. 41</b> )	<b><i>Limatus</i></b>



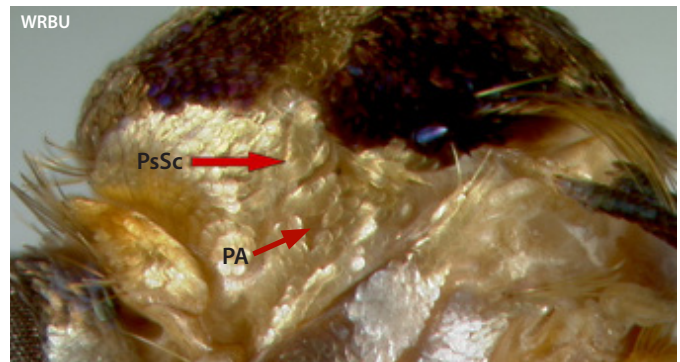
**Fig. 38.** PsS present AND PS present: *Ps. ferox*



**Fig. 39.** PsS present AND postspiracular setae absent: *Tr. digitatum*



**Fig. 40.** PsS present AND postspiracular setae absent: *Cs. morsitans*



**Fig. 41.** PsSc present instead of setae and postspiracular setae absent: *Limatus* spp.

**Step: 08 (7)**

Wing scales on dorsal surface narrow ( <b>fig. 42</b> )	<b><i>Wyeomyia</i></b>
Wing scales on dorsal surface broad ( <b>fig. 43</b> )	<b>9</b>



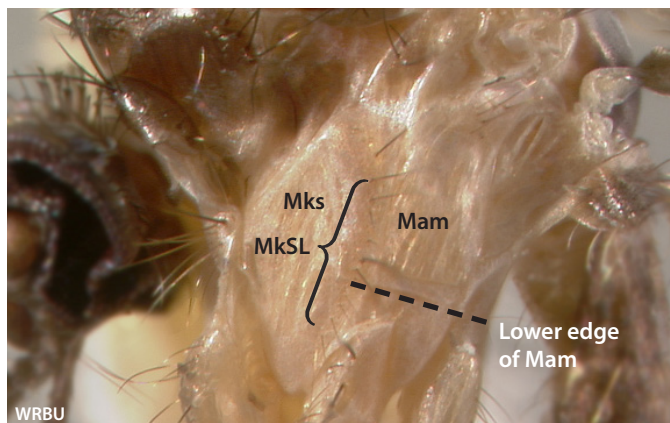
**Fig. 42.** Wing scales narrow: *Culex* spp.



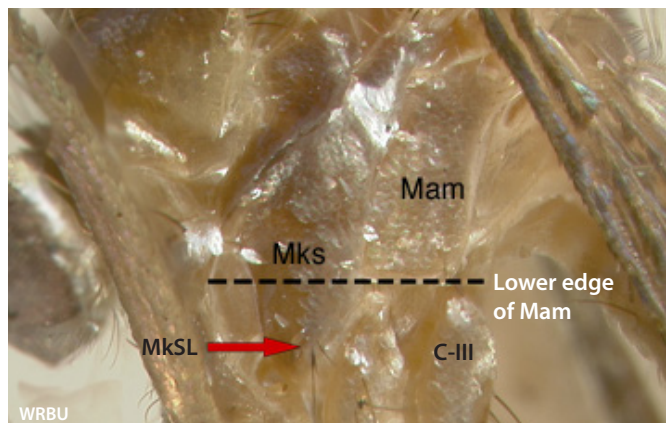
**Fig. 43.** Wing scales broad: *Ae. poicilius*

**Step: 09 (8)**

Lower mesokatepisternal setae (MkSL) extend well above lower edge of mesanepimeron (Mam) ( <b>fig. 44</b> )	<b>10</b>
Lower mesokatepisternal setae (MkSL) absent or restricted to area below lower edge of mesanepimeron (Mam) ( <b>fig. 45</b> )	<b>11</b>



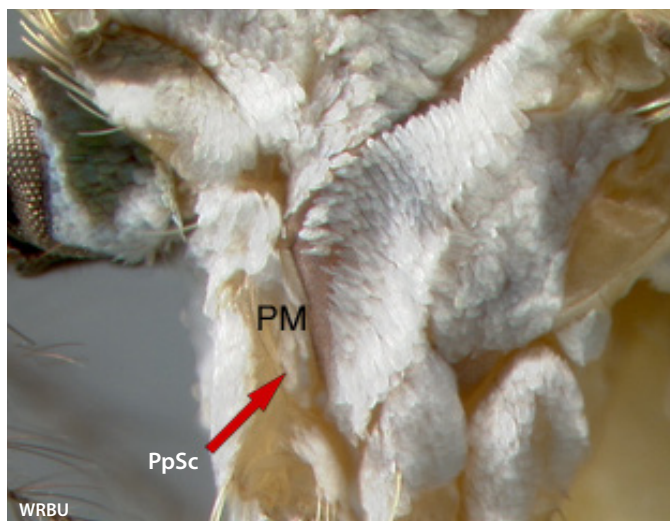
**Fig. 44.** MkSL extend well above lower edge of Mam: *Cx. portesi*



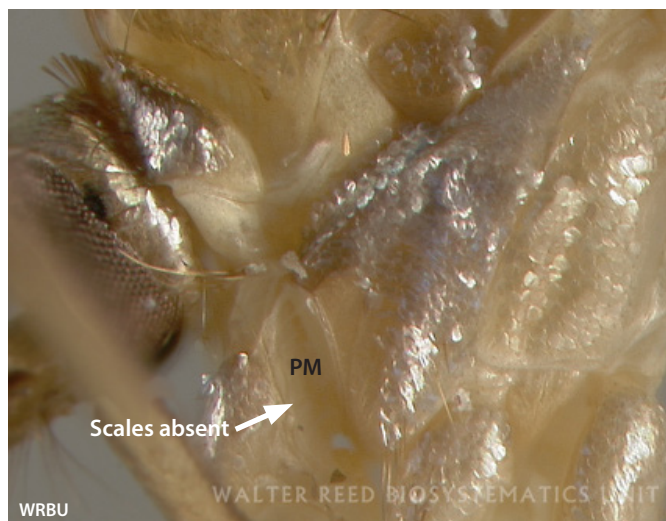
**Fig. 45.** MkSL absent or restricted to area below lower edge of Mam: *Ru. cerqueira*

**Step: 10 (9)**

Postprocoxal scales (PpSc) present on postprocoxal membrane (PM) ( <b>fig. 46</b> )	<b><i>Shannoniana</i></b>
Scales absent on postprocoxal membrane (PM) ( <b>fig. 47</b> )	<b><i>Trichoprosopon</i></b>



