

WORKING DRAFT - September 13, 2005

# Key to the Medically Important Mosquitoes of Louisiana

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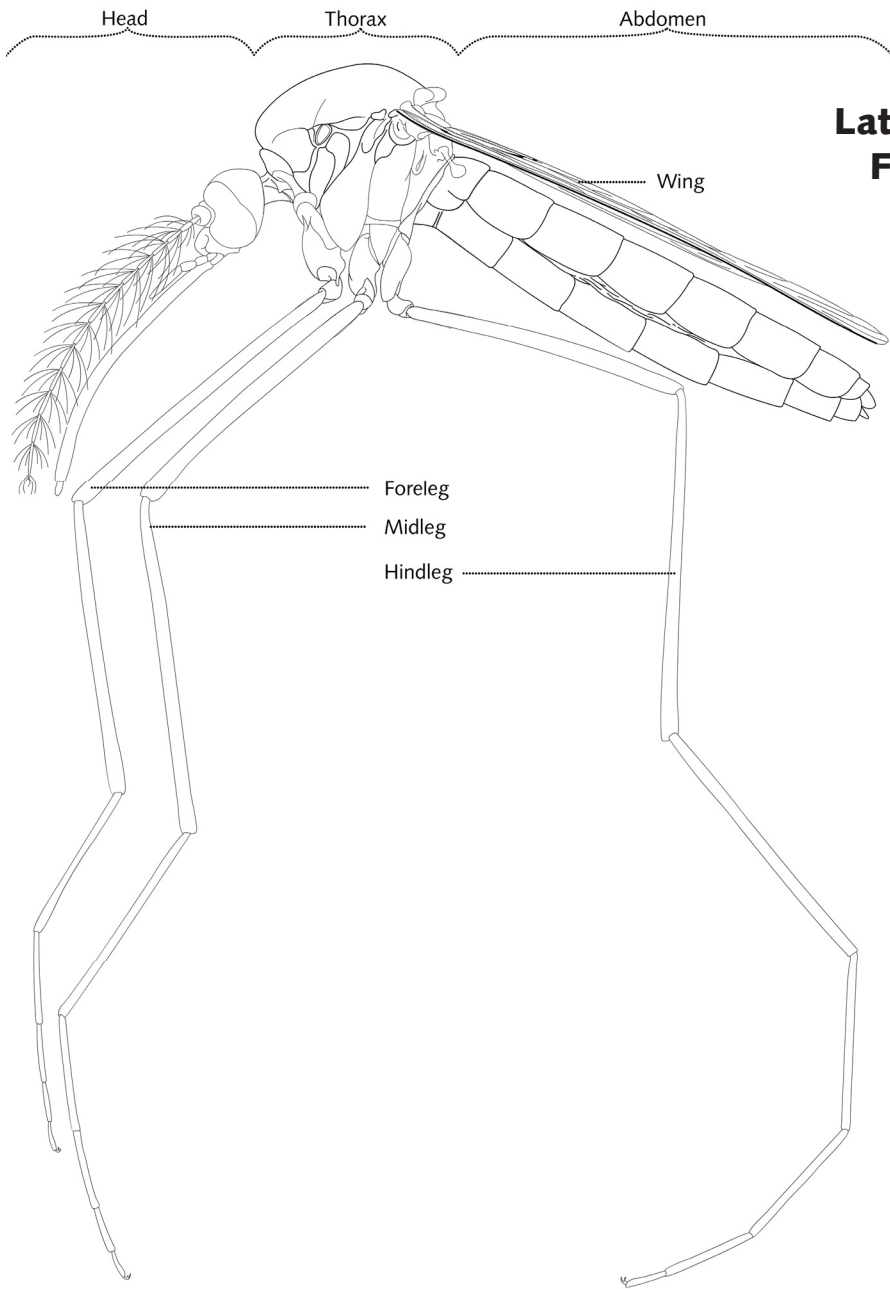
Tulane University School of Public Health and Tropical Medicine

Funded by the Louisiana Mosquito Control Association, the Centers for Disease Control and Prevention, and the Tulane Department of Tropical Medicine.

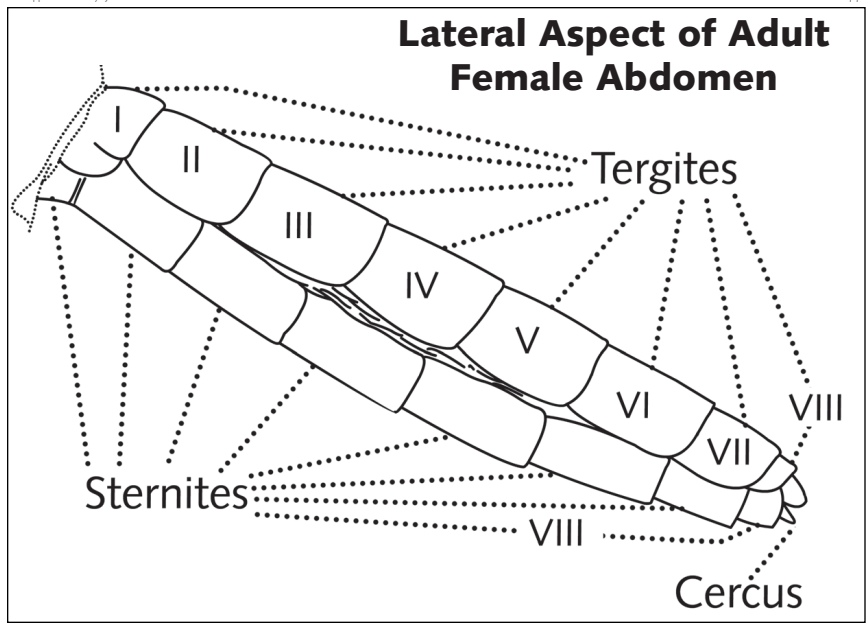
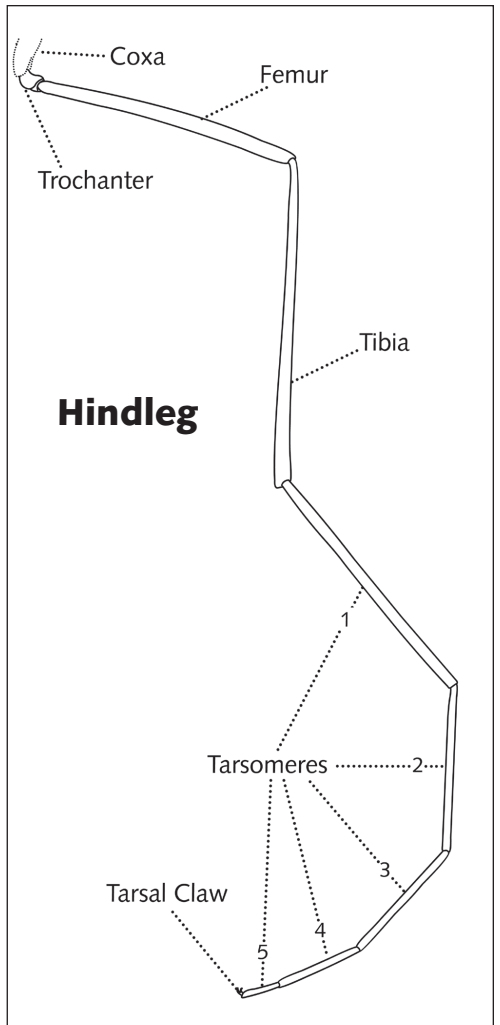
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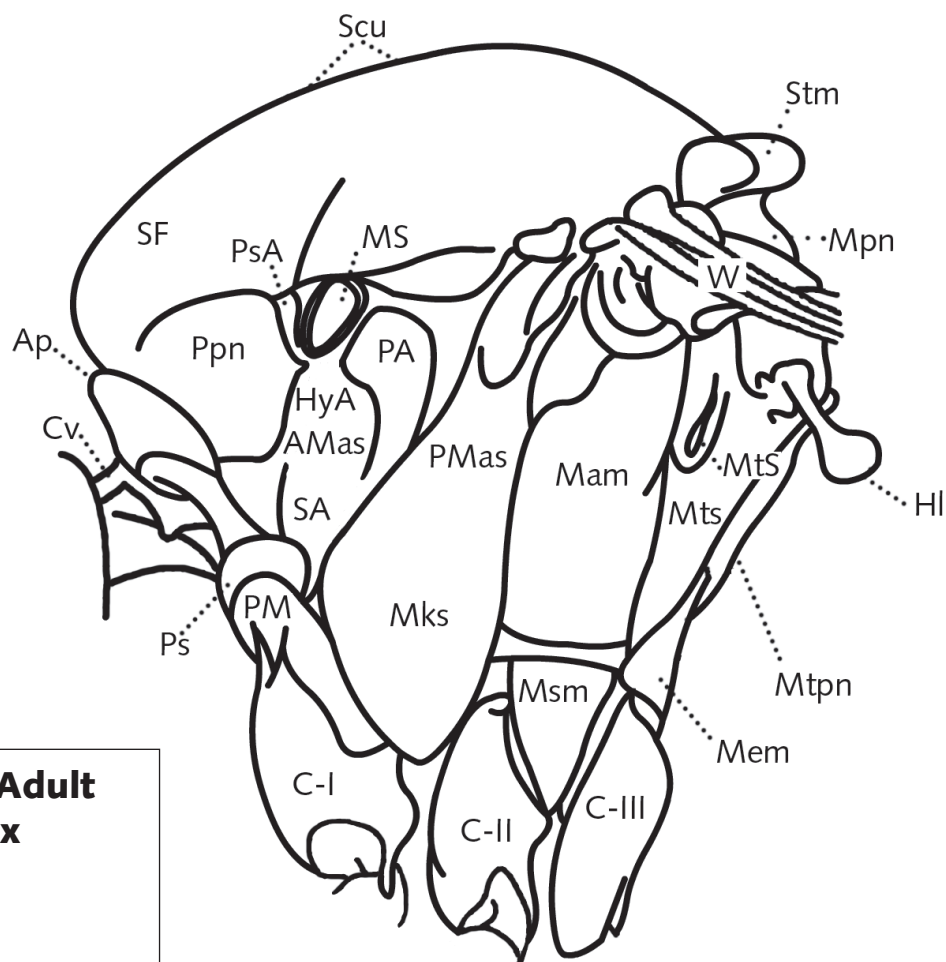


### Lateral View of Adult Female Mosquito

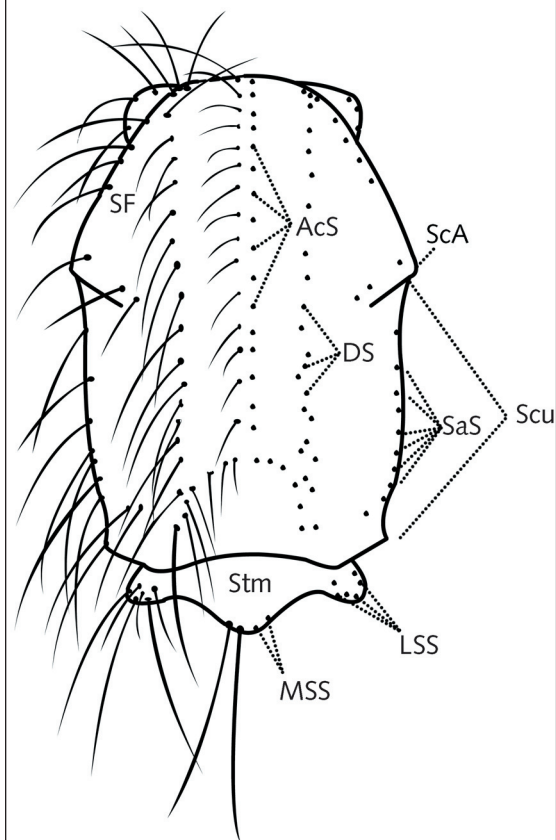




## Lateral Aspect of Adult Female Thorax



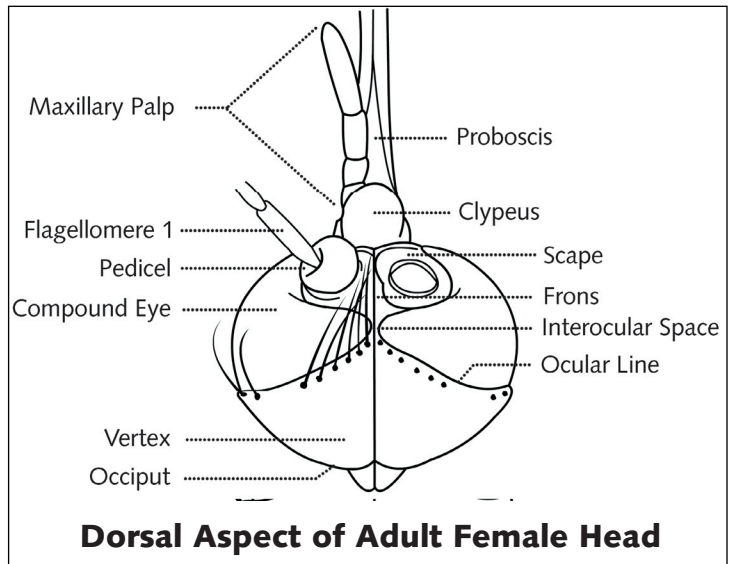
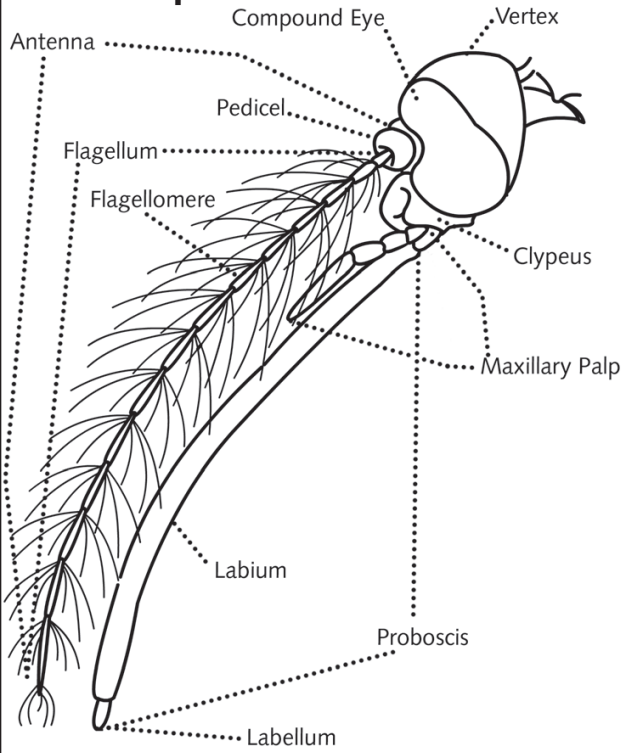
## Dorsal Aspect of Adult Female Thorax



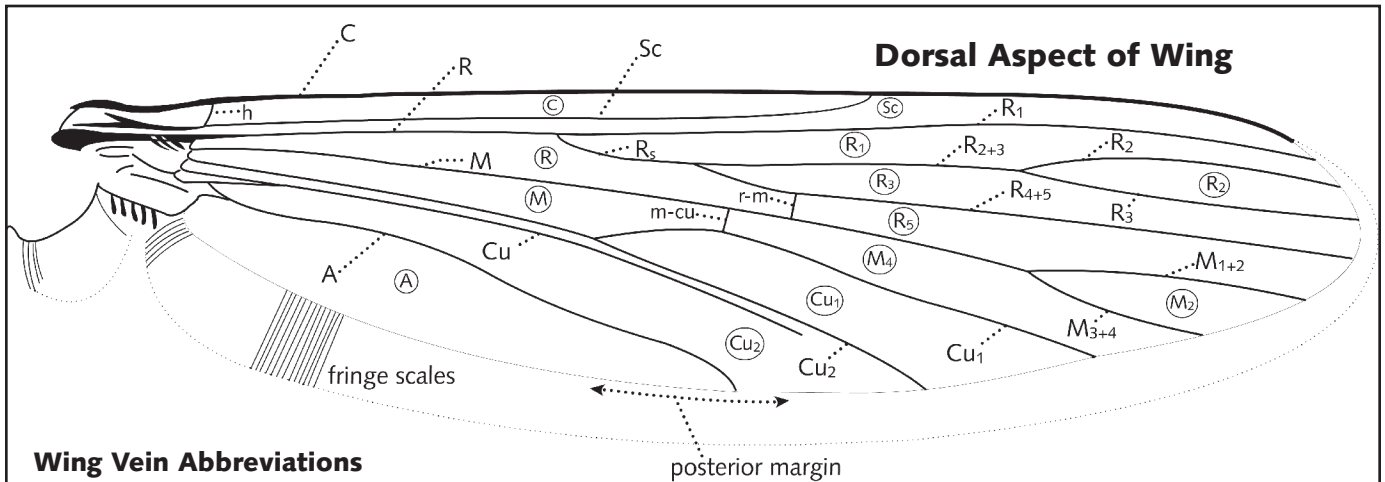
## Anatomical Abbreviations for Adult Thorax

|                                 |                                  |
|---------------------------------|----------------------------------|
| AcS - achrostichal setae        | Msm - mesomeron                  |
| AMas - anterior mesanepisternum | Mtpn - metapostnotum             |
| Ap - anteprepronotum            | Mts - metepisternum              |
| C-I - forecoxa                  | MtS - metathoracic spiracle      |
| C-II - midcoxa                  | PA - postspiracular area         |
| C-III - hindcoxa                | PM - postprocoxal membrane       |
| Ce - cercus                     | PMas - posterior mesanepisternum |
| Cv - cervix                     | Ppn - postpronotum               |
| DS - dorsocentral setae         | Ps - proepisternum               |
| HI - halter                     | PsA - prespiracular area         |
| HyA - hyostigmal area           | SA - subspiracular area          |
| LSS - lateral scutellar setae   | SaS - supraalar setae            |
| MSS - median scutellar setae    | Scu - scutum                     |
| Mam - mesanepimeron             | SF - scutal fossa                |
| Mem - metameron                 | ScA - scutal angle               |
| Mks - mesokatepisternum         | Stm - scutellum                  |
| Mpn - mesopostnotum             | W - wing                         |
| MS - mesothoracic spiracle      |                                  |

### Lateral Aspect of Adult Female Head



### Dorsal Aspect of Adult Female Head



#### Wing Vein Abbreviations

- A - Anal vein
- C - Costal vein
- Cu - Cubital vein
- Cu<sub>1</sub> - Anterior branch of cubital vein
- Cu<sub>2</sub> - Posterior branch of cubital vein
- h - Humeral crossvein
- M - Medial vein
- M<sub>1+2</sub> - Anterior branch of medial vein
- M<sub>3+4</sub> - Posterior branch of medial vein
- m-cu - mediocubital crossvein
- R - Radial vein
- R<sub>1</sub> - Anteriormost branch of radial vein
- R<sub>s</sub> - Radial sector vein
- R<sub>2</sub> - Anterior branch of radial sector vein
- R<sub>2+3</sub> - Connector vein of radial sector vein
- R<sub>3</sub> - Median branch of radial sector vein
- R<sub>4+5</sub> - Posterior branch of radial sector vein
- r-m - Radiomedial crossvein
- Sc - Subcostal vein

#### Wing Cell Abbreviations

*(cell abbreviations are circled in the image below)*

- C - Costal cell
- Cu<sub>1</sub> - Cubital<sub>1</sub> cell
- Cu<sub>2</sub> - Cubital<sub>2</sub> cell
- M - Medial cell
- M<sub>2</sub> - Medial<sub>2</sub> cell
- M<sub>4</sub> - Medial<sub>4</sub> cell
- R - Radial cell
- R<sub>1</sub> - Radial<sub>1</sub> cell
- R<sub>2</sub> - Radial<sub>2</sub> cell
- R<sub>3</sub> - Radial<sub>3</sub> cell
- R<sub>5</sub> - Radial<sub>5</sub> cell
- Sc - Subcostal cell

**Adult Female Genera**

- 1. Palpi about as long as proboscis (Fig. 1a).....*Anopheles*
- 1'. Palpi shorter than proboscis (Fig. 1b).....2

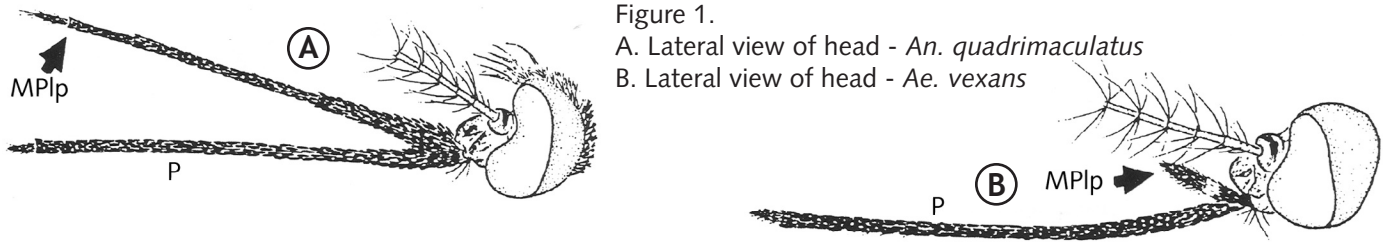


Figure 1.  
A. Lateral view of head - *An. quadrimaculatus*  
B. Lateral view of head - *Ae. vexans*

- 2(1). Proboscis stout basally, outer half tapered and curved downward (Fig. 2a); posterior edge of wing strongly emarginated at apex of vein Cu<sub>2</sub> (Fig. 2b).....*Toxorhynchites rutilus*
- 2'. Proboscis slender and not curved downward (Fig. 2c); wing edge evenly rounded or only slightly emarginated at apex of vein Cu<sub>2</sub> (Fig. 2d).....3

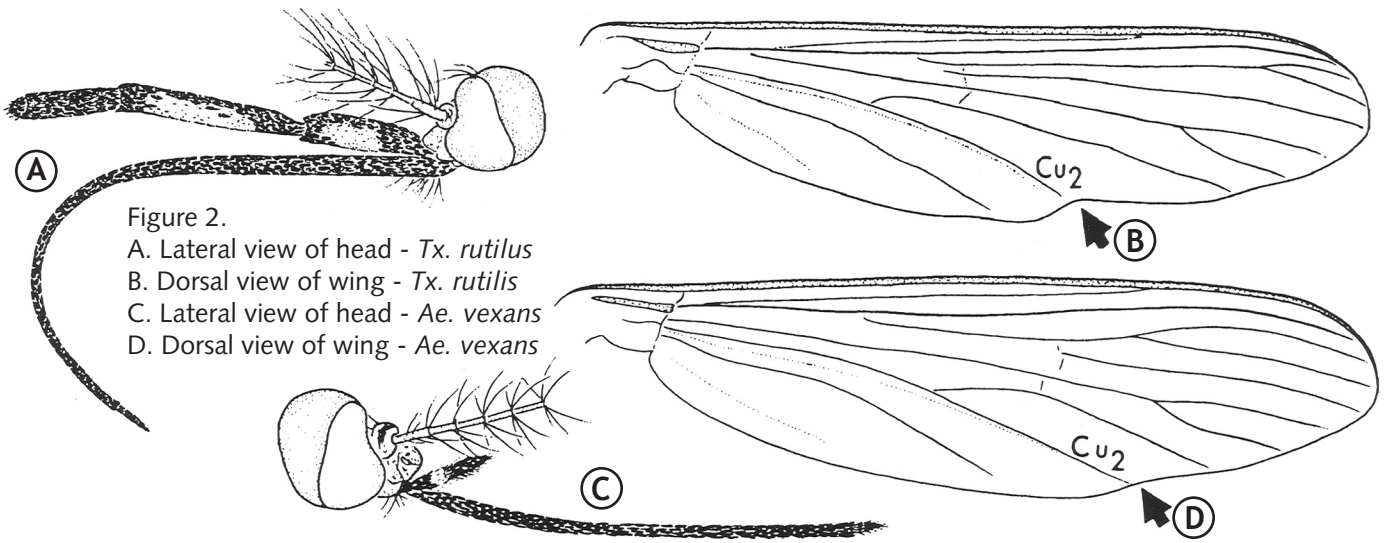


Figure 2.  
A. Lateral view of head - *Tx. rutilus*  
B. Dorsal view of wing - *Tx. rutilus*  
C. Lateral view of head - *Ae. vexans*  
D. Dorsal view of wing - *Ae. vexans*

- 3(2). Abdomen with dark scales dorsally and pale scales ventrally, the two colors meeting laterally in a straight line (Fig. 3a); mesopostnotum with setae (Fig. 3b).....*Wyeomyia*
- 3'. Abdominal tergites banded or with lateral spots (Fig. 3c); mesopostnotum without setae (Fig. 3d).....4

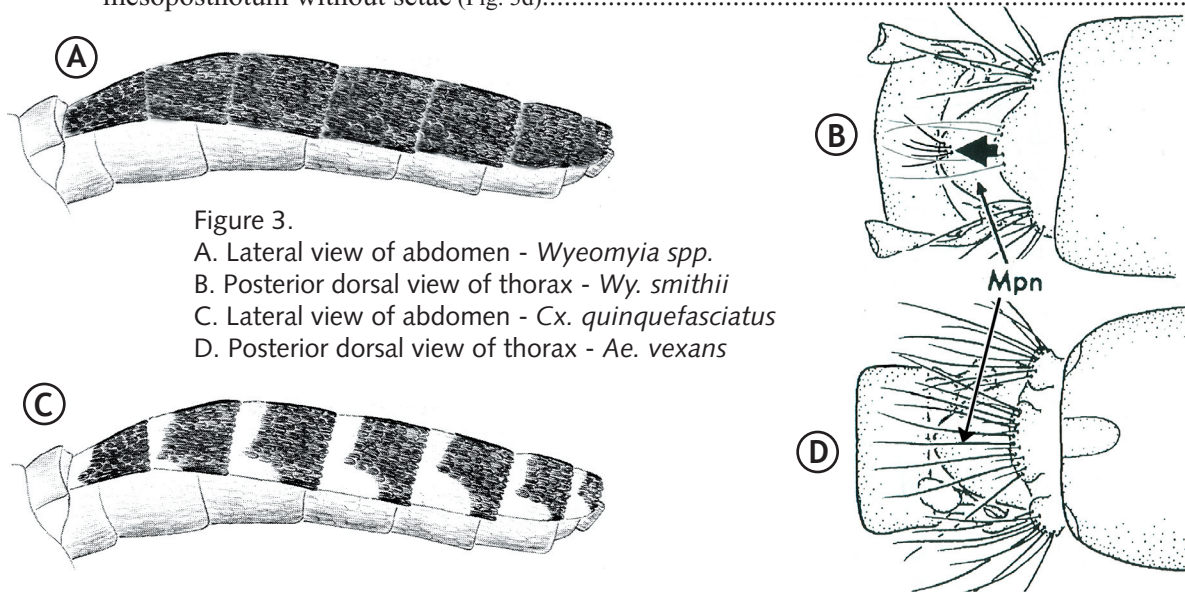


Figure 3.  
A. Lateral view of abdomen - *Wyeomyia* spp.  
B. Posterior dorsal view of thorax - *Wy. smithii*  
C. Lateral view of abdomen - *Cx. quinquefasciatus*  
D. Posterior dorsal view of thorax - *Ae. vexans*

- 4(3). Radial<sub>2</sub> cell of wing less than half as long as vein R<sub>2+3</sub> (Fig. 4a);  
 thorax usually with patches of iridescent blue or white scales (Fig. 4b).....*Uranotaenia*
- 4'. Radial<sub>2</sub> cell of wing at least as long as long vein R<sub>2+3</sub> (Fig. 4c);  
 blue scales absent on thorax (Fig. 4d).....5

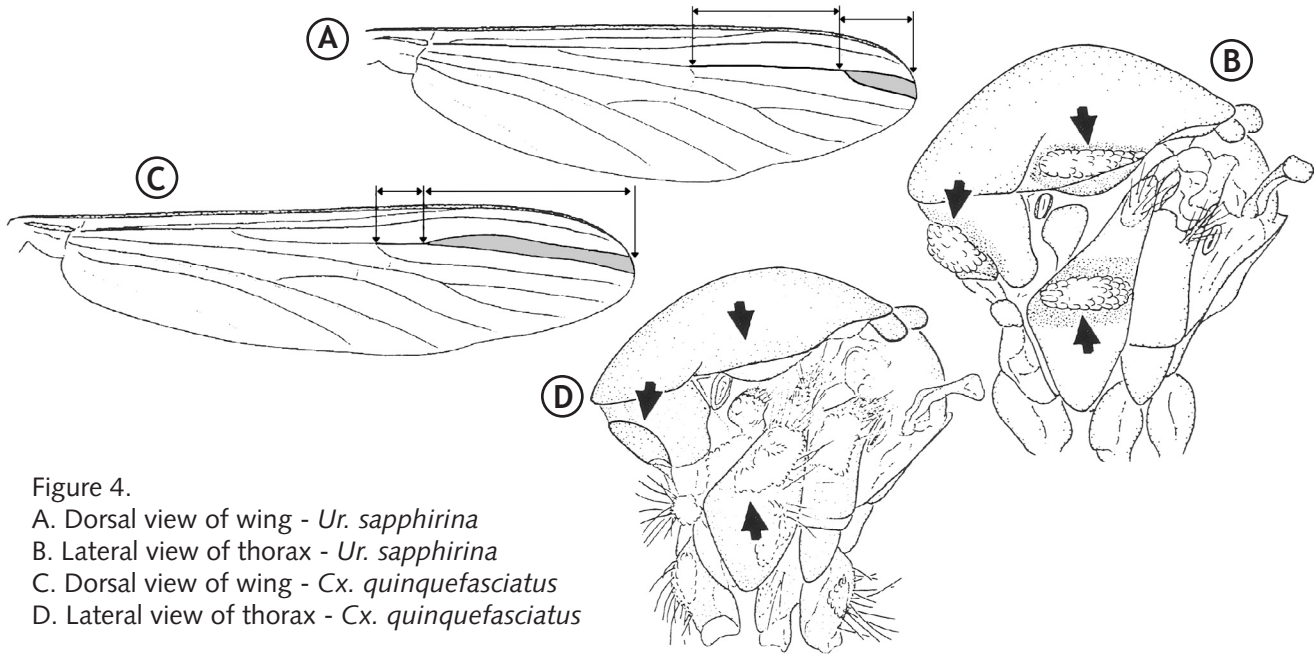


Figure 4.  
 A. Dorsal view of wing - *Ur. sapphirina*  
 B. Lateral view of thorax - *Ur. sapphirina*  
 C. Dorsal view of wing - *Cx. quinquefasciatus*  
 D. Lateral view of thorax - *Cx. quinquefasciatus*

- 5(4). Abdomen pointed at tip (Fig. 5a).....6
- 5'. Abdomen blunt at tip (Fig. 5b).....7

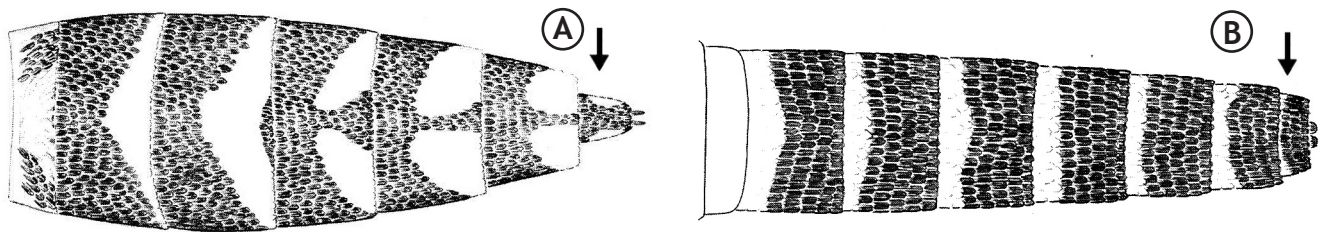


Figure 5.  
 A. Dorsal view of abdomen - *Ps. ferox*  
 B. Dorsal view of abdomen - *Cx. restuans*



- 6(5). Dorsal segments of abdomen with light scales apically (Fig. 6a), or if absent, hind tibia with conspicuous, long, erect scales (Fig. 6b); prespiracular setae present (Fig. 6c).....*Psorophora*
- 6'. Dorsal segments of abdomen with light scales basally (Fig. 6d); hind tibia never with long, erect scales (Fig. 6e); prespiracular setae absent (Fig. 6f).....*Aedes*

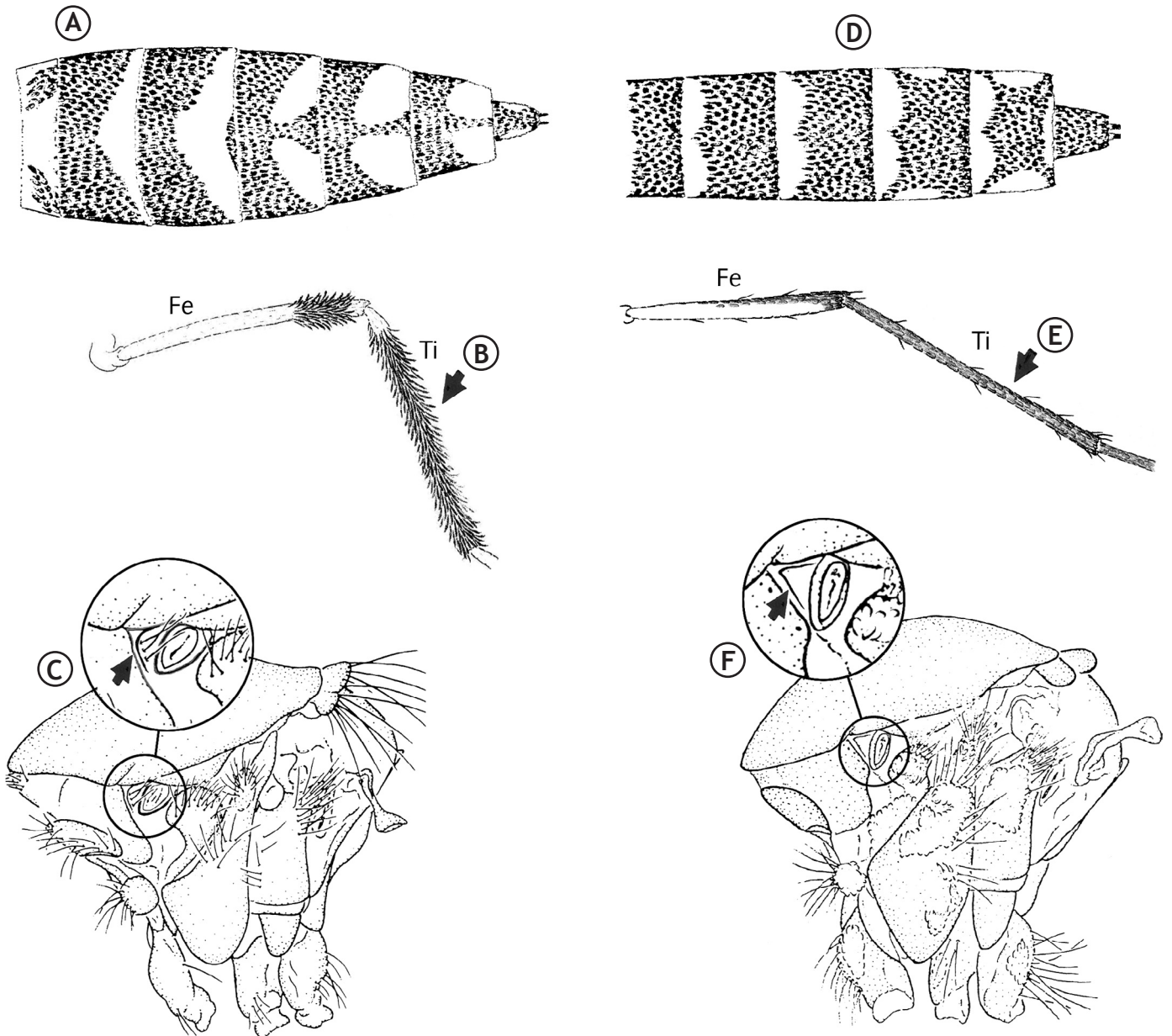


Figure 6.  
 A. Dorsal view of abdomen - *Ps. cyanescens*  
 B. Lateral view of hind tibia - *Ps. ciliata*  
 C. Lateral view of thorax - *Ps. ciliata*  
 D. Dorsal view of abdomen - *Ae. vexans*  
 E. Lateral view of hind tibia - *Ae. infirmatis*  
 F. Lateral view of thorax - *Ae. vexans*

- 7(5'). Base of subcosta on under side of wing with a tuft of setae (Fig. 7a); prespiracular setae present (Fig. 7b).....*Culiseta*
- 7'. Base of subcosta without a tuft of setae (Fig. 7c); prespiracular setae absent (Fig. 7d).....