**Fig. 46.** PpSc present on postprocoxal membrane (PM): *Wy. arthrostigma*



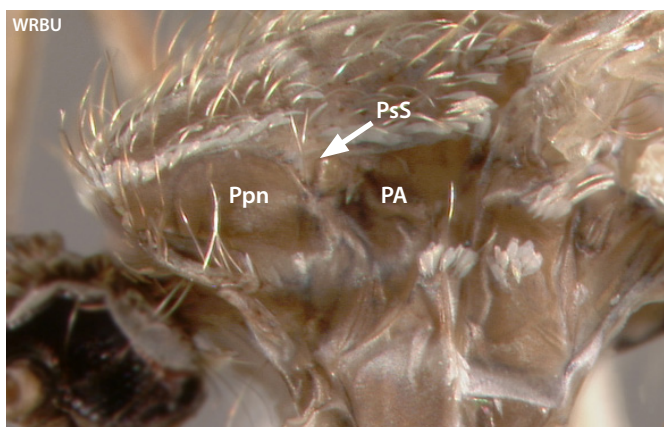
**Fig. 47.** Scales absent on postpronotum (Ppn): *Tr. digitatum*

**Step: 11 (9)**

One or more posterior postpronotal setae (PpS) present on postpronotum (Ppn) ( <b>fig. 48</b> )	<b>12</b>
Postpronotal setae absent. No setae on the postpronotum (Ppn) ( <b>fig. 49</b> )	<b>13</b>



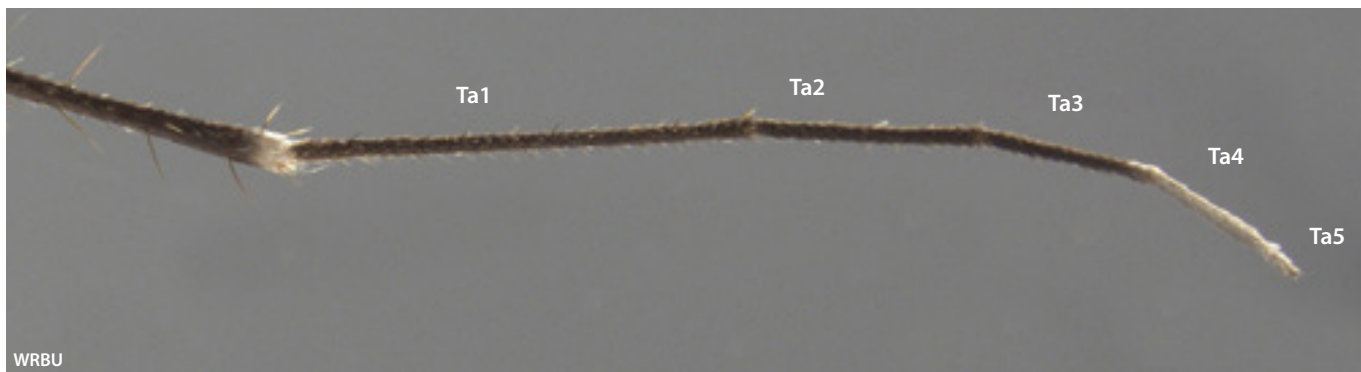
**Fig. 48.** One or more PpS present on postpronotum (Ppn): *Ae. japonicus*



**Fig. 49.** Postpronotal setae absent: *An. cruzii*

**Step: 12 (11)**

White scales present on one or two tarsomeres (Ta1-5) of mid- and hindtarsi ( <b>fig. 50</b> )	<b><i>Johnbelkinia</i></b>
White scales absent on tarsi, or tarsi entirely dark-scaled ( <b>fig. 51</b> )	<b><i>Runchomyia</i></b>



**Fig. 50.** White scales present on one or two tarsomeres: *Mi. mimomyiaformis*



**Fig. 51.** White scales absent on tarsi, or tarsi entirely dark-scaled: *Ar. subalbatus*

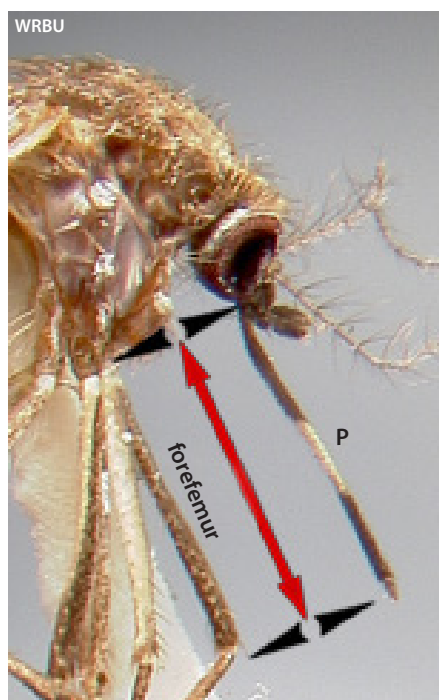
**Step: 13 (11)**

Proboscis about as long as, or shorter than, forefemur (**fig. 52**); OR the midtarsus has bright white scaling on the anterior surface from the middle of tarsomere 2 through tarsomere 5, and the hindtarsus has similar scaling ventrally from the middle of tarsomere 3 through tarsomere 5 (**fig. 53**)

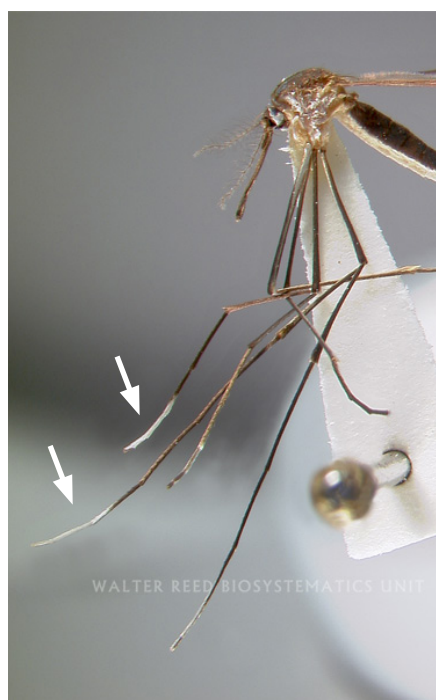
***Onirion***

Proboscis distinctly longer than forefemur (**fig. 55**) OR all tarsi completely dark (**fig. 54**)

***Isostomyia***



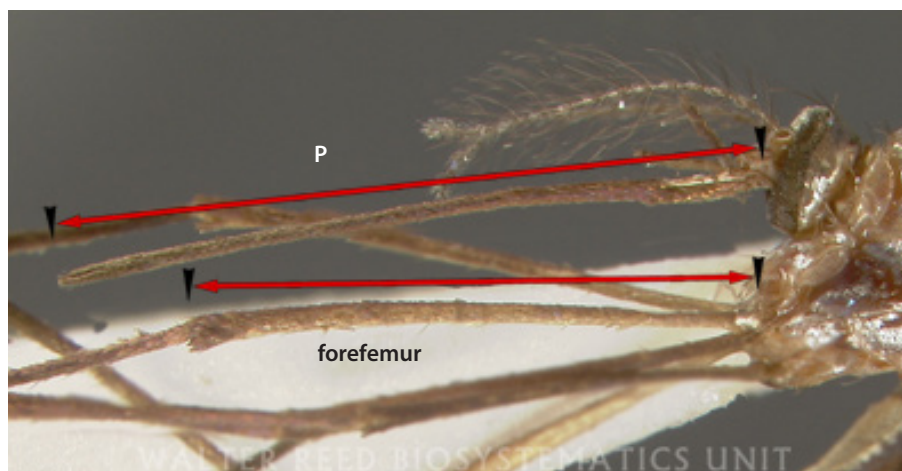
**Fig. 52.** Proboscis about as long as forefemur