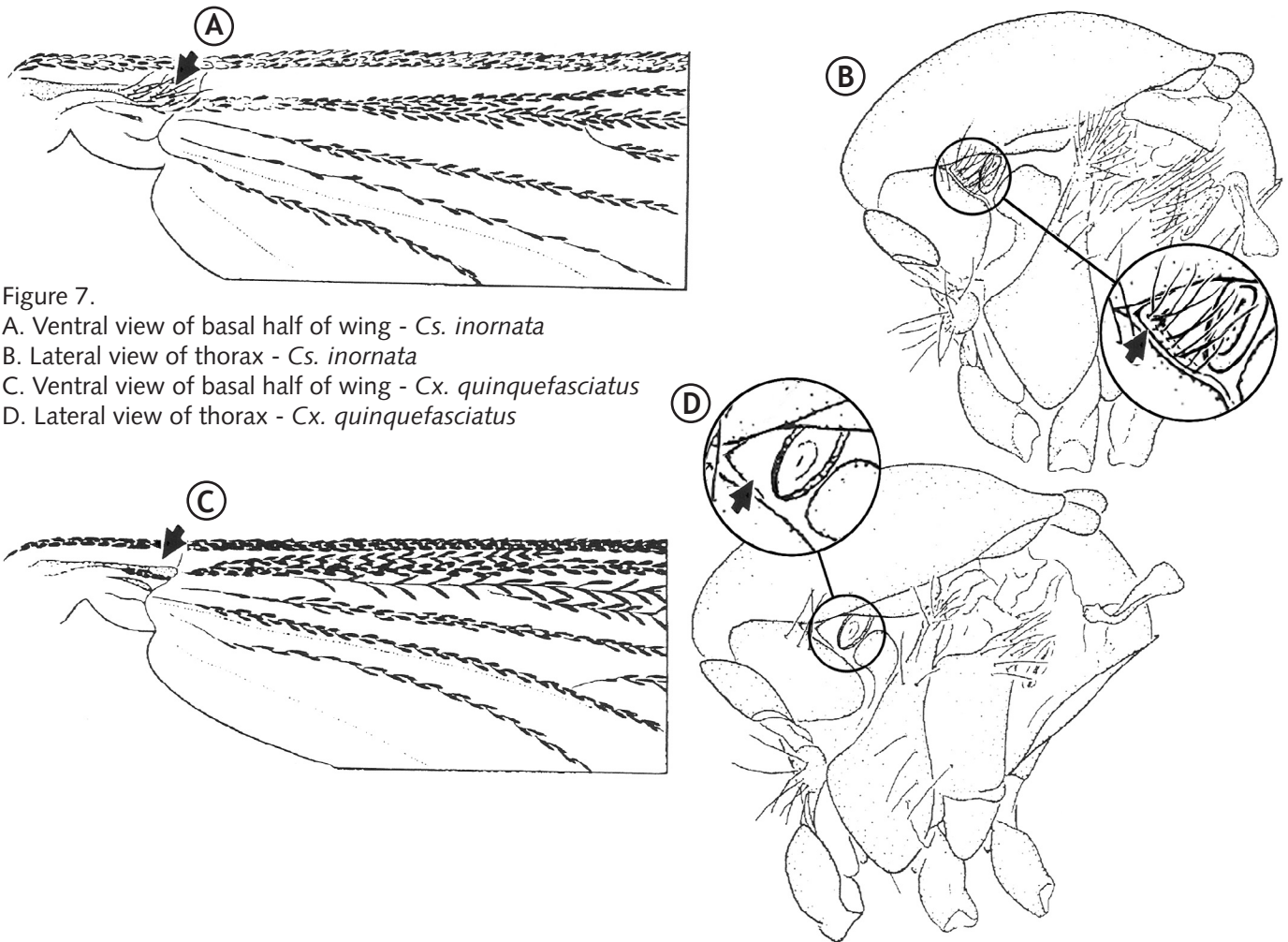


Figure 7.  
 A. Ventral view of basal half of wing - *Cs. inornata*  
 B. Lateral view of thorax - *Cs. inornata*  
 C. Ventral view of basal half of wing - *Cx. quinquefasciatus*  
 D. Lateral view of thorax - *Cx. quinquefasciatus*

- 8(7). Wing scales narrow (Fig. 8a)..
- 8'. Wing scales broad, mixed brown and white (Fig. 8b).....10

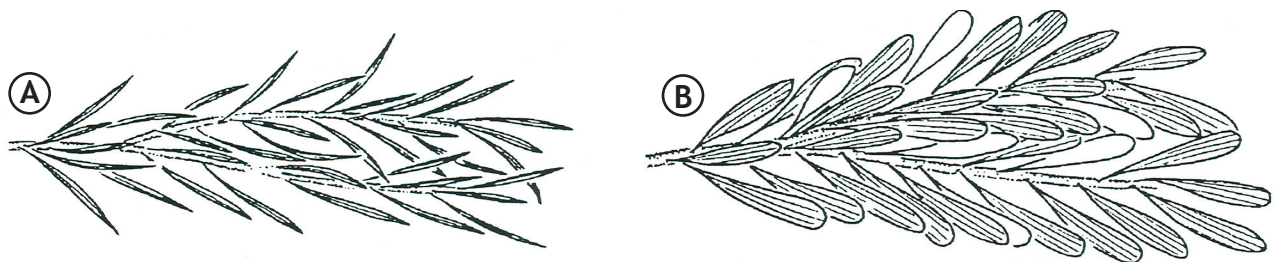


Figure 8.  
 A. Dorsal view of wing veins - *Cx. quinquefasciatus*  
 B. Dorsal view of wing veins - *Cq. perturbans*

- 9(8). Antenna not longer than proboscis, first flagellomere about as long as following segments (Fig. 9a).....*Culex*
- 9'. Antenna longer than proboscis, first flagellomere as long as next two segments together (Fig. 9b).....*Deinocerites*

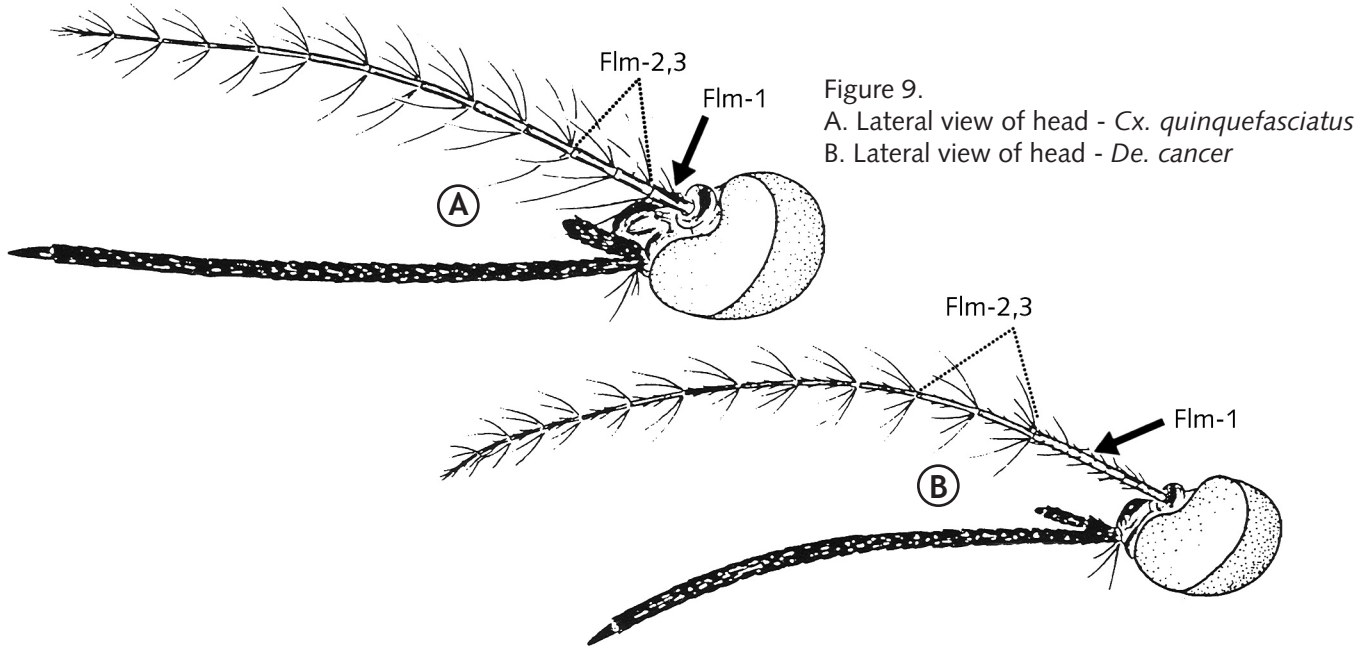


Figure 9.  
A. Lateral view of head - *Cx. quinquefasciatus*  
B. Lateral view of head - *De. cancer*

- 10(8'). Mesonotum with fine longitudinal lines of white scales (Fig. 10a).....*Orthopodomyia*
- 10'. Mesonotum without white lines of scales (Fig. 10b).....11

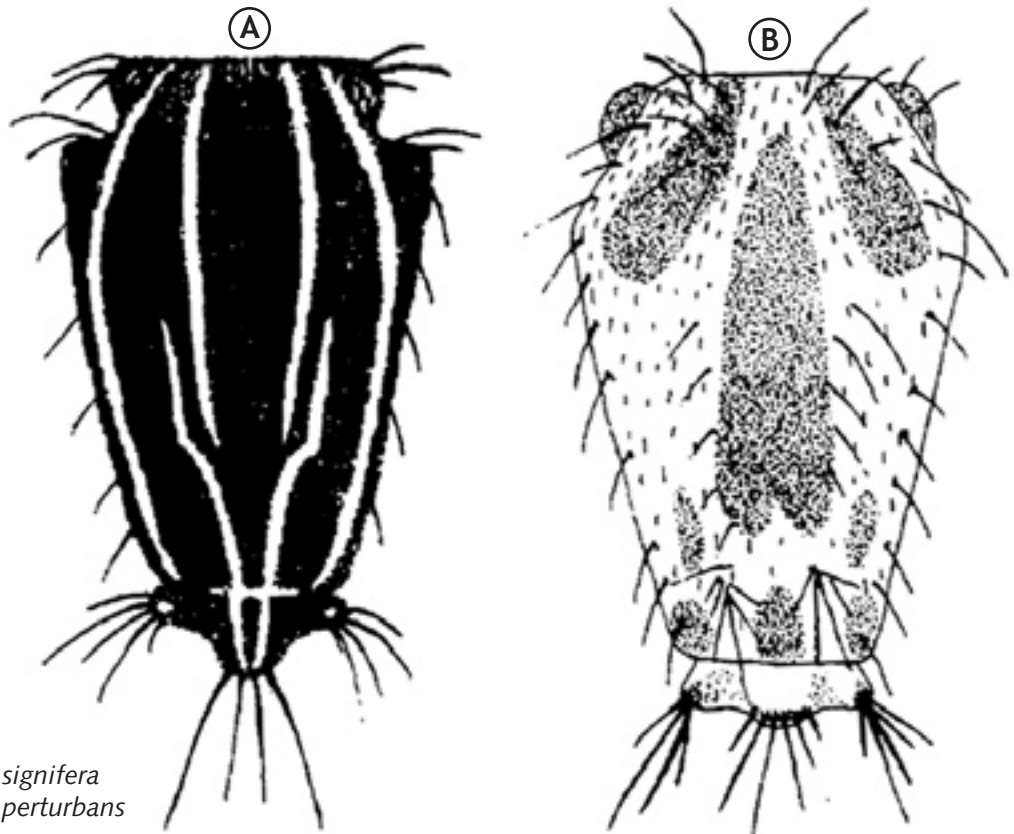


Figure 10.  
A. Dorsal view of thorax - *Or. signifera*  
B. Dorsal view of thorax - *Cq. perturbans*

- 11(10). Wide pale band near distal end of hind tibia (Fig. 11a);  
 postspiracular bristles absent (Fig. 11b).....*Coquillettidia perturbans*
- 11'. Hind tibia without pale band (Fig. 11c); postspiracular bristles present (Fig. 11d).....*Mansonia*

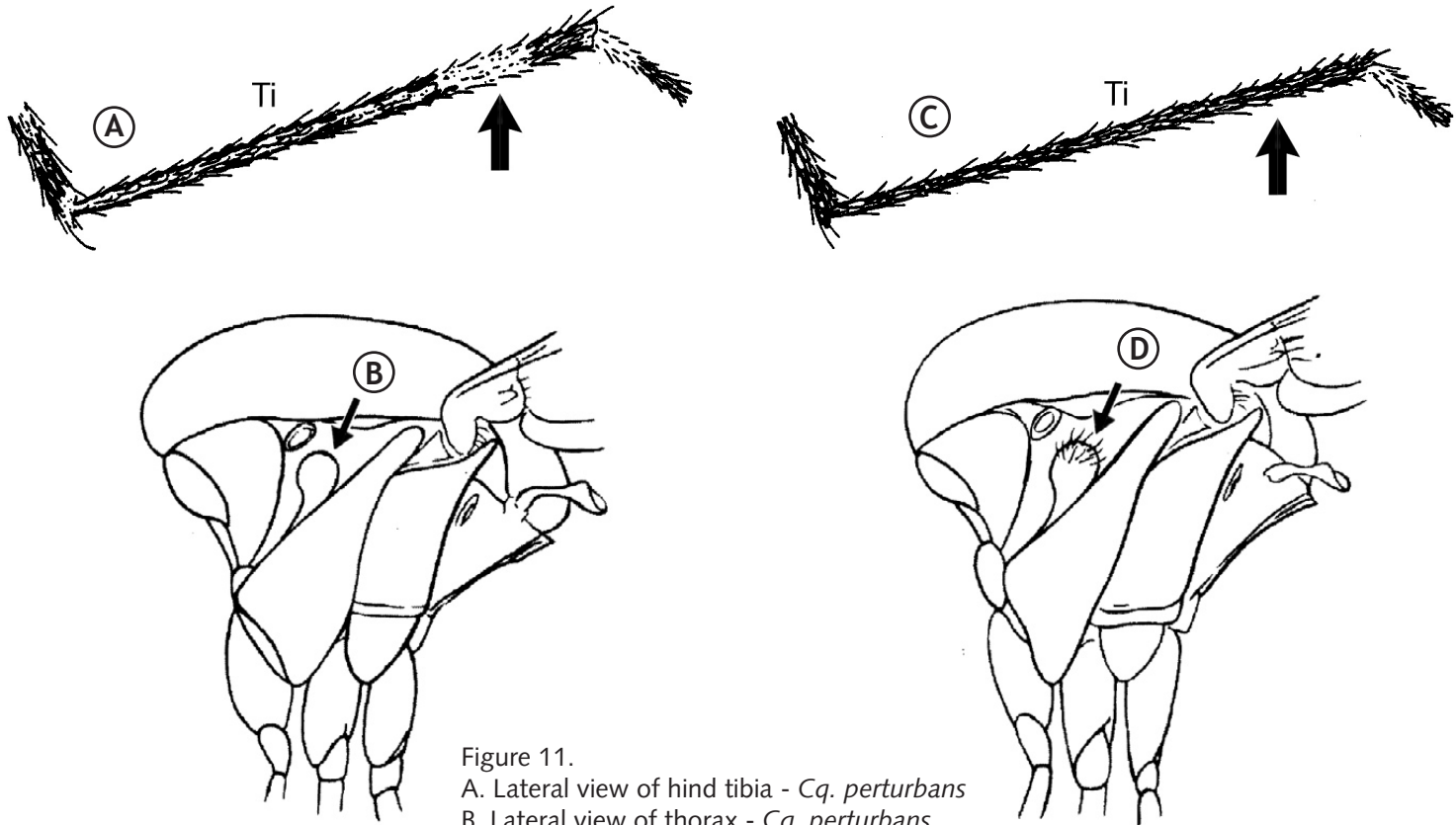


Figure 11.  
 A. Lateral view of hind tibia - *Cq. perturbans*  
 B. Lateral view of thorax - *Cq. perturbans*  
 C. Lateral view of hind tibia - *Ma. titillans*  
 D. Lateral view of thorax - *Ma. titillans*



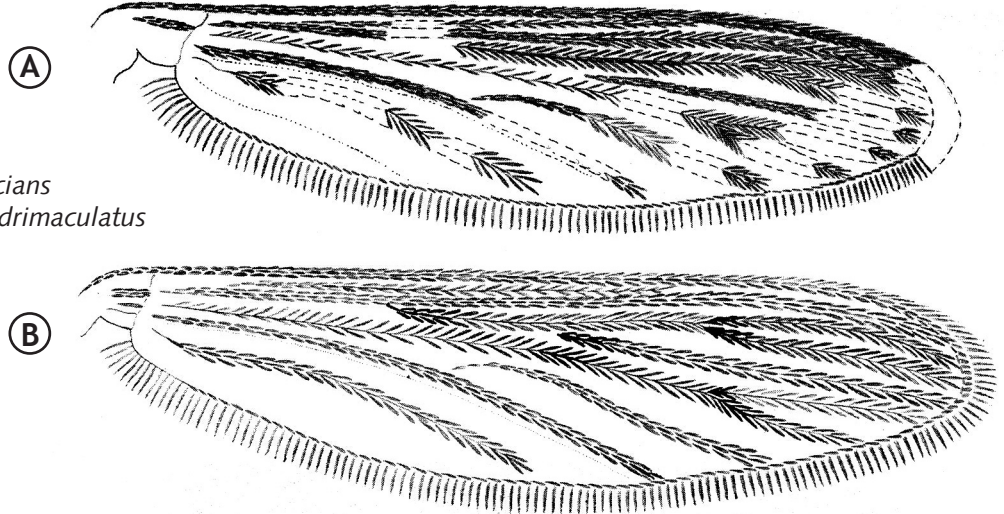
## Anopheles Adults

1. Wings with areas of white or yellow scales (Fig. 1a).....2  
 1'. Wings entirely dark-scaled (Fig. 1b).....5

Figure 1.