**Fig. 53.** Midtarsus with bright white scaling: *On. personatum*



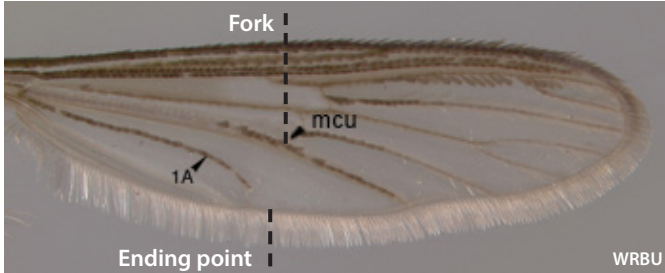
**Fig. 54.** All tarsi completely dark: *Is. espini*



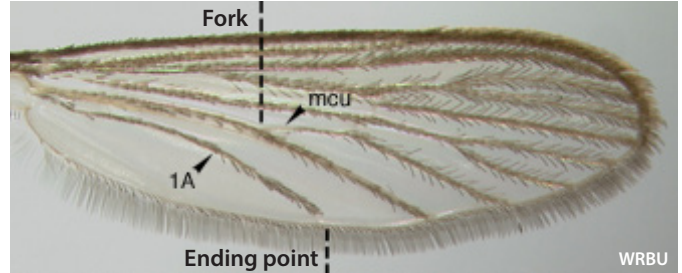
**Fig. 55.** Proboscis distinctly longer than forefemur

**Step: 14 (6)**

Vein 1A ending before, or at level with, intersection (fork) of m-cu ( <b>fig. 56</b> )	<b><i>Uranotaenia</i></b>
Vein 1A ending beyond intersection (fork) of m-cu ( <b>fig. 57</b> )	<b>15</b>



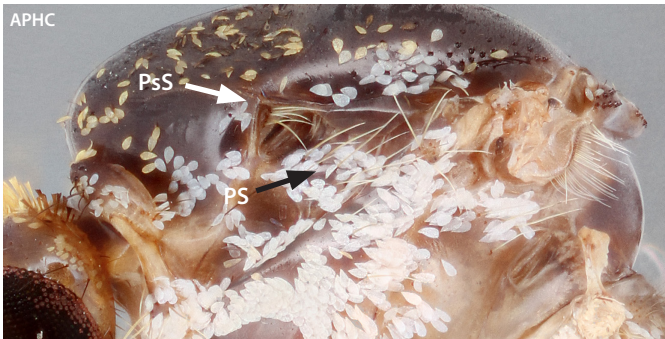
**Fig. 56.** Vein 1A ending before intersection (fork) of m-cu: *Uranotaenia* spp.



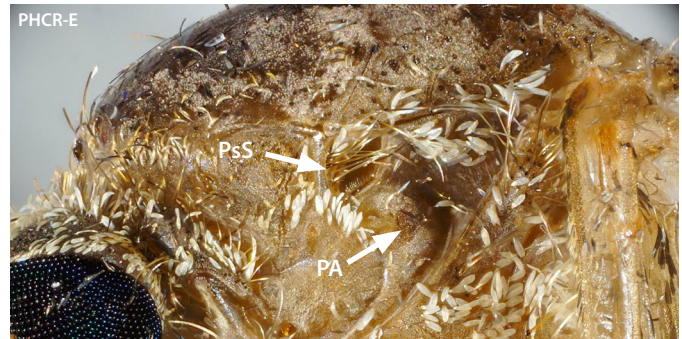
**Fig. 57.** Vein 1A ending beyond intersection (fork) of m-cu: *Culex* spp.

**Step: 15 (14)**

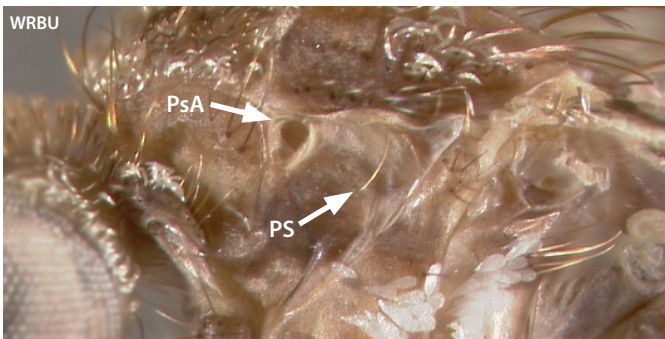
Prespiracular setae (PsS) present AND postspiracular setae (PS) present ( <b>fig. 58</b> )	<b><i>Psorophora</i></b>
Prespiracular setae (PsS) present AND postspiracular setae absent [no setae in the postspiracular area (PA)] ( <b>fig. 59</b> )	<b><i>Culiseta</i></b>
Prespiracular setae absent [no setae in the prespiracular area (PsA)] AND postspiracular setae (PS) present ( <b>fig. 60</b> )	<b>16</b>
Prespiracular setae absent [no setae in the prespiracular area (PsA)] AND postspiracular setae absent [no setae in the postspiracular area (PA)] ( <b>fig. 61</b> )	<b>17</b>



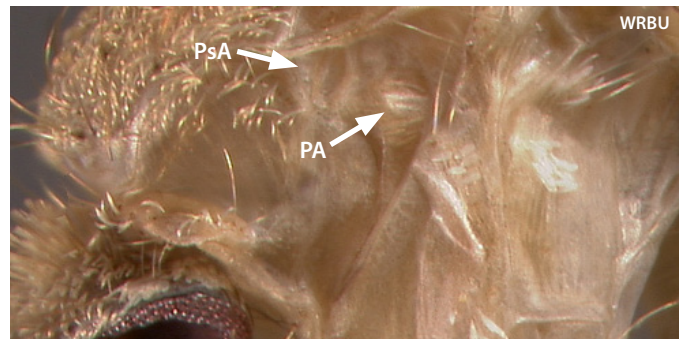
**Fig. 58.** PsS present AND PS present: *Ps. ferox*