A. Dorsal view of wing - *An. crucians*

B. Dorsal view of wing - *An. quadrimaculatus*



- 2(1). Palpi unbanded (Fig. 2a).....*An. punctipennis*  
 2'. Palpi banded (Fig. 2b).....

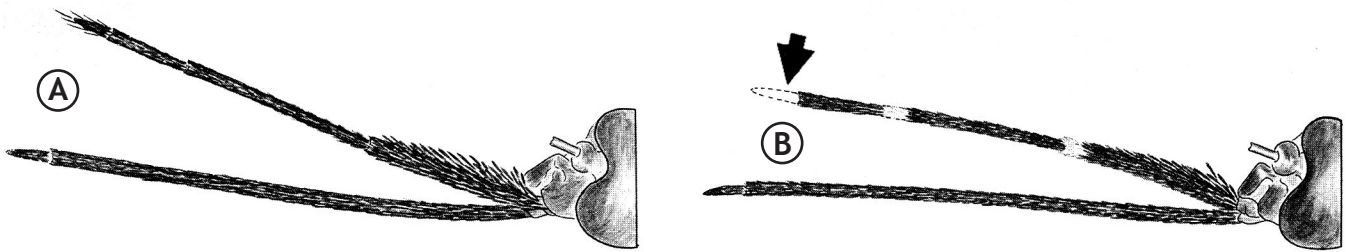


Figure 2.

A. Lateral view of head - *An. punctipennis*

B. Lateral view of head - *An. pseudopunctipennis*

- 3(2'). Front margin of wing with two pale areas, one at wingtip, and one at junction of costal and subcostal veins (Fig. 3a).....*An. pseudopunctipennis*  
 3'. Front margin of wing with one pale area at wingtip (Fig. 3b).....4

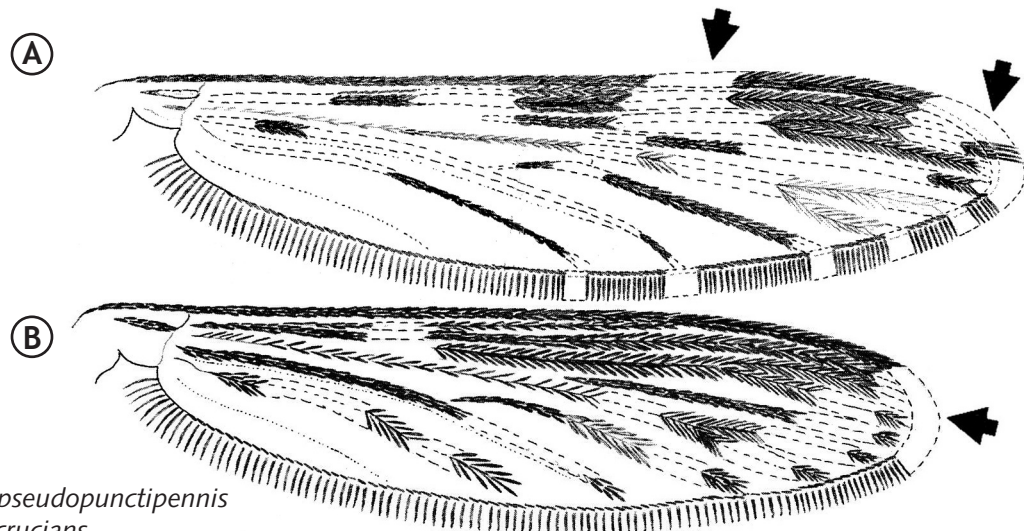


Figure 3.

A. Dorsal view of wing - *An. pseudopunctipennis*

B. Dorsal view of wing - *An. crucians*

- 4(3). Wing vein Cu partly or entirely dark-scaled (Fig. 4a).....*An. crucians*
- 4'. Wing vein Cu often entirely white-scaled (Fig. 4b).....*An. bradleyi*

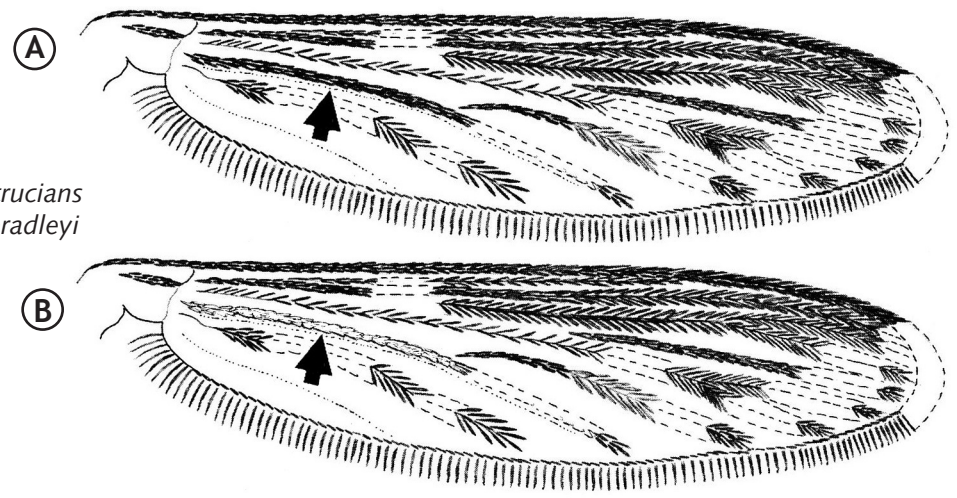


Figure 4.  
 A. Dorsal view of wing - *An. crucians*  
 B. Dorsal view of wing - *An. bradleyi*

- 5(1). Wings unspotted (Fig. 5a); distal end of hind femur without light kneespot (Fig. 5b).....*An. atropos*
- 5'. Wings spotted by clumping of dark scales (Fig. 5c); distal end of hind femur with light kneespot (Fig. 5d).....*An. quadrimaculatus* complex\*

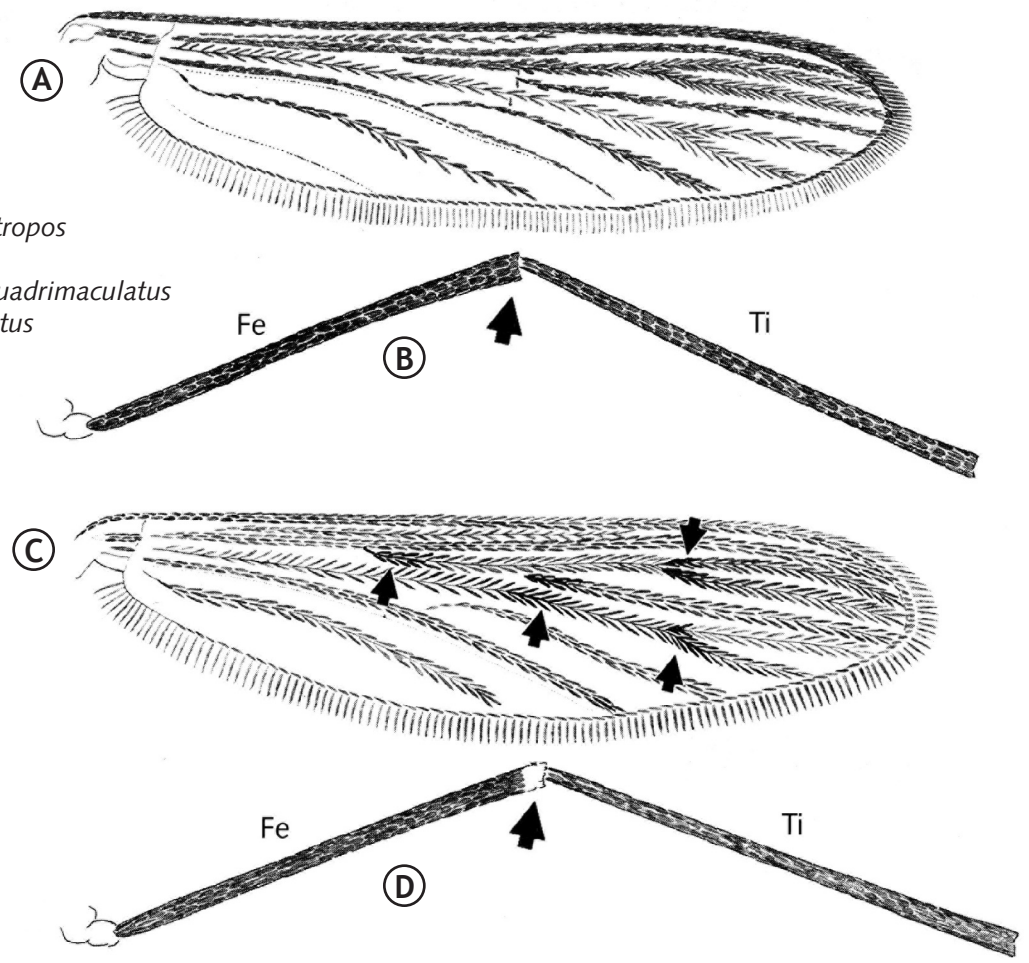
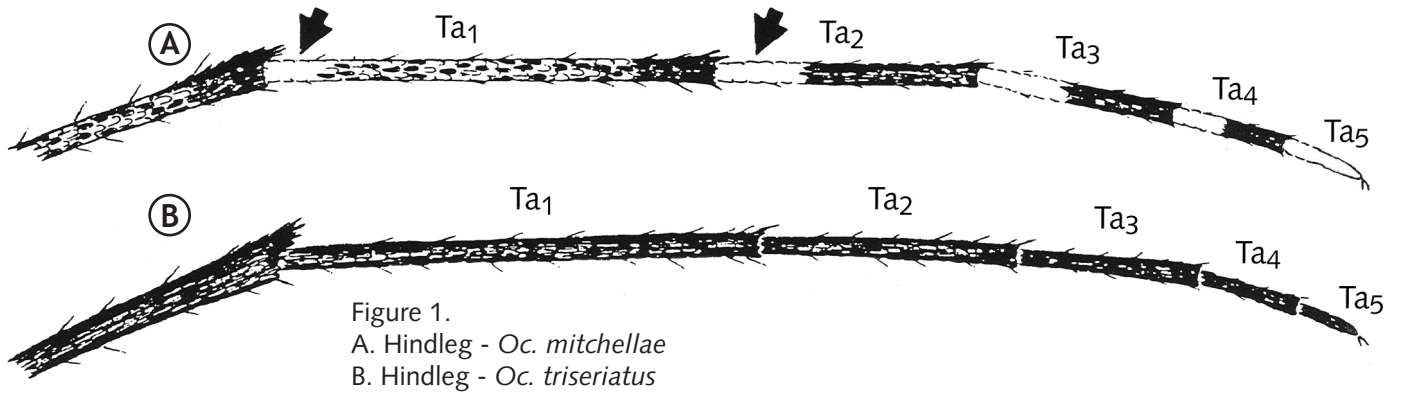


Figure 5.  
 A. Dorsal view of wing - *An. atropos*  
 B. Hindleg - *An. atropos*  
 C. Dorsal view of wing - *An. quadrimaculatus*  
 D. Hindleg - *An. quadrimaculatus*

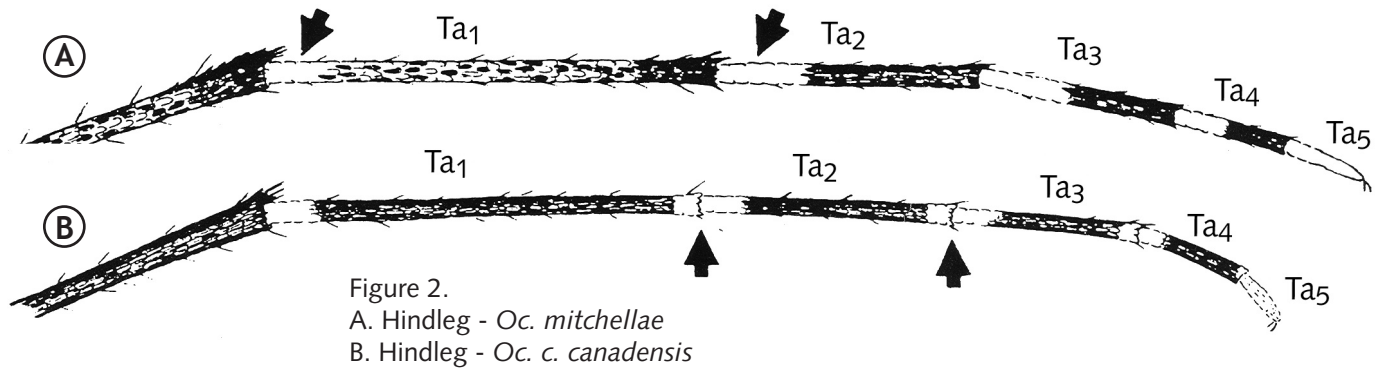
\* Species A, B, C2 and D of the *Anopheles quadrimaculatus* complex are found within Louisiana. Reinert et al (1999) described the morphological distinctions between the members of this species complex for all life stages.

**Aedes Adults**

- 1. Hindtarsomeres with pale bands (Fig. 1a).....2
- 1'. Hindtarsomeres without pale bands (Fig. 1b).....10



- 2(1). Hindtarsomeres pale-banded on basal part of segment only (Fig. 2a).....
- 2'. Hindtarsomeres pale-banded both basally and apically, at least on some segments (Fig. 2b).....9



- 3(2). Proboscis with definite pale-scaled band near middle (Fig. 3a).....4
- 3'. Proboscis lacking definite pale-scaled band near middle (Fig. 3b).....6

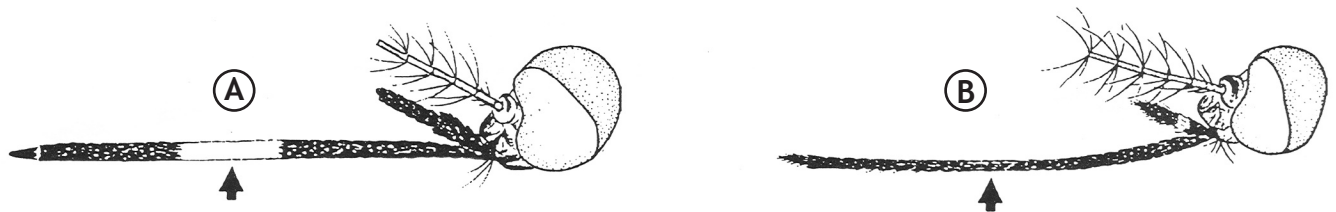


Figure 3.  
 A. Lateral view of head - *Oc. sollicitans*  
 B. Lateral view of head - *Ae. vexans*



- 4(3). Abdominal terga with transverse, basal, pale bands, but lacking median, longitudinal stripe (Fig. 4a); wing dark-scaled (Fig. 4b).....*Oc. taeniorhynchus*
- 4'. Abdominal terga with pale-scaled, transverse bands, and longitudinal stripe or rows of disconnected spots medially (Fig. 4c); wing scales either all dark or intermixed dark and pale (Fig. 4d).....5