**Fig. 59.** PsS present AND postspiracular setae absent: *Cs. longiareolata*



**Fig. 60.** Prespiracular setae absent and PS present: *Cq. venezuelensis*



**Fig. 61.** Prespiracular and postspiracular setae absent: *Cx. quinquefasciatus*



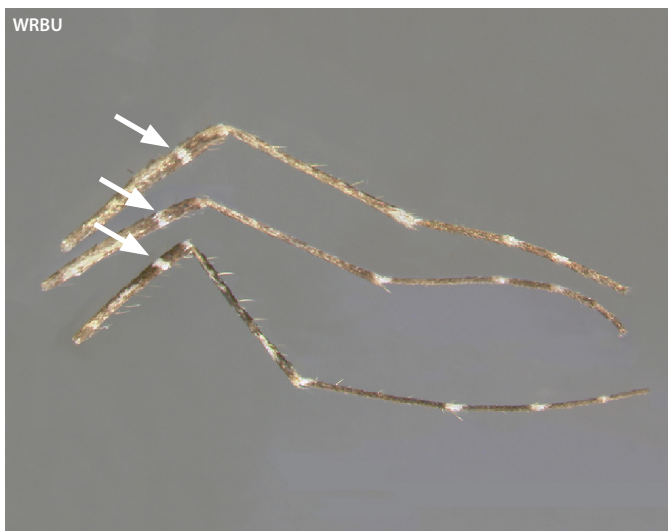
**Step: 16 (15)**

Conspicuous preapical white band or spot on the anterior surface of the femora (**fig. 62**);  
Neotropical species (subgenus *Rhynchoaenia*) are distinct in having this character

***Coquillettidia (Rhynchoaenia)***

No white band or spot on the anterior surface of the femora (**fig. 63**)

***Aedes***



**Fig. 62.** White band on the anterior surface of the femora: *Coquillettidia*



**Fig. 63.** No preapical white bands on the femora: *Ae. taeniorhynchus*

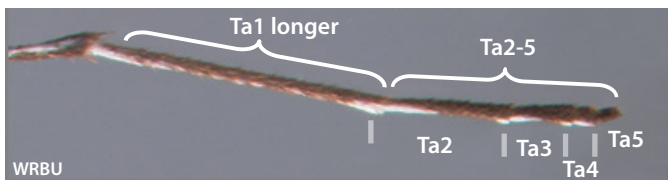
**Step: 17 (15)**

Tarsomere 1 (Ta1) longer than tarsomeres 2-5 combined. Ta4 shorter than Ta5 (**fig. 64**)

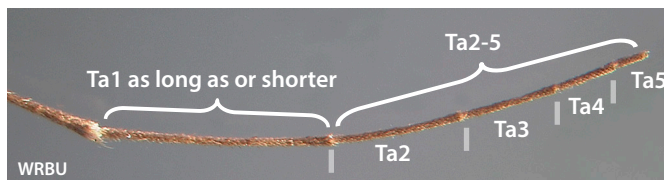
***Orthopodomyia***

Tarsomere 1 (Ta1) as long as, or shorter than, tarsomeres 2-5 combined (Ta2-5), Ta4 longer than Ta5 (**fig. 65**)

**20**



**Fig. 64.** Tarsomere 1 (Ta1) longer than tarsomeres 2-5 combined, tarsomere Ta4 shorter than Ta5: *Orthopodomyia* sp



**Fig. 65.** Tarsomere 1 shorter than tarsomeres 2-5 combined, tarsomere Ta4 longer than Ta5: *Cx. quinquefasciatus*

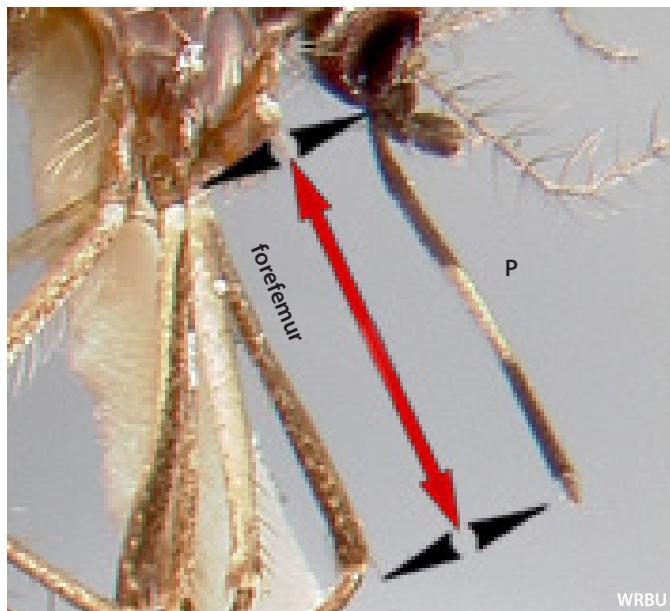
**Step: 18 (3)**

Proboscis about as long as, or shorter than, forefemur (**fig. 66**); OR erect forked scales numerous on vertex and usually occiput (**fig. 67**)

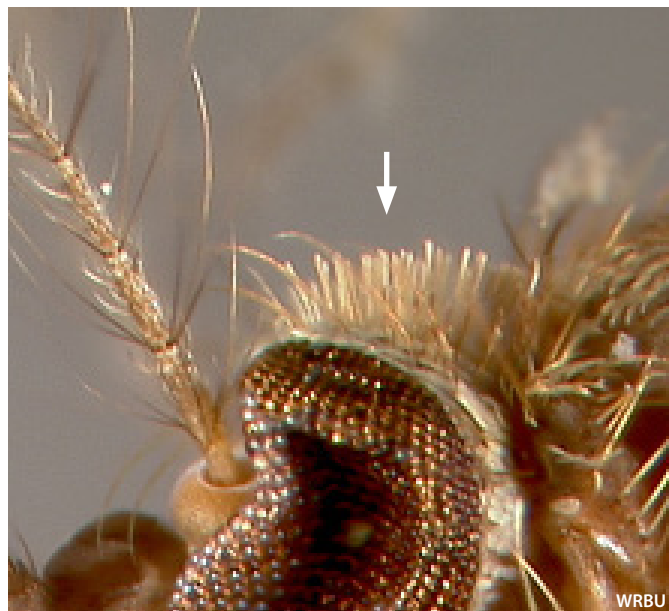
*Deinocerites*

Proboscis distinctly longer than forefemur (**fig. 68**); OR erect forked scales restricted to occiput (**fig. 69**), differs from *Deinocerites* in having the proboscis swollen apically

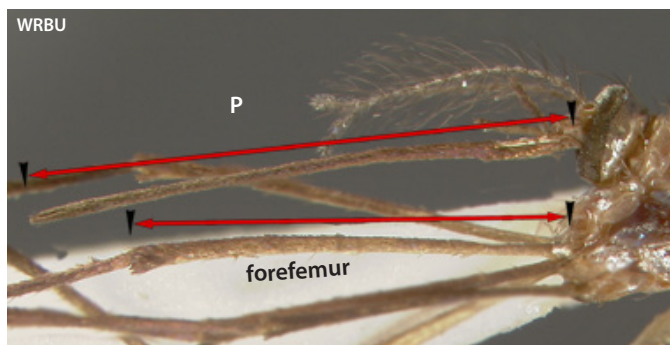
*Galindomyia*



**Fig. 66.** Proboscis about as long as forefemur



**Fig. 67.** Erect forked scales numerous on vertex



**Fig. 68.** Proboscis distinctly longer than forefemur



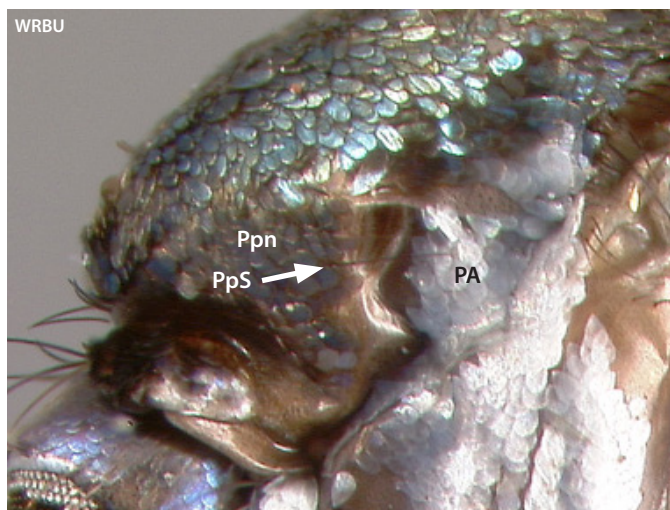
**Fig. 69.** Erect forked scales restricted to occiput

**Step: 19 (5)**

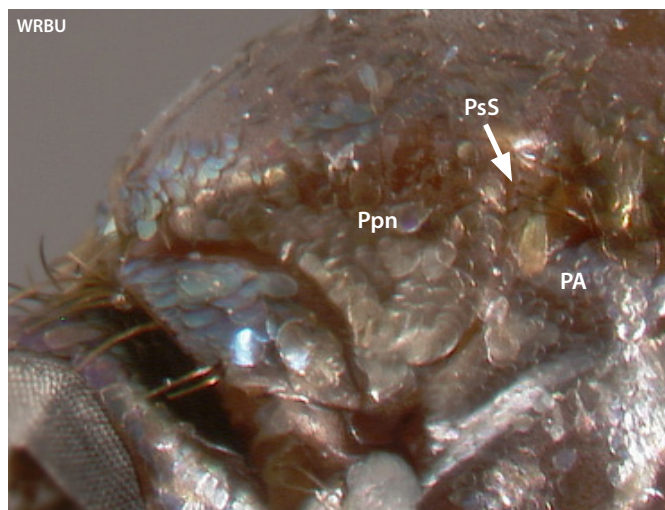
One or more posterior postpronotal setae (PpS) present on postpronotum (Ppn) (**fig. 70**); OR wing scales narrow (**fig. 72**), but if broad, then not strongly asymmetrical (**fig. 73**)

***Haemagogus***

Upper postpronotal setae absent [no setae on the postpronotum (Ppn)] (**fig. 71**); OR wing scales broad, strongly asymmetrical (**fig. 74**)

***Sabethes***

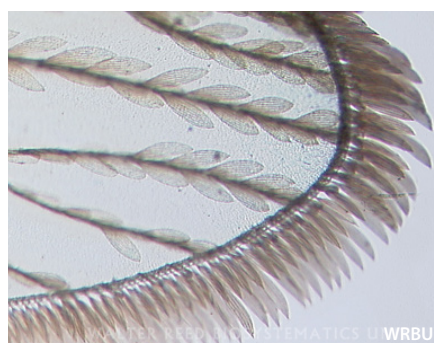
**Fig. 70.** One or more PpS present on postpronotum: *Hg. janthinomys*



**Fig. 71.** Upper postpronotal setae absent: *Sa. chloropterus*



**Fig. 72.** Wing scales narrow: *Cx. sitiens*



**Fig. 73.** Wing scales broad



**Fig. 74.** Wing scales broad, strongly asymmetrical: *Mansonia* spp.

**Step: 20 (17)**

Zero to three lower mesepimeral setae (MeSL) (**Fig. 75**)

**Culex**

Four or more lower mesepimeral setae (MeSL) (**Fig. 76**)

**Lutzia**



**Fig. 75.** One lower mesepimeral setae (MeSL) *Cx. quinquefasciatus*



**Fig. 76.** Four or more lower mesepimeral setae (MeSL) *Lt. tigripes*

# Key to Female Mosquito Genera in SOUTHCOM, without Figures

1. Mosquito - Non Mosquito		
	A fly with needle-like mouthparts ( <b>fig. 3</b> ); scales covering the body ( <b>fig. 4</b> ); and scales on the wings ( <b>fig. 5</b> )	Mosquito—2
	No needle-like mouthparts ( <b>figs. 6 &amp; 7</b> ); body without scales ( <b>fig. 8</b> ); wings usually without scales ( <b>fig. 9</b> )	Not a Mosquito
2 (1).	Antennae bushy or feather-like, palpi (MPlp) as long as proboscis and bushy or with paddles ( <b>figs. 10-12</b> )	Male
	Antennae not bushy or feather-like, palpi (MPlp) shorter than proboscis, proboscis with apical half not strongly recurved and not more slender than basal half (not tapering to a point) ( <b>figs. 13 &amp; 14</b> ), wing not emarginated just beyond tip of vein CuA ( <b>fig. 15</b> )	Female ( <i>Culicinae</i> )—3
	Antennae not bushy or feather-like, palpi (MPlp) as long as proboscis, not bushy and without paddles. Proboscis not tapering to a point ( <b>figs. 16-18</b> ). Wing not emarginated ( <b>fig. 15</b> )	Female ( <i>Anophelinae</i> )—4
	Antennae not bushy or feather-like, proboscis (P) with apical half strongly recurved and more slender than basal half (tapering to a point) ( <b>fig. 19</b> ), wing with posterior edge emarginated just beyond tip of vein CuA ( <b>fig. 20</b> )	<i>Toxorhynchites</i>
3 (2).	Antennal flagellomere 1 (Flm-1) more than twice as long as flagellomere 2 (Flm-2) ( <b>fig. 21</b> ); antenna longer than proboscis	18
	Antennal flagellomere 1 (Flm-1) less than twice as long as flagellomere 2 (about the same length) ( <b>fig. 22</b> ); antenna not longer than proboscis. These are the common features for most mosquitoes	5
	All antennal flagellomeres of females are unusually short and thick ( <b>fig. 23</b> ); Hindfemur with a tuft of suberect scales at apex ( <b>fig. 24</b> )	<i>Aedeomyia</i>
4 (2).	Posterior margin of scutellum (Stm) evenly rounded or slightly trilobed, with setae more-or-less evenly distributed ( <b>fig. 25</b> ); paratergite (Pa) without scales ( <b>fig. 26</b> )	<i>Anopheles</i>
	Posterior margin of scutellum (Stm) trilobed, with setae in three distinct groups ( <b>fig. 27</b> ); paratergite (Pa) with scales (PaSc) ( <b>fig. 28</b> )	<i>Chagasia</i>
5 (3).	Arrangement of silvery scales extending from scutum (Scu) to coxae in a single broad, vertical band ( <b>fig. 29</b> )	19
	Arrangement of silvery scales extending from scutum to coxae in three vertical arcs ( <b>fig. 30</b> )	<i>Haemagogus</i>
	Not as described above ( <b>fig. 31</b> )	6
6 (5).	Base of hind coxa (C-III) in line with, or slightly above, base of mesomeron (Msm) ( <b>fig. 32</b> ); AND wing scales narrow ( <b>fig. 35</b> ), but if broad, then not strongly asymmetrical ( <b>fig. 36</b> )	7
	Base of hind coxa (C-III) distinctly ventral to base of mesomeron (Msm) ( <b>fig. 33</b> ); AND wing scales broad, strongly asymmetrical ( <b>fig. 37</b> )	<i>Mansonia</i>
	Base of hind coxa (C-III) distinctly ventral to base of mesomeron (Msm) ( <b>fig. 34</b> ); AND wing scales narrow ( <b>fig. 35</b> ), but if broad, then not strongly asymmetrical ( <b>fig. 36</b> )	14
7(6).	Prespiracular setae (PsS) present AND postspiracular setae (PS) present ( <b>fig. 38</b> )	<i>Johnbelkinia</i>
	Prespiracular setae (PsS) present AND postspiracular setae absent [no setae in the postspiracular area (PA)] ( <b>figs. 39 &amp; 40</b> )	8
	Prespiracular setae absent [no setae in the prespiracular area (PsA)], prespiracular scales (PsSc) present AND postspiracular setae absent [no setae in the postspiracular area (PA)] ( <b>fig. 41</b> )	<i>Limatus</i>
8 (7).	Wing scales on dorsal surface narrow ( <b>fig. 42</b> )	<i>Wyeomyia</i>
	Wing scales on dorsal surface broad ( <b>fig. 43</b> )	9
9 (8).	Lower mesokatepisternal setae (MkSL) extend well above lower edge of mesanepimeron (Mam) ( <b>fig. 44</b> )	10
	Lower mesokatepisternal setae (MkSL) absent or restricted to area below lower edge of mesanepimeron (Mam) ( <b>fig. 45</b> )	11