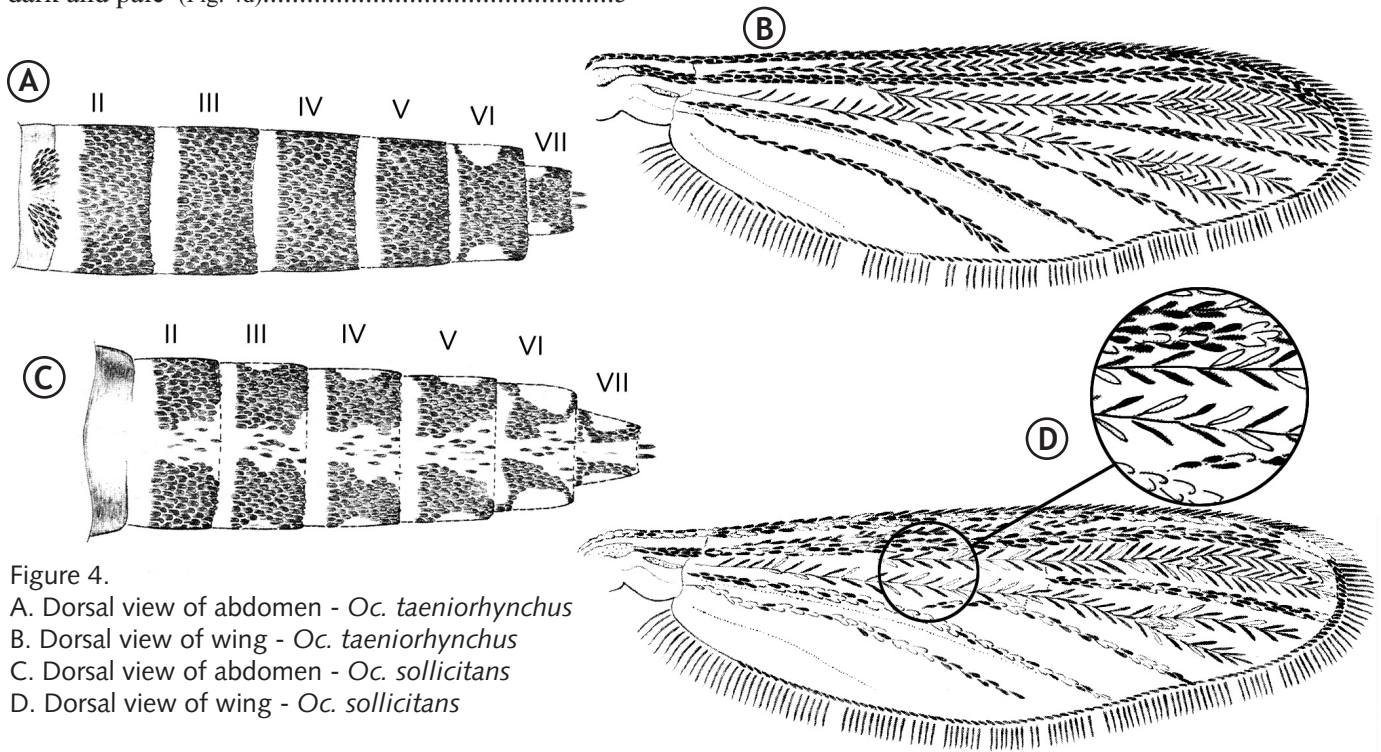


Figure 4.  
 A. Dorsal view of abdomen - *Oc. taeniorhynchus*  
 B. Dorsal view of wing - *Oc. taeniorhynchus*  
 C. Dorsal view of abdomen - *Oc. sollicitans*  
 D. Dorsal view of wing - *Oc. sollicitans*

- 5(4'). Wing with scales all dark (Fig. 5a); hypostigmal scales absent (Fig. 5b).....*Oc. mitchellae*
- 5'. Wing with dark and pale scales intermixed (Fig. 4d above); hypostigmal scales present (Fig. 5c).....*Oc. sollicitans*

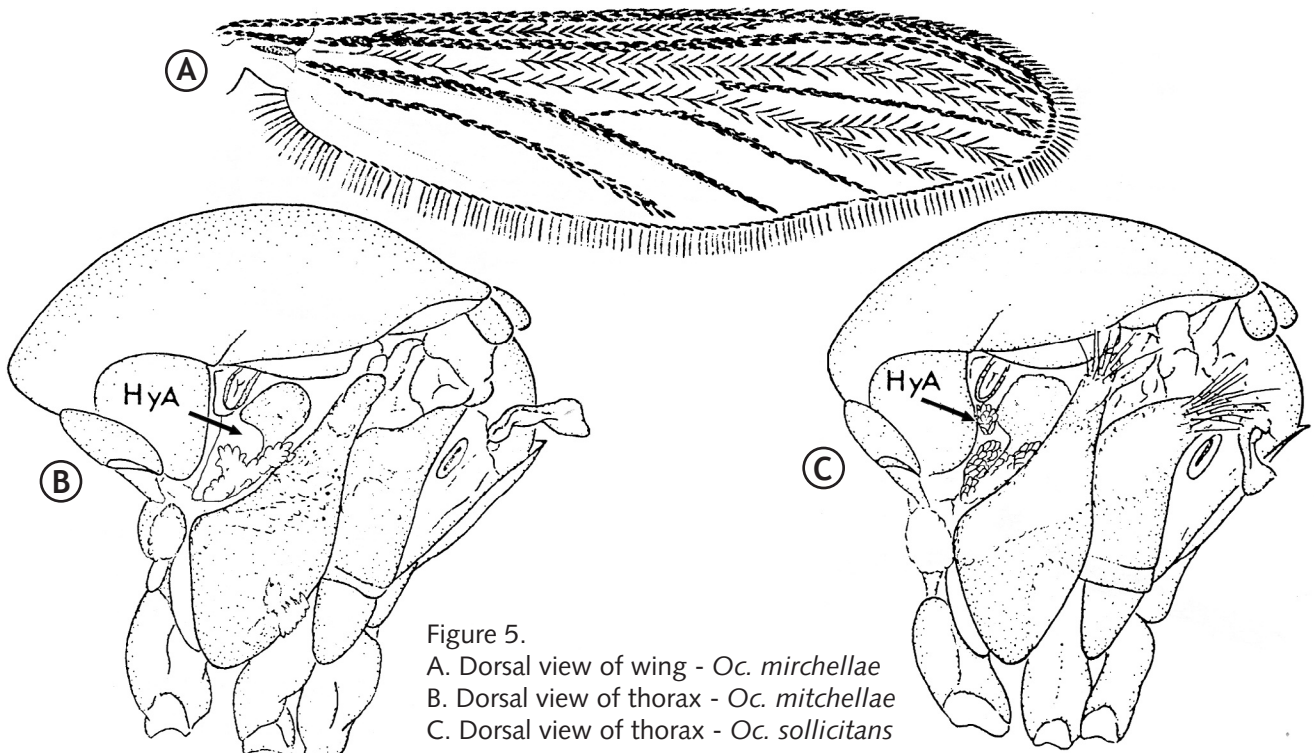
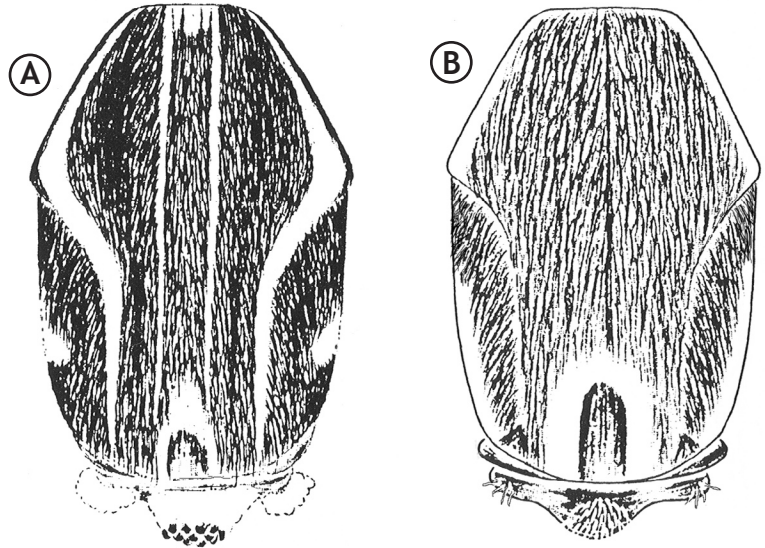


Figure 5.  
 A. Dorsal view of wing - *Oc. mitchellae*  
 B. Dorsal view of thorax - *Oc. mitchellae*  
 C. Dorsal view of thorax - *Oc. sollicitans*

- 6(3'). Scutum with conspicuous lyre- or modified lyre-shaped markings of silvery or yellow scales on background of dark scales (Fig. 6a).....
- 6'. Scutum without such markings (Fig. 6b).....8

Figure 6.

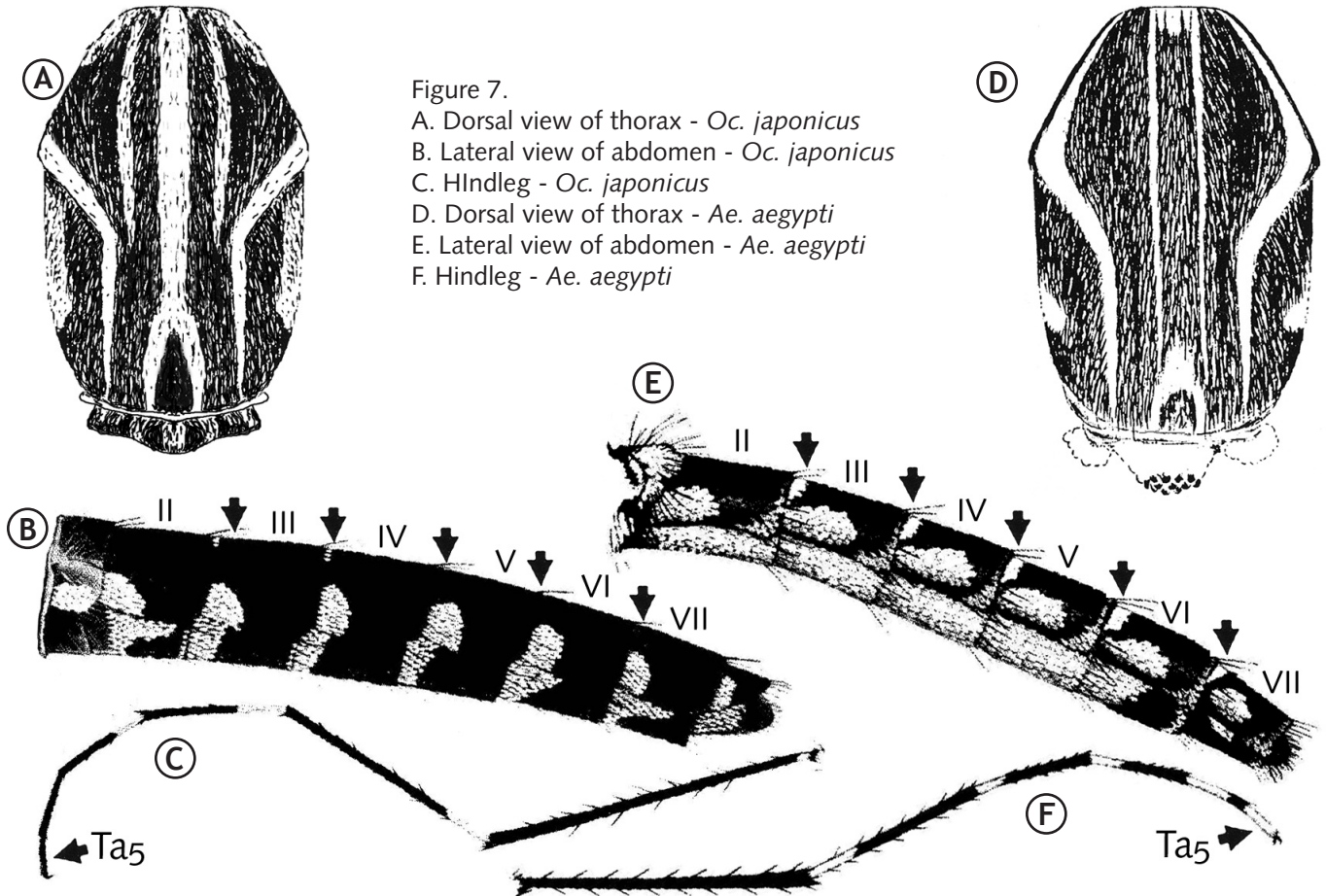
- A. Dorsal view of thorax - *Ae. aegypti*  
 B. Dorsal view of thorax - *Oc. c. canadensis*



- 7(6). Scutum with median, longitudinal stripe of yellow scales (Fig. 7a); abdominal terga III-VII without dorsal pale bands (Fig. 7b); hindtarsomere 5 dark-scaled (Fig. 7c).....*Oc. japonicus*
- 7'. Scutum without median, longitudinal stripe (Fig. 7d); abdominal terga III-VII with basal, transverse, pale bands (Fig. 7e); hindtarsomere 5 pale-scaled (Fig. 7f).....*Ae. aegypti*

Figure 7.

- A. Dorsal view of thorax - *Oc. japonicus*  
 B. Lateral view of abdomen - *Oc. japonicus*  
 C. Hindleg - *Oc. japonicus*  
 D. Dorsal view of thorax - *Ae. aegypti*  
 E. Lateral view of abdomen - *Ae. aegypti*  
 F. Hindleg - *Ae. aegypti*





- 8(6'). Scutum with single narrow stripe of white scales (Fig. 8a); basal pale bands on abdomen without posterior notch but flaring laterally (Fig. 8b); basal pale bands of hindtarsomeres broad, that on tarsomere 2 covering more than 0.3 of segment (Fig. 8c).....*Ae. albopictus*
- 8'. Scutum without single narrow white stripe of scales (Fig. 8d); basal pale bands on abdomen with posterior notch (Fig. 8e); basal pale bands of hindtarsomeres narrow, that on tarsomere 2 covering 0.2 or less of segment (Fig. 8f).....*Ae. vexans*

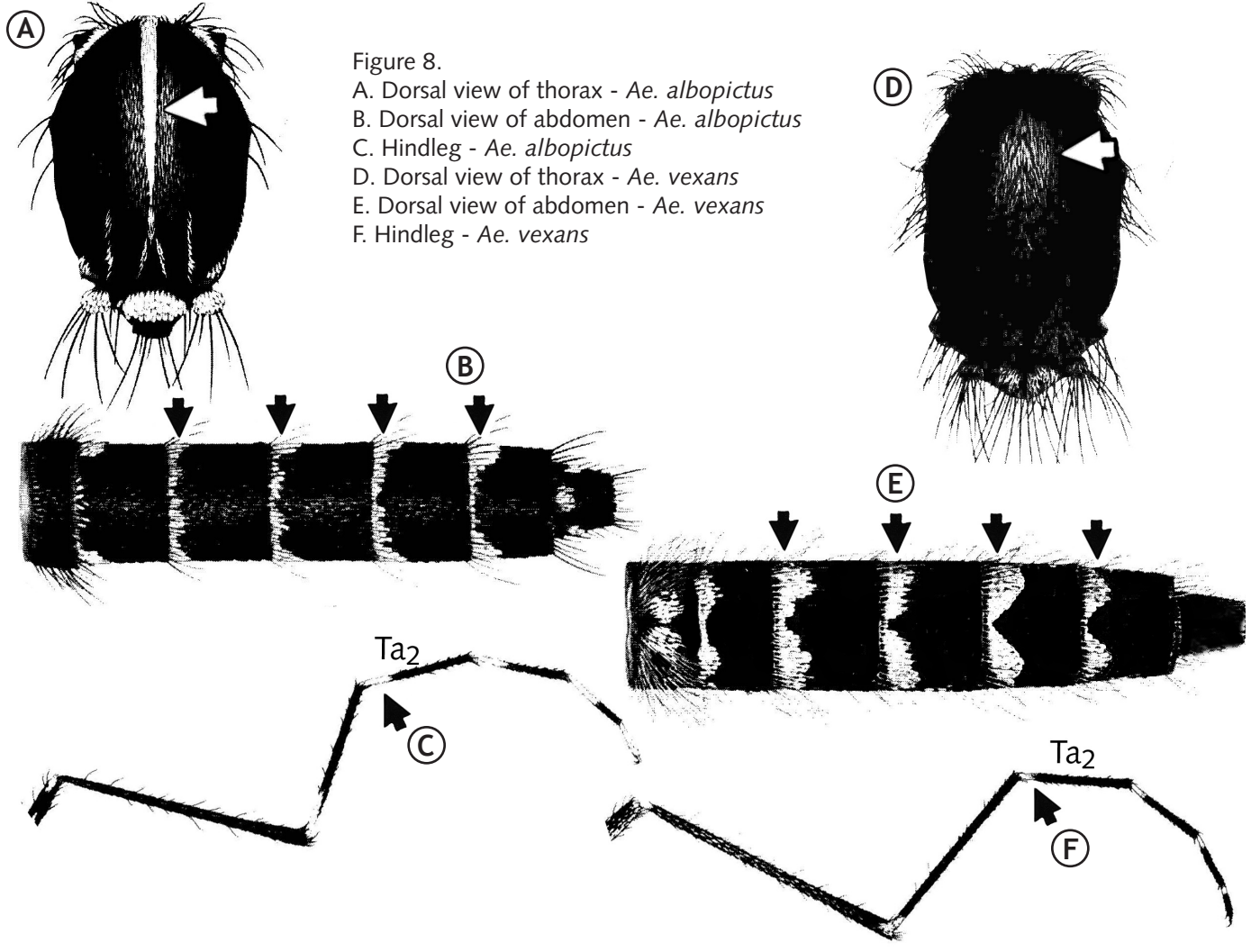
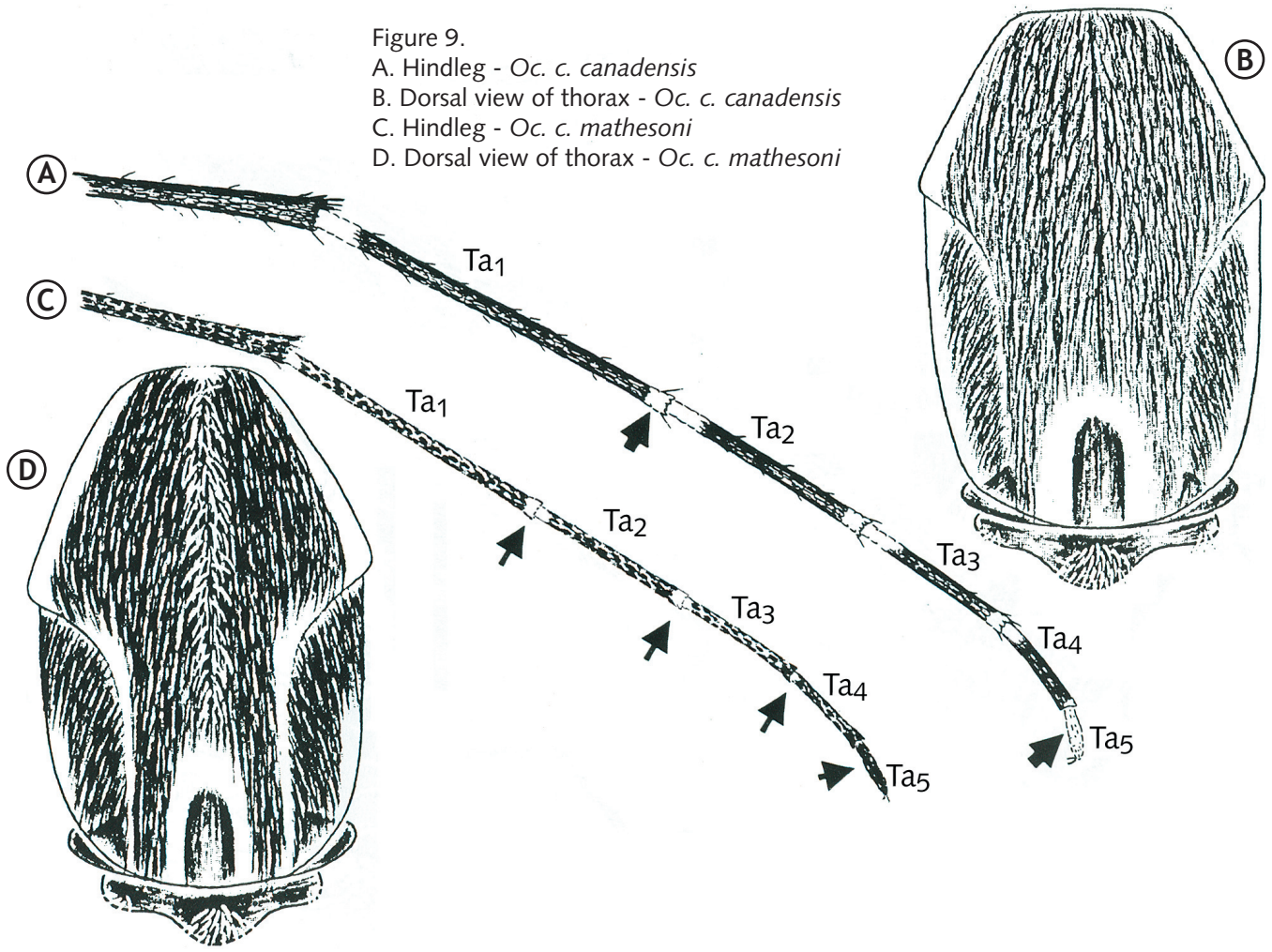