10 (9).	Postprocoxal scales (PpSc) present on postprocoxal membrane (PM) ( <b>fig. 46</b> )	<i>Shannoniana</i>
	Scales absent on postprocoxal membrane (PM) ( <b>fig. 47</b> )	<i>Trichoprosopon</i>
11 (9).	One or more posterior postpronotal setae (PpS) present on postpronotum (Ppn) ( <b>fig. 48</b> )	<b>12</b>
	Postpronotal setae absent. No setae on the postpronotum (Ppn) ( <b>fig. 49</b> )	<b>13</b>
12 (11).	White scales present on one or two tarsomeres (Ta1-5) of mid- and hindtarsi ( <b>fig. 50</b> )	<i>Johnbelkinia</i>
	White scales absent on tarsi, or tarsi entirely dark-scaled ( <b>fig. 51</b> )	<i>Runchomyia</i>
13 (11).	Proboscis about as long as, or shorter than, forefemur ( <b>fig. 52</b> ); OR the midtarsus has bright white scaling on the anterior surface from the middle of tarsomere 2 through tarsomere 5, and the hindtarsus has similar scaling ventrally from the middle of tarsomere 3 through tarsomere 5 ( <b>fig. 53</b> )	<i>Onirion</i>
	Proboscis distinctly longer than forefemur ( <b>fig. 55</b> ) OR all tarsi completely dark ( <b>fig. 54</b> )	<i>Isostomyia</i>
14 (6).	Vein 1A ending before, or at level with, intersection (fork) of m-cu ( <b>fig. 56</b> )	<i>Uranotaenia</i>
	Vein 1A ending beyond intersection (fork) of m-cu ( <b>fig. 57</b> )	<b>15</b>
15 (14).	Prespiracular setae (PsS) present AND postspiracular setae (PS) present ( <b>fig. 58</b> )	<i>Psorophora</i>
	Prespiracular setae (PsS) present AND postspiracular setae absent (no setae in the postspiracular area (PA) ( <b>fig. 59</b> )	<i>Culiseta</i>
	Prespiracular setae absent [no setae in the prespiracular area (PsA)] AND postspiracular setae (PS) present ( <b>fig. 60</b> )	<b>16</b>
	Prespiracular setae absent [no setae in the prespiracular area (PsA)] AND postspiracular setae absent [no setae in the postspiracular area (PA)] ( <b>fig. 61</b> )	<b>17</b>
16 (15).	Conspicuous preapical white band or spot on the anterior surface of the femora ( <b>fig. 62</b> ); neotropical species (subgenus <i>Rhynchoetaenia</i> ) are distinct in having this character	<i>Coquillettidia (Rhynchoetaenia)</i>
	No white band or spot on the anterior surface of the femora ( <b>fig. 63</b> )	<i>Aedes</i>
17 (15).	Tarsomere 1 (Ta1) longer than tarsomeres 2-5 combined. Ta4 shorter than Ta5. ( <b>fig. 64</b> )	<i>Orthopodomyia</i>
	Tarsomere 1 (Ta1) as long as, or shorter than, tarsomeres 2-5 combined (Ta2-5), Ta4 longer than Ta5 ( <b>fig. 65</b> )	<b>20</b>
18 (3).	Proboscis about as long as, or shorter than, forefemur ( <b>fig. 66</b> ); OR erect forked scales numerous on vertex and usually occiput ( <b>fig. 67</b> )	<i>Deinocerites</i>
	Proboscis distinctly longer than forefemur ( <b>fig. 68</b> ); OR erect forked scales restricted to occiput ( <b>fig. 69</b> ), differs from <i>Deinocerites</i> in having the proboscis swollen apically	<i>Galindomyia</i>
19 (5).	One or more posterior postpronotal setae (PpS) present on postpronotum (Ppn) ( <b>fig. 70</b> ); OR wing scales narrow ( <b>fig. 72</b> ), but if broad, then not strongly asymmetrical ( <b>fig. 73</b> )	<i>Haemagogus</i>
	Upper postpronotal setae absent [no setae on the postpronotum (Ppn)] ( <b>fig. 71</b> ); OR wing scales broad, strongly asymmetrical ( <b>fig. 74</b> )	<i>Sabethes</i>
20 (17).	Zero to three lower mesepimeral setae (MeSL) ( <b>Fig. 75</b> )	<i>Culex</i>
	Four or more lower mesepimeral setae (MeSL) ( <b>Fig. 76</b> )	<i>Lutzia</i>

# Fig. 77. Pictorial Comparison of the Mosquito Genera



*Aedeomyia squamipennis*



*Aedes (Aedimorphus) vexans*



*Anopheles (Anopheles) pseudopunctipennis*



*Chagasia bathana*



*Coquillettidia (Rhynchoaenia) nigricans*



*Culex (Culex) pipiens*

All Fig. 77 photos are courtesy of WRBU unless otherwise noted.