Figure 8.  
 A. Dorsal view of thorax - *Ae. albopictus*  
 B. Dorsal view of abdomen - *Ae. albopictus*  
 C. Hindleg - *Ae. albopictus*  
 D. Dorsal view of thorax - *Ae. vexans*  
 E. Dorsal view of abdomen - *Ae. vexans*  
 F. Hindleg - *Ae. vexans*

- 9(2'). Hindtarsomeres 1-4 with broad, pale, basal and apical bands, hindtarsomere 5 entirely pale-scaled (Fig. 9a); scutum with golden brown scales (Fig. 9b).....*Oc. canadensis canadensis*
- 9'. Hindtarsomeres 1-2 with narrow, pale, basal and apical bands, hindtarsomeres 3-4 with only basal pale bands, hindtarsomere 5 dark-scaled (Fig. 9c); scutum with scales mostly dark brown, with indefinite median stripe of paler scales (Fig. 9d).....*Oc. c. mathesoni*

Figure 9.  
 A. Hindleg - *Oc. c. canadensis*  
 B. Dorsal view of thorax - *Oc. c. canadensis*  
 C. Hindleg - *Oc. c. mathesoni*  
 D. Dorsal view of thorax - *Oc. c. mathesoni*



- 10(1'). Scutal integument with pair of dark, posterolateral spots (Fig. 10a); mesonotum gold-colored.....*Oc. fulvus pallens*
- 10'. Scutal integument lacking dark, posterolateral spots (Fig. 10b).....11

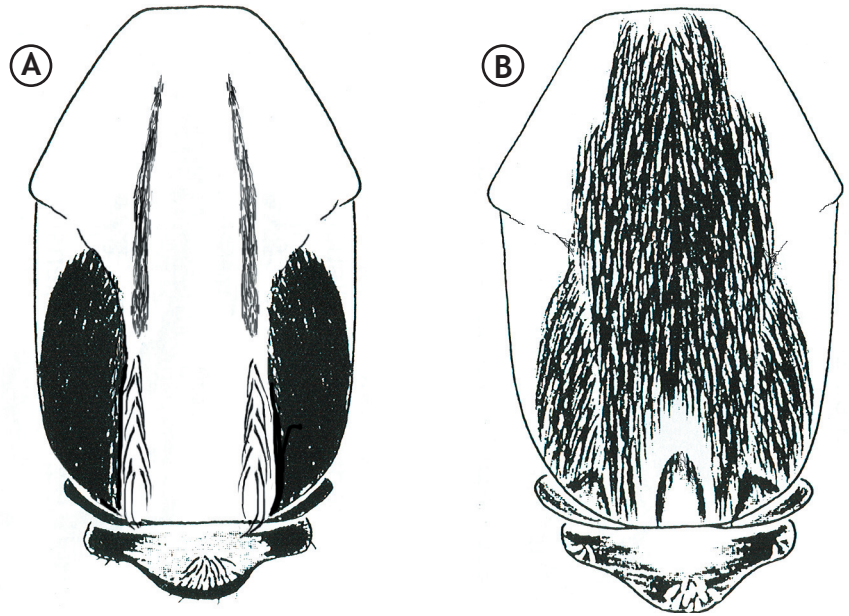


Figure 10.  
 A. Dorsal view of thorax - *Oc. fulvus pallens*  
 B. Dorsal view of thorax - *Oc. triseriatus*

- 11(10'). Scutum with patch or median stripe of silvery white, pale white or pale yellow scales (Fig. 11a), or with silvery white scales laterally(Fig. 11b).....
- 11'. Scutum without silvery white scales medially or laterally, nor pale white or pale yellow scales medially(Fig. 11c).....17

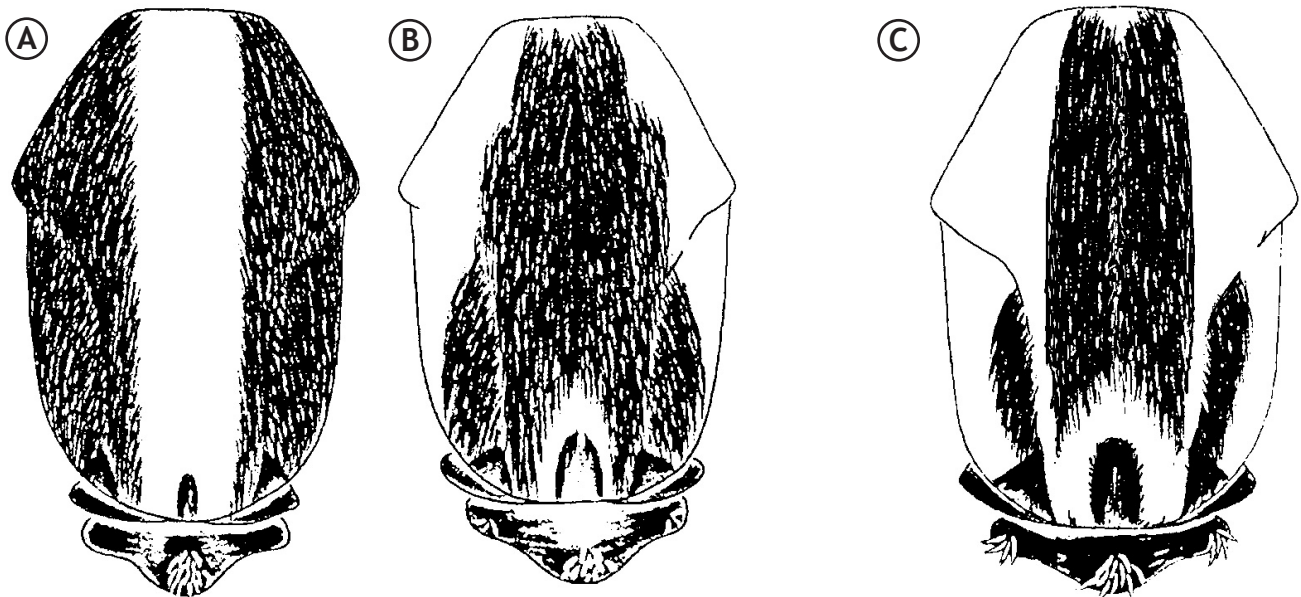


Figure 11.  
 A. Dorsal view of thorax - *Oc. atlanticus*  
 B. Dorsal view of thorax - *Oc. triseriatus*  
 C. Dorsal view of thorax - *Oc. sticticus*



- 12(11). Scutum with median, longitudinal stripe of dark brown scales and silvery white scales laterally (Fig. 12a).....13
- 12'. Scutum with one or two broad patches or stripes of silvery white, pale white or sometimes pale yellow scales medially (Fig. 12b).....

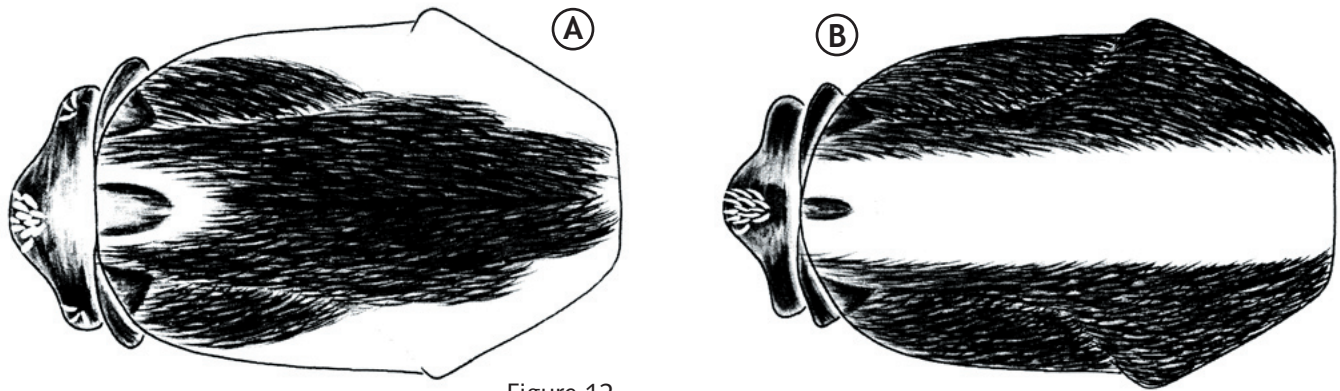


Figure 12.  
 A. Dorsal view of thorax - *Oc. triseriatus*  
 B. Dorsal view of thorax - *Oc. atlanticus*

- 13(12). Setae of anterior portion of scutum relatively few and weak, silver scaling of scutal fossa usually restricted to lateral and posterior portions (Fig. 13a); claws of fore- and midlegs evenly curved, tooth less than 0.3 length of claw (Fig. 13b).....*Oc. triseriatus*
- 13'. Setae of anterior portion of scutum numerous and well-developed, silver scaling usually covering entire scutal fossa (Fig. 13c); claws of fore- and midlegs abruptly curving, tooth 0.2 to 0.3 length of claw (Fig. 13d).....*Oc. hendersoni*

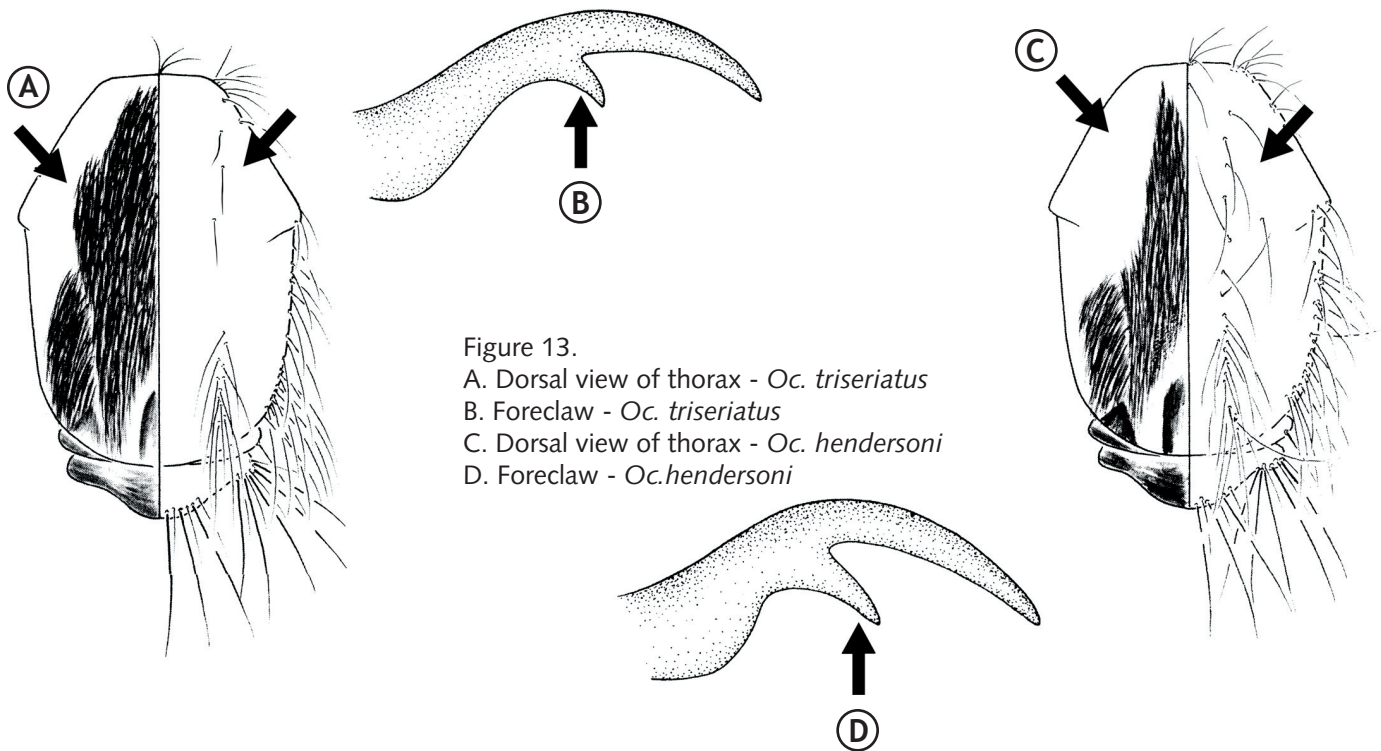


Figure 13.  
 A. Dorsal view of thorax - *Oc. triseriatus*  
 B. Foreclaw - *Oc. triseriatus*  
 C. Dorsal view of thorax - *Oc. hendersoni*  
 D. Foreclaw - *Oc. hendersoni*

- 14(12'). Scutum with two broad white stripes, separated by a bronzy-brown median strip (Fig. 14a).....*Oc. trivittatus*  
 14'. Scutum with a single white stripe (Fig. 14b).....15

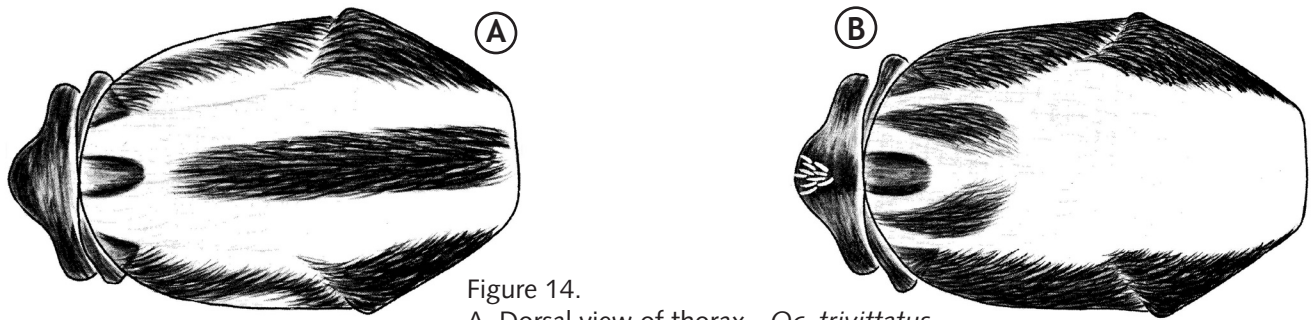


Figure 14.  
 A. Dorsal view of thorax - *Oc. trivittatus*  
 B. Dorsal view of thorax - *Oc. infirmatus*

- 15(14'). Scutum with anteromedian patch of silvery white or pale yellow scales, extending to middle or a little beyond, which is much broader than lateral, dark-scaled areas (Fig. 15a).....*Oc. infirmatus*  
 15'. Scutum with median, longitudinal stripe of silvery scales, extending full length, usually narrower than lateral dark-scaled areas (Fig. 15b).....16

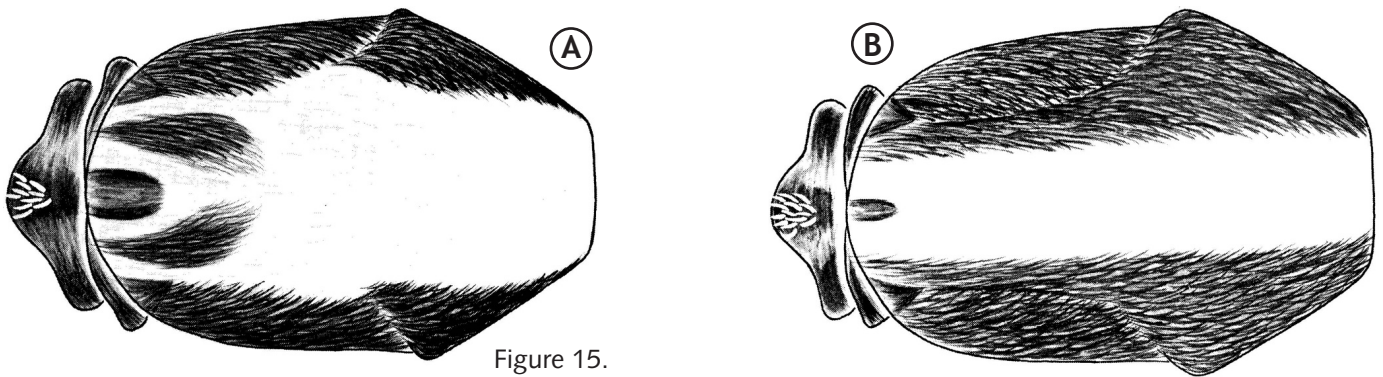


Figure 15.  
 A. Dorsal view of thorax - *Oc. infirmatus*  
 B. Dorsal view of thorax - *Oc. atlanticus*

- 16(15'). Occiput with few or no dark scales laterally (Fig. 16a); small species, wing length about 2.5mm.....*Oc. dupreei*  
 16'. Occiput with prominent spots of dark appressed scales laterally (Fig. 16b); medium-sized species, wing length 3.0 - 4.0mm.....*Oc. atlanticus*, *Oc. tormentor*

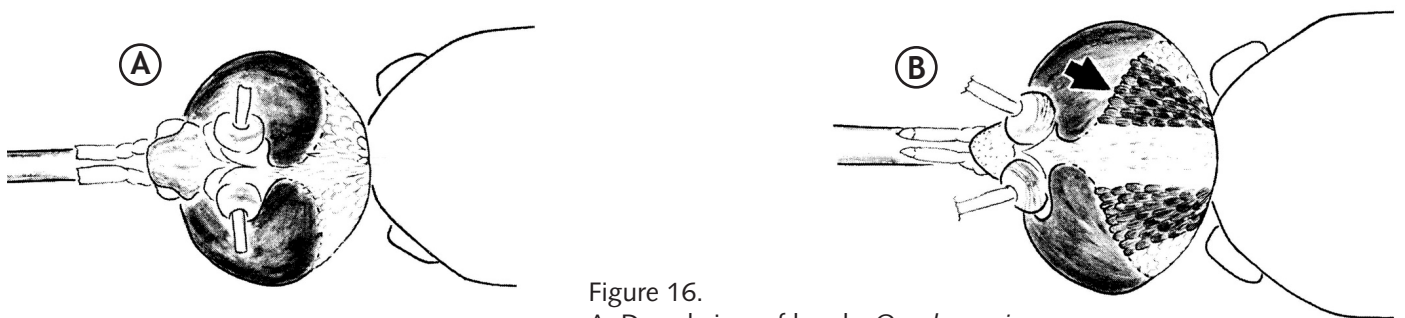


Figure 16.  
 A. Dorsal view of head - *Oc. dupreei*  
 B. Dorsal view of thorax - *Oc. atlanticus*



- 17(11'). Abdominal terga without basal, pale bands, or, if present, banded on fewer than half of terga (Fig. 17a).....*Oc. thibaulti*
- 17'. Abdominal terga always with pale, basal bands on more than half of abdominal terga, usually banded on segments I-VII (Fig. 17b).....18

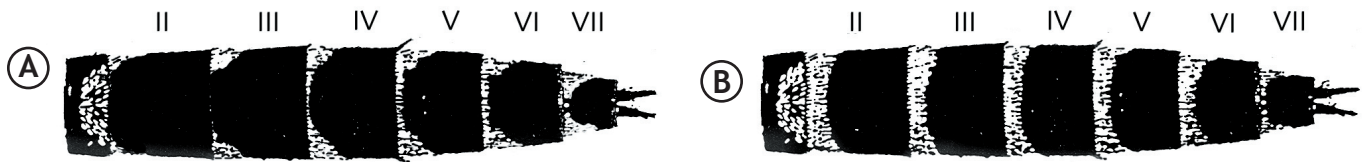


Figure 17.  
 A. Dorsal view of abdomen - *Oc. thibaulti*  
 B. Dorsal view of abdomen - *Oc. sticticus*

- 18(17'). Scutum with dark, median, longitudinal stripe (Fig. 18a); mesokatepisternum with scales extending to near anterior angle (Fig. 18b).....*Oc. sticticus*
- 18'. Scutum with unicolorous scales (Fig. 18c); mesokatepisternum with scales usually not extending to anterior angle (Fig. 18d).....*Ae. cinereus*

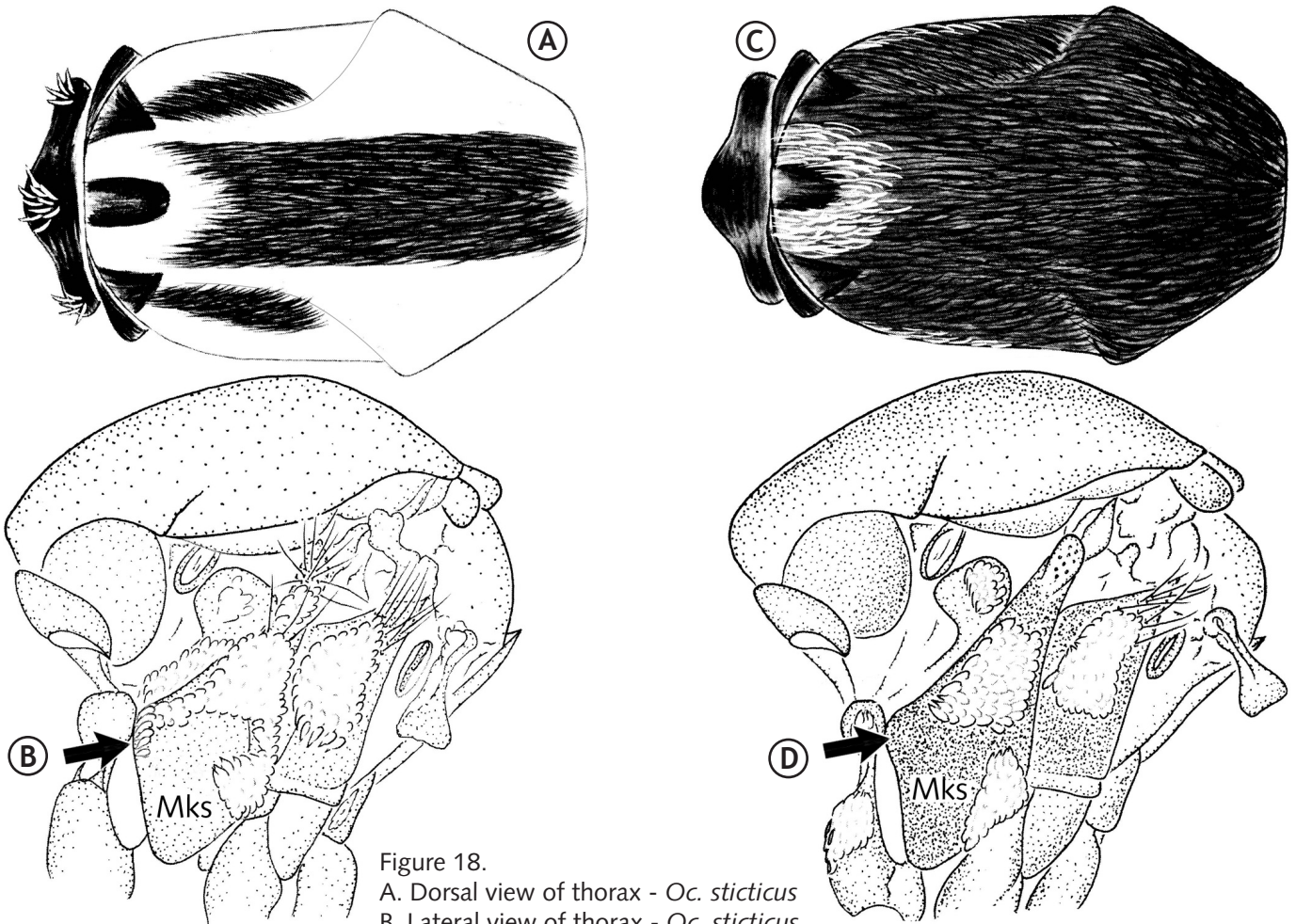


Figure 18.  
 A. Dorsal view of thorax - *Oc. sticticus*  
 B. Lateral view of thorax - *Oc. sticticus*  
 C. Lateral view of thorax - *Ae. cinereus*  
 D. Dorsal view of thorax - *Ae. cinereus*

**Culex Adults**

- 1. Scutum with middorsal, acrostichal setae (Fig. 1a); occiput with narrow scales dorsally (Fig. 1b).....2
- 1'. Scutum without middorsal acrostichal setae (Fig. 1c); occiput with broad, appressed scales dorsally, sometimes limited to ocular line (Fig. 1d).....

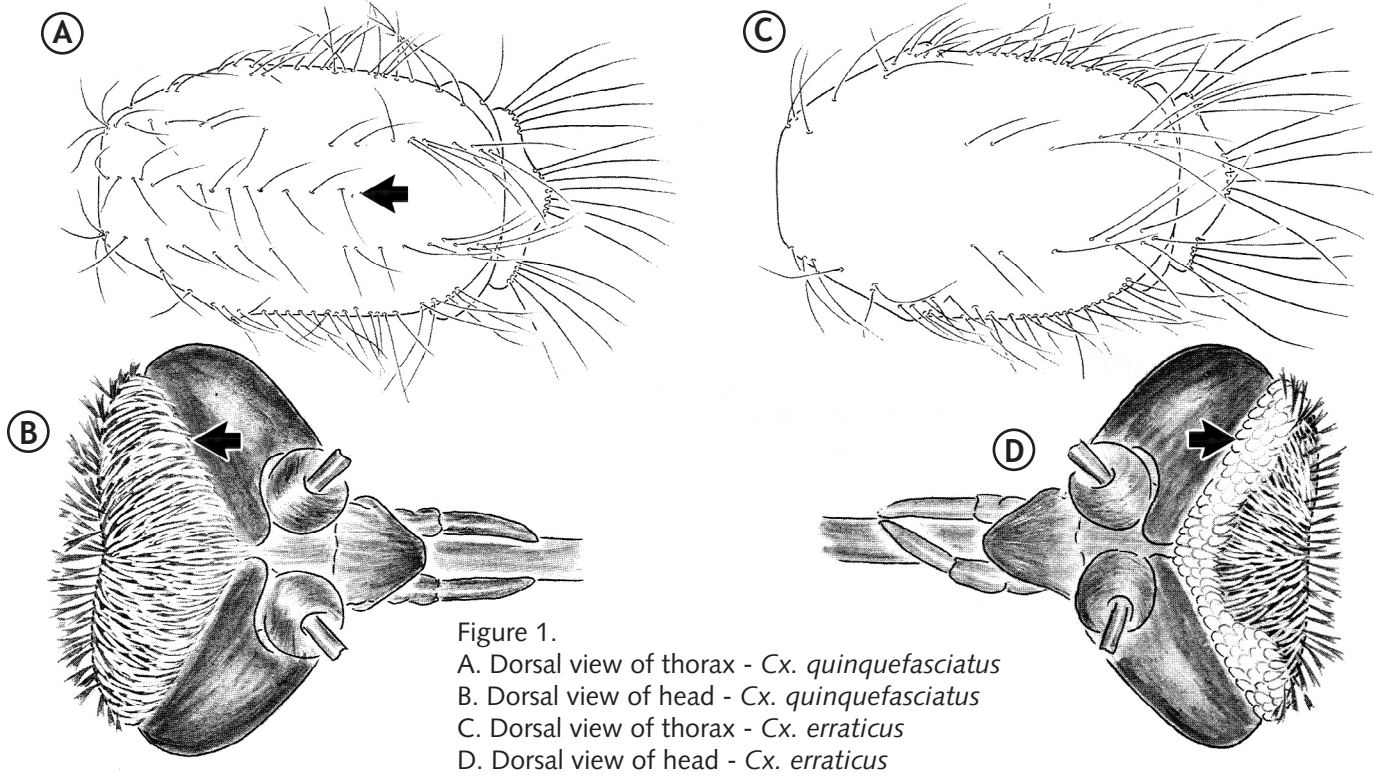


Figure 1.  
 A. Dorsal view of thorax - *Cx. quinquefasciatus*  
 B. Dorsal view of head - *Cx. quinquefasciatus*  
 C. Dorsal view of thorax - *Cx. erraticus*  
 D. Dorsal view of head - *Cx. erraticus*

- 2(1). Abdominal terga with bands or lateral patches of pale scales along apical border (Fig. 2a).....*Cx. territans*
- 2'. Abdominal terga with bands or lateral patches of pale scales along basal border (Fig. 2b).....3

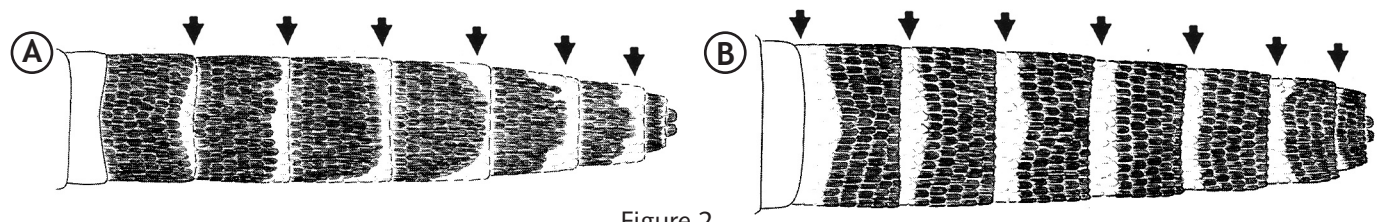
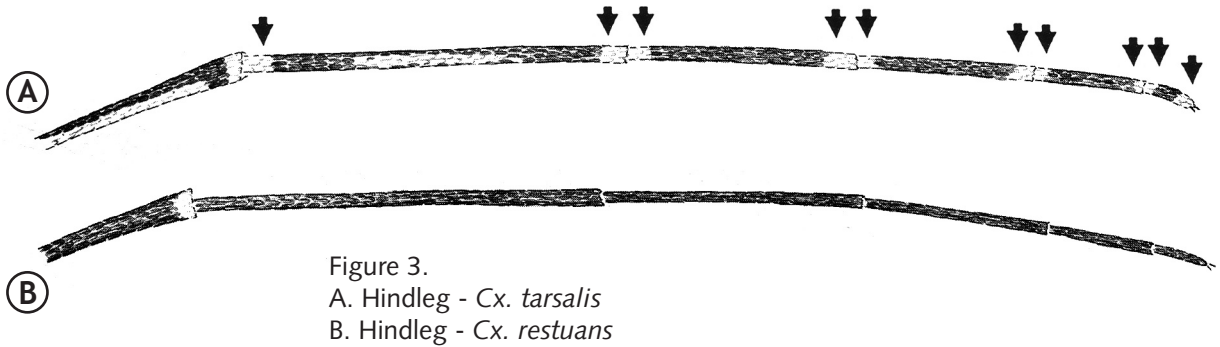


Figure 2.  
 A. Dorsal view of abdomen - *Cx. territans*  
 B. Dorsal view of abdomen - *Cx. restuans*

- 3(2'). Hind tarsomeres with basal and apical pale bands (Fig. 3a).....4
- 3'. Hind tarsomeres entirely dark-scaled (Fig. 3b).....5



- 4(3). Palpi tipped with white, proboscis ringed with white scales (Fig. 4a).....*Cx. tarsalis*
- 4'. Palpi and proboscis entirely dark (Fig. 4b).....*Cx. coronator*

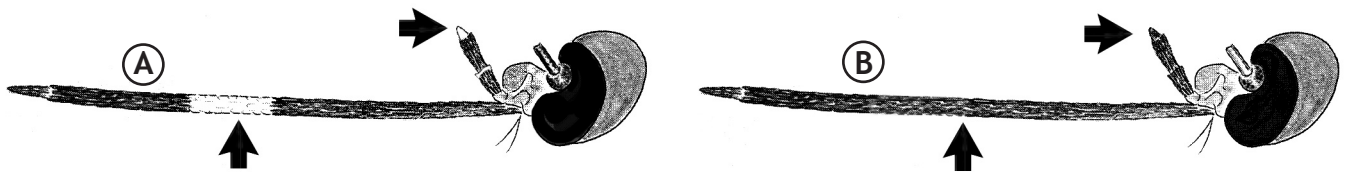


Figure 4.  
A. Lateral view of head and proboscis - *Cx. tarsalis*  
B. Lateral view of head and proboscis - *Cx. coronator*

- 5(3'). Abdominal terga not banded, or with narrow, basal, pale bands (Fig. 5a).....6
- 5'. Abdominal terga with conspicuous, basal bands of pale scales (Fig. 5b).....7

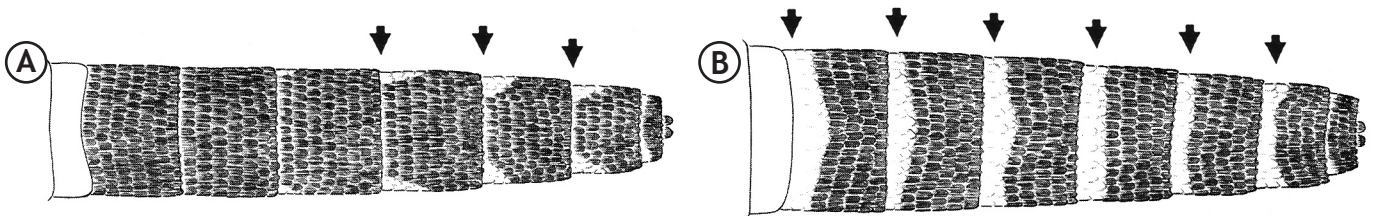


Figure 5.  
A. Dorsal view of abdomen - *Cx. nigripalpus*  
B. Dorsal view of abdomen - *Cx. restuans*



- 6(5). Scale patches on thoracic pleura absent, or if present, in groups of fewer than six scales (Fig. 6a); abdominal terga usually without basal bands of pale scales, tergum VII mostly dark-scaled (Fig. 6b).....*Cx. nigripalpus*
- 6'. Thoracic pleura with several patches of pale scales each with six or more scales (Fig. 6c); abdominal terga usually with narrow, basal bands of dingy yellow scales, tergum VII mostly yellow-scaled (Fig. 6d).....*Cx. salinarius*