# Fig. 77. Pictorial Comparison of the Mosquito Genera



*Culiseta (Culicella) morsitans*



*Deinocerites pseudes*



*Galindomyia leei*



*Haemagogus (Haemagogus) janthinomys*



*Isostomyia espini*



*Johnbelkinia ulopus*



# Fig. 77. Pictorial Comparison of the Mosquito Genera



*Limatus durhamii*



*Lutzia (Metalutzia) fuscana*



*Mansonia (Mansonia) titillans*



*Onirion personatum*



*Orthopodomyia albicosta*



*Psorophora (Janthinosoma) ferox*

# Fig. 77. Pictorial Comparison of the Mosquito Genera



*Runchomyia (Ctenogoeldia) magna*



*Sabethes (Sabethes) tarsopus*



*Shannoniana* (Species unknown)



*Toxorhynchites (Lynchiella) rutilus*



*Trichoprosopon* spp. ©Steve Marshall



*Uranotaenia (Uranotaenia) sapphirina*



*Wyeomyia arthrostigma*

# Mosquito Genera Covered in This Key

## Adapted from the Mosquito Taxonomic Inventory

**Aedeomyia**—A few arboviruses and avian malarial protozoa have been isolated from species of *Aedeomyia*, but none of the species are considered to be medically important to humans. Females of *Aedeomyia* feed predominantly on birds. *Aedeomyia africana* have been collected from human bait stationed on platforms in forest canopy, but members of the genus are not normally attracted to humans.

**Aedes**—Certain members of the tribe are of great importance in the transmission of viruses and helminths to humans and other animals. The immature stages of *Stegomyia* are found in natural and artificial containers. Typical habitats are tree holes, but many species inhabit small amounts of water contained in dead and fallen plant parts.

**Anopheles**—Mosquitoes of genus *Anopheles* are the sole vectors of human malarial parasites. Some species are effective vectors of microfilariae, and some may be involved in the transmission of encephalitis viruses. *Anopheles* are vectors of numerous animal pathogens, including species of malaria protozoa that do not affect humans. *Anopheles* larvae are adapted to a variety of aquatic habitats but occur predominantly in ground waters. The larvae generally rest with the end of the abdomen against objects and are, therefore, found in greatest numbers in areas with emergent vegetation at the margins of the habitats. The adults of most *Anopheles* are active at night or during twilight periods, and they rest in cool, damp places during the day.

**Chagasia**—Species are not known to transmit any diseases to humans. Females bite during the day and night but seldom feed on humans.

**Coquillettidia (Rhy.)**—Some species are notorious pests of humans and domestic animals in Africa, Europe, and North America. Several species of subgenera *Coquillettidia* and *Rhynchoaenia* are natural vectors of various arboviruses. The females of several species readily attack humans. Both nocturnal and diurnal biters are known.

**Culex**—Several species of subgenera *Culex* and *Melanoconion* are of medical importance. *Melanoconion* mainly occurs in the Neotropical Region. Several species of the subgenus are important vectors of encephalitis and other arboviruses. Subgenus *Culex* has species in all zoogeographic regions and contains most of the medically important and pest species of the genus. *Culex* larvae occur primarily in semi-permanent or permanent bodies of ground water. Some utilize artificial containers. A few species, including the filarial vector *Cx. quinquefasciatus*, are found in organically-polluted waters. Females bite at night.

**Culiseta**—Three species, *Cs. inornata*, *Cs. melanura* and *Cs. dyari*, are vectors of both Eastern and Western equine encephalitis virus in North America. Little is known about the blood-feeding habits of females. Most species feed on birds

and mammals, but a few feed on reptiles. Several species attack domestic animals and occasionally humans.

**Deinocerites**—Venezuelan and St. Louis equine encephalitis viruses have been isolated from *Deinocerites pseudus*, and laboratory studies have shown that this species is capable of transmitting these viruses. Nevertheless, species of *Deinocerites* are not important pests of humans and probably play little, if any, role in the transmission of pathogens. The feeding preferences of females are not well known, but some species feed on a variety of hosts, including humans and other mammals, birds, lizards, frogs, and toads.

**Galindomyia**—*Galindomyia leei* is not a medically important species. *Galindomyia leei* has only been collected from Colombia and Ecuador.

**Haemagogus**—Several species, including *Hg. janthinomys*, *Hg. equinus*, *Hg. lucifer*, *Hg. leucocelaenus*, *Hg. mesodentatus*, *Hg. spegazzinii* and *Hg. capricornii*, are vectors of sylvatic yellow fever virus. *Ilheus* virus has been isolated from *Hg. janthinomys* and *Hg. spegazzinii* in Panama and from *Hg. leucocelaenus* in Brazil. Many species readily attack humans in forest clearings, open secondary growth, and littoral situations associated with mangroves.

**Isostomyia**—The bionomics of *Isostomyia* is largely unknown, but it is unlikely that the species are involved in the transmission of pathogens to humans. The adults are known to enter houses and bite humans outdoors in domestic areas.

**Johnbelkinia**—Arboviruses have been isolated from *Jn. ulopus* in Trinidad and Colombia, hence species of *Johnbelkinia* are considered to be potential vectors of pathogens of human diseases. Species of this genus are known to carry the eggs of the human bot fly, *Dermatobia hominis*. They are mainly active during the day. Females bite humans and other mammals.

**Limatus**—*Wyeomyia* virus has been isolated from a pool of *Limatus* in Trinidad, and Venezuelan equine encephalitis virus has been isolated from *Li. flavisetosus*, but species of the genus are unlikely to be of medical or economic importance to humans. Adults have been captured during landing-biting collections made at ground level and on towers in forests.

**Lutzia**—None of the species of *Lutzia* are of medical or economic importance. The larvae of all species are predaceous.

**Mansonia**—*Mansonia titillans*, of subgenus *Mansonia*, is an important pest in South and Central America and the southern United States. It is known to transmit various arboviruses, including Venezuelan equine encephalitis. The females of several species are vicious nocturnal biters.

**Onirion**—Species of *Onirion* are of no known medical importance.

**Orthopodomyia**—None of the species are of medical or economic importance to humans.

**Psorophora**—Several species of *Psorophora* are vectors of arboviruses. *Ilheus* virus is transmitted by *Ps. ferox*; Venezuelan equine encephalitis virus is transmitted by *Ps. ferox* and *Ps. confinnis*. See subgenera *Grabhamia*, *Janthinosoma*, and *Psorophora* for viruses isolated from other species of *Psorophora*. Larvae of subgenus *Psorophora* are predacious. The adults are diurnal, and the females of many species avidly bite humans.

**Runchomyia**—*Runchomyia* species are unlikely to be of medical or economic importance to humans. The adults of at least two species have been captured during landing-biting collections in forests.

**Sabethes**—*Sabethes chloropterus* appears to play a role in the transmission of yellow fever virus in Central America. *Ilheus* and St. Louis encephalitis viruses have also been isolated from this species in Panama; the latter virus has been isolated from *Sa. belisarioi* in Brazil. *Sabethes* are attracted to humans on the ground but are most abundant in the forest canopy. Blood-seeking species of subgenus *Sabethes* approach humans slowly and have a predilection for landing on the nose.

**Shannoniana**—Species of *Shannoniana* are unlikely to be of medical or economic importance to humans. Females have been captured while landing-biting on horses and humans in forests during the daytime.

**Toxorhynchites**—Species of *Toxorhynchites* are not involved in the transmission of human or animal pathogens. The larvae of a few species have been used with some success to control economically important mosquitoes whose larvae inhabit plant cavities and artificial containers. Males and females both feed exclusively on nectar and other sugary substances. The adults are active during the day.

**Trichoprosopon**—*Trichoprosopon digitatum* is regarded as a potential vector of arboviruses to humans. *Pixuna* and *Wyeomyia* viruses have been isolated from this species. *Bussuquara*, *Ilheus*, and St. Louis encephalitis viruses have been isolated from mixed pools that included this species. Females of a few species are known to bite humans in shaded areas during the daytime.

**Uranotaenia**—A few species bite humans, but none are involved in the transmission of pathogens. Many species are attracted to light and are occasionally found resting inside houses.

**Wyeomyia**—*Wyeomyia* are not known to vector disease agents and have little, if any, economic importance to humans; however, *Ilheus* and Venezuelan encephalitis viruses have been isolated from *Wy. medioalbipes* in Trinidad. Most of the species take blood meals, and females readily feed on humans that enter their realm.

## Terms & Abbreviations of Adult Mosquitoes

**Anterior**—Nearer the front or nearer to the head.

**Apical**—Concerning the tip or furthest part from the thorax.

**Asymmetrical wing scale**— Unlike on either side of a dividing line from the stem of the scale to the tip.

**Basal**—Region close to the point of attachment to the thorax.

**C-III**—Hind Coxa. The basal segment of the hind pair of legs; Coxa are referred to as fore-(C-I), mid-(C-II) or hindcoxa (C-III).

**Emarginated wing**—V-shaped thickening or cut-out place in hindmargin of wing.

**F1m**—Fagellomere. An individual unit of the antennal flagellum. F1m-1 is the first segment.

**Mam**—Mesanepimeron. The large, upper area of the mesepimeron. Contains scales and setae. The group of setae on the lower portion of this structure (MeSL) are often used in keys. Their grouping pattern varies between mosquitoes.

**MeSL**—The setae occurring in groups on the anterior, middle, and/or posterior area of the mesanepimeron below the level of the metathoracic spiracle.

**Mks**—Mesokatepisternum. Lower area of the mesepisternum.

**MkSL**—Lower mesokatepisternal setae. The setae occurring in a more-or-less vertical line along the posterior margin of the mesokatepisternum.

**MPIp**—Maxillary palpus. Varies in length according to genus and sex. Male MPIp are usually longer than the proboscis, have paddle-like structures, and can be very hairy. Female *Anopheles* MPIp are as long as the proboscis but lack the paddles. MPIp that are shorter than the proboscis indicate a non-*Anopheles* female mosquito.

**Msm**—Mesomeron. A triangular structure located above and between the mid- and hindcoxa. The base of the Msm is located between the Mam and the Msn.

**Mts**—Metepisternum. In mosquitoes, the area immediately behind and below the metathoracic spiracle.

**MtSc**—Metepisternal scales. The scales occurring in a small group on the Mts just below the metathoracic spiracle.

**Occ**—Occiput. Posterior dorsal part of the cranium; its boundaries with the vertex are not delimited; usually with erect scales.

**P**—Proboscis.

**Pa**—Paratergite. Narrow lateral part of the mesonotum just before the wing root; separated from the scutum by the paranotal suture. Scales on this structure are called PaSc.

**PA**—Postspiracular area. The sclerotized area of the anterior anepisternum lying posterior to the mesothoracic spiracle; connected or continuous with the subspiracular area ventrally; scales (PoSc) and setae (PS) are borne on this area.

**PaSc**—Paratergal scales. The scales occurring in a group on the paratergite (Pa).

**PM**—Postprocoxal membrane. The membrane between the forecoxa and the mesokatepisternum; sometimes bearing scales (PpSc).

**PpSc**—Postspiracular scales. The scales occurring in a group on the postspiracular (PA) area.

**Ppn**—Postpronotum. The posterior division of the pronotum generally lying between the antepronotum and the scutum anterior of the scutal angle. In mosquitoes, usually not clearly demarcated ventrally from the proepimeron.

**PpSc**—Postprocoxal scales. The scales occurring in a small group on the postprocoxal membrane (PM).

**PpS**—Postpronotal setae. The setae occurring in an arcuate line on the upper posterior margin of the postpronotum (Ppn).

**PS**—Postspiracular setae. The setae occurring in a group on the postspiracular (PA) area.

**PsA**—Prespiracular area. A small triangular area above and forward of the mesothoracic spiracle. When setae are present, they are referred to as PsS and, with scales, as PsSc.

**PsS**—Prespiracular setae. The setae occurring in the small triangular prespiracular area (PsA).

**PsSc**—Prespiracular scales. The scales occurring on the prespiracular area (PsA).

**Pv**—Pulvillus. Pad-like lobes on the tips of the legs between the tarsal claws. Only *Culex*, *Deinocerites*, *Galindomyia*, and *Lutzia* genera have this structure.

**Scu**—Scutum. The dorsal area of the thorax.

**Stm**—Scutellum. In Culicinae mosquitoes, except *Toxorhynchites*, it is trilobed. *Anopheles* have an evenly rounded shape except for *Chagasia*, which is trilobed.

**Ta**—Tarsus. The part of the leg that comes after the tibia. In mosquitoes, it consists of five tarsomeres (Ta1-5); referred to as fore-, mid- or hindtarsus as appropriate.

**Ta1**—Tarsomere one. An individual sub-segment of a tarsus. In mosquitoes, five tarsomeres comprise each tarsus; referred to as the first through the fifth tarsomeres of the appropriate tarsus and denoted by adding numerical subscripts (1-5) to the abbreviation of the tarsus.

## References

Genera classification follows the “traditional” mosquito classification as of 2000 from the Walter Reed Biosystematics Unit (WRBU) web site (2013).

The key and the genera list are derived from the WRBU SOUTHCOM Lucid Key (2015), [http://wrbu.si.edu/command\\_aors\\_MQkeys.html](http://wrbu.si.edu/command_aors_MQkeys.html).

The genera descriptions were adapted from the Harbach R. (2014) Mosquito Taxonomic Inventory at <http://mosquito-taxonomic-inventory.info/simpletaxonomy/term/6231>. License link: <http://creativecommons.org/licenses/by/3.0/>

The medically important species list was derived from the WRBU medically important species list and from the Mosquito Taxonomic Inventory web site (2014).

Character abbreviations of adult female morphology follow the Darsie and Ward (2005) format.

## Other resources used to develop this key:

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