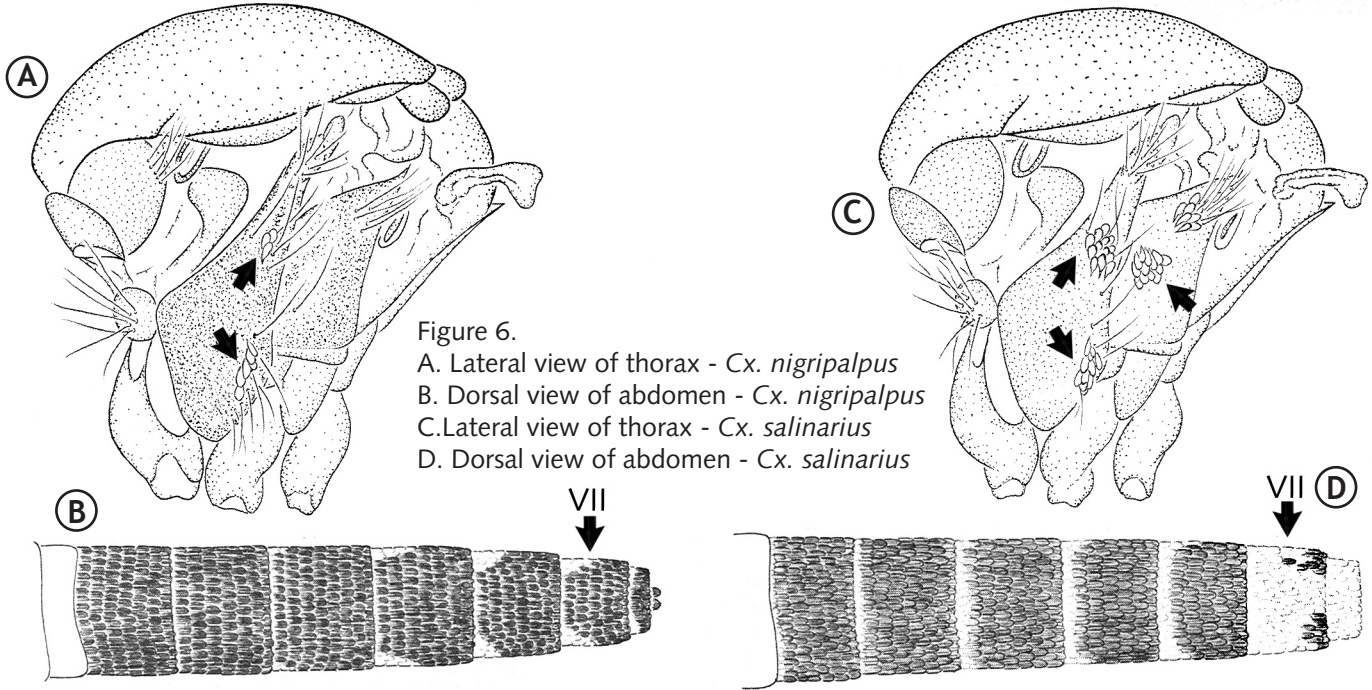


Figure 6.  
 A. Lateral view of thorax - *Cx. nigripalpus*  
 B. Dorsal view of abdomen - *Cx. nigripalpus*  
 C. Lateral view of thorax - *Cx. salinarius*  
 D. Dorsal view of abdomen - *Cx. salinarius*

- 7(5'). Basal pale bands of abdominal terga rounded posteriorly, with marked sublateral constrictions, narrowly joined to large lateral pale patches (Fig. 7a); scutum always lacking pale-scaled spots (Fig. 7b).....*Cx. quinquefasciatus*
- 7'. Basal pale bands of abdominal terga not rounded posteriorly, broadly joined to large lateral pale patches with only slight sublateral constrictions (Fig. 7c); scutum with (Fig. 7d) or without pale-scaled spots .....*Cx. restuans*

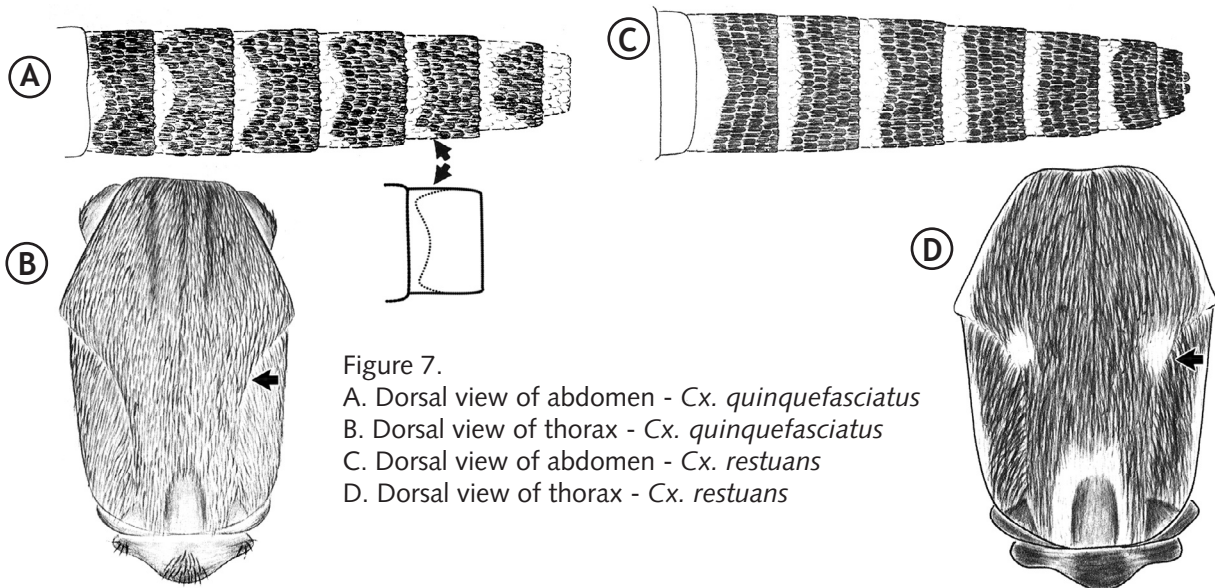


Figure 7.  
 A. Dorsal view of abdomen - *Cx. quinquefasciatus*  
 B. Dorsal view of thorax - *Cx. quinquefasciatus*  
 C. Dorsal view of abdomen - *Cx. restuans*  
 D. Dorsal view of thorax - *Cx. restuans*

- 8(1'). Mesanepimeron with large patch of broad, pale scales (Fig. 8a).....*Cx. erraticus*  
 8'. Mesanepimeron unscaled, or with few narrow scales (Fig. 8b).....9

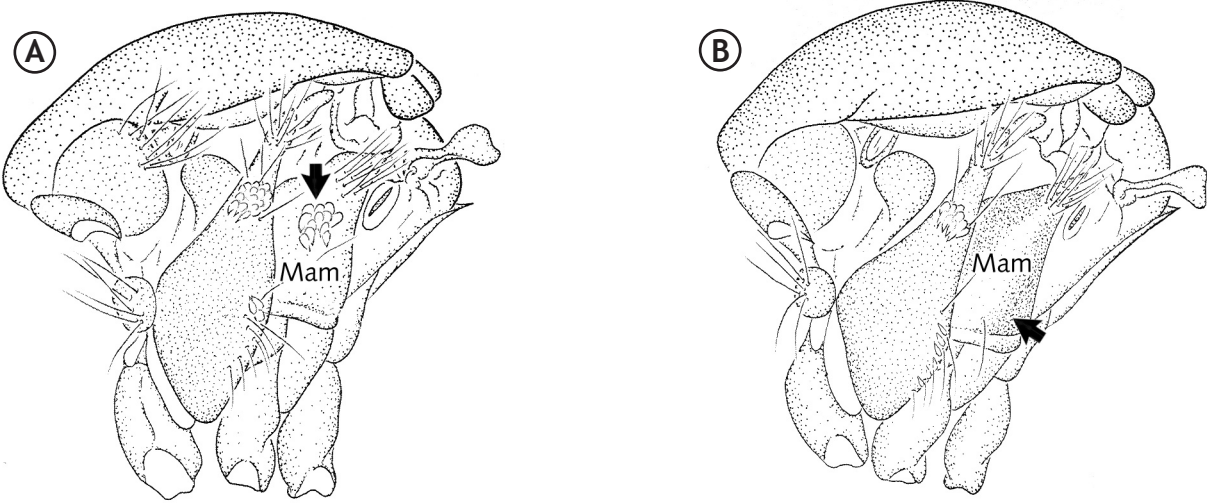


Figure 8.  
 A. Lateral view of thorax - *Cx. erraticus*  
 B. Lateral view of thorax - *Cx. peccator*

- 9(8). Upper mesokatepisternum with patch of more than five scales (Fig. 9a).. *Cx. peccator*  
 9'. Upper mesokatepisternum usually lacking scales, never with more than three scales (Fig. 9b).....*Cx. pilosus*

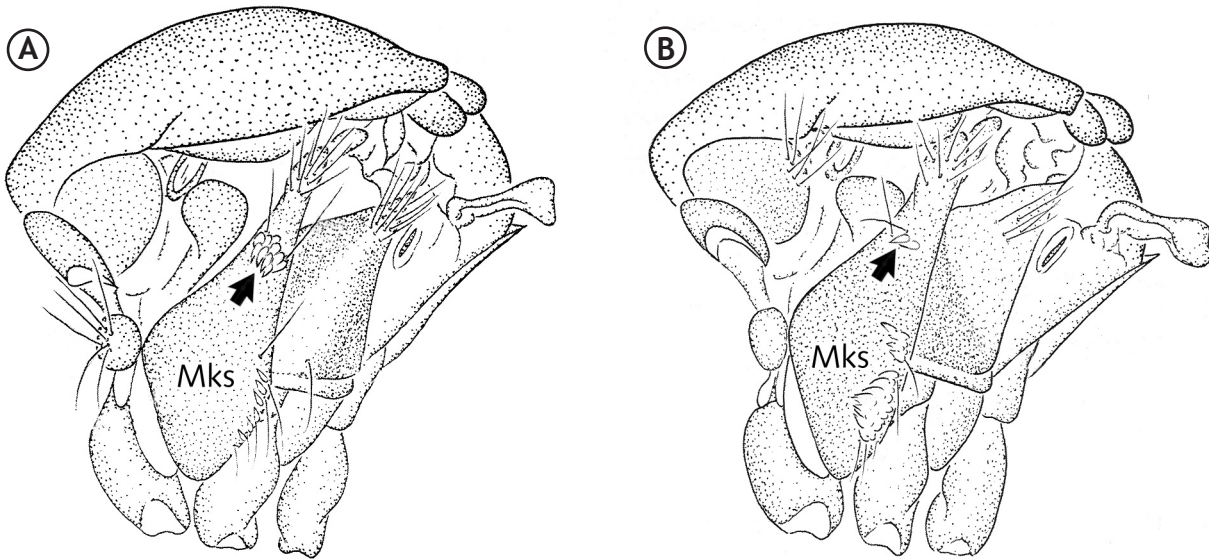
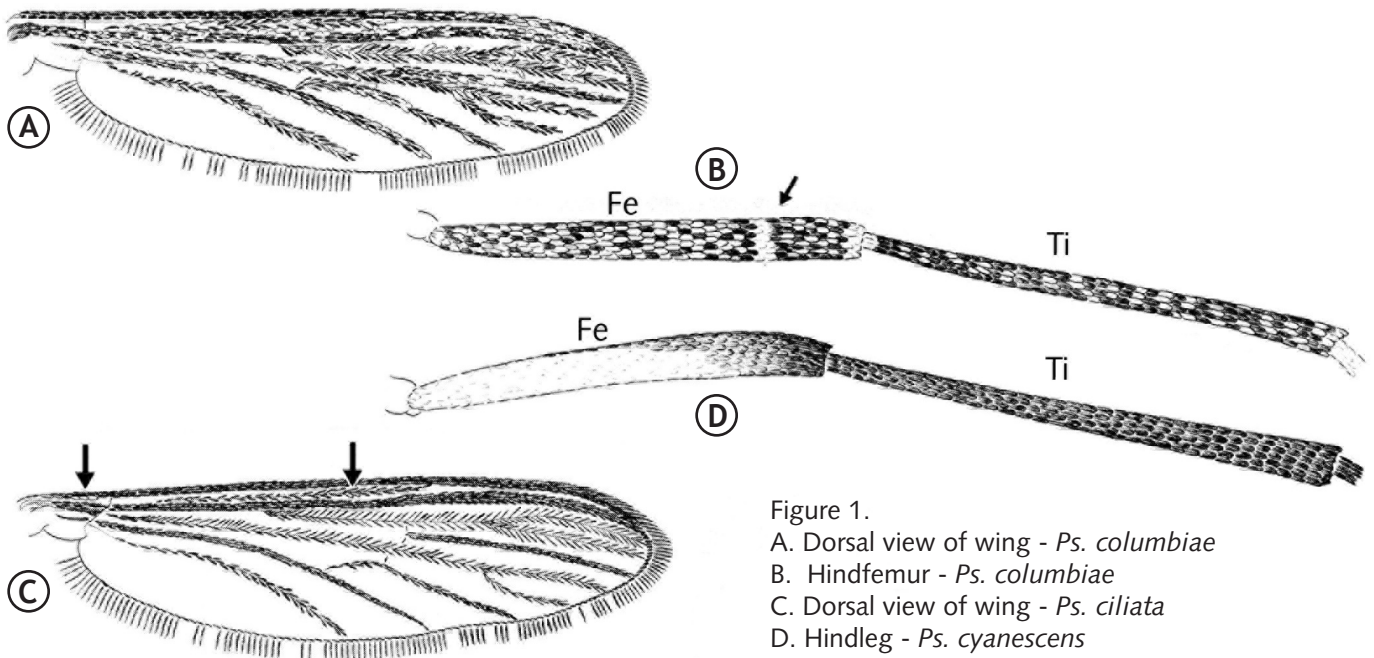


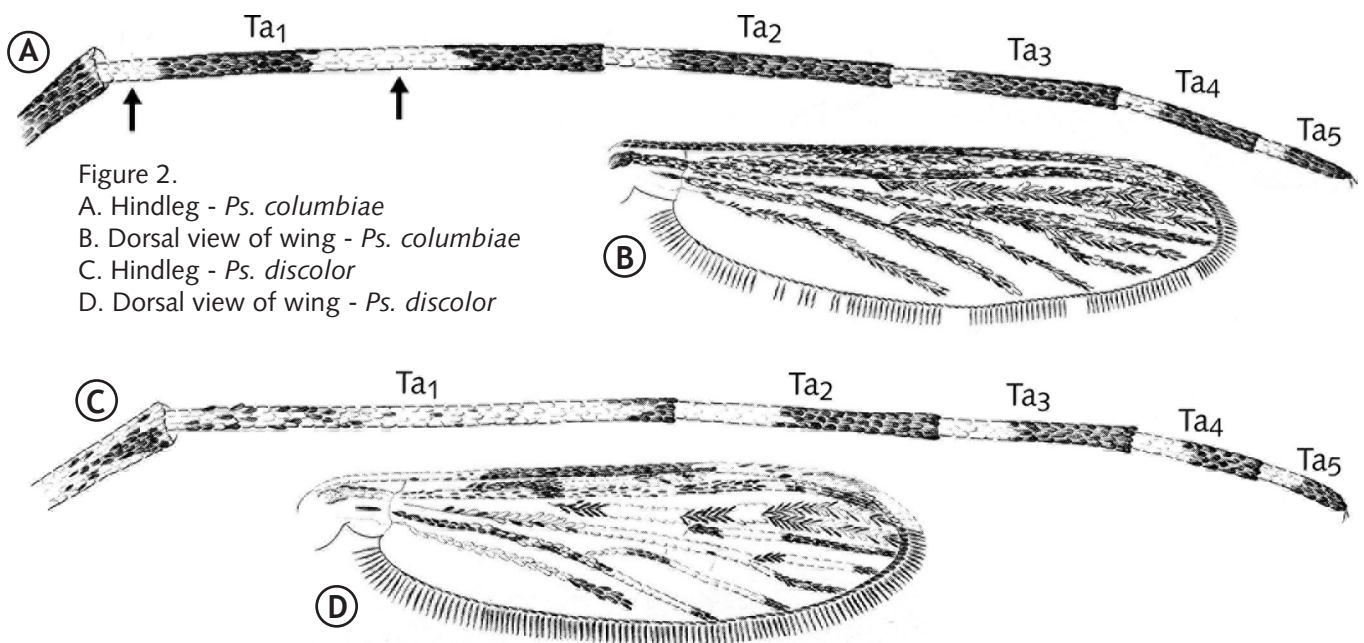
Figure 9.  
 A. Lateral view of thorax - *Cx. peccator*  
 B. Lateral view of thorax - *Cx. pilosus*

## Psorophora Adults

1. Wing scales dark and pale on all veins (Fig. 1a); femora with more or less distinct, narrow, subapical band of pale scales (Fig. 1b).....2  
 1'. Wing scales all dark or with few pale scales on costa and subcosta (Fig. 1c); femora without subapical pale band (Fig. 1d).....



- 2(1). Hindtarsomere 1 with pale-scaled rings at base and middle (Fig. 2a); dark and pale wing scales in no definite pattern (Fig. 2b).....*Ps. columbiae*  
 2'. Hindtarsomere 1 largely pale-scaled (Fig. 2c); wing with definite areas of pale and dark scales (Fig. 2d).....*Ps. discolor*





- 3(1'). Apices of hindfemur and tibia with long, erect scales, shaggy in appearance; hindtarsomere 5 not entirely pale-scaled (Fig. 3a).....4
- 3'. Apices of hindfemur and hindtibia usually without erect scales (Fig. 3b), if somewhat shaggy, then hindtarsomere 5 entirely pale-scaled (Fig. 3c).....5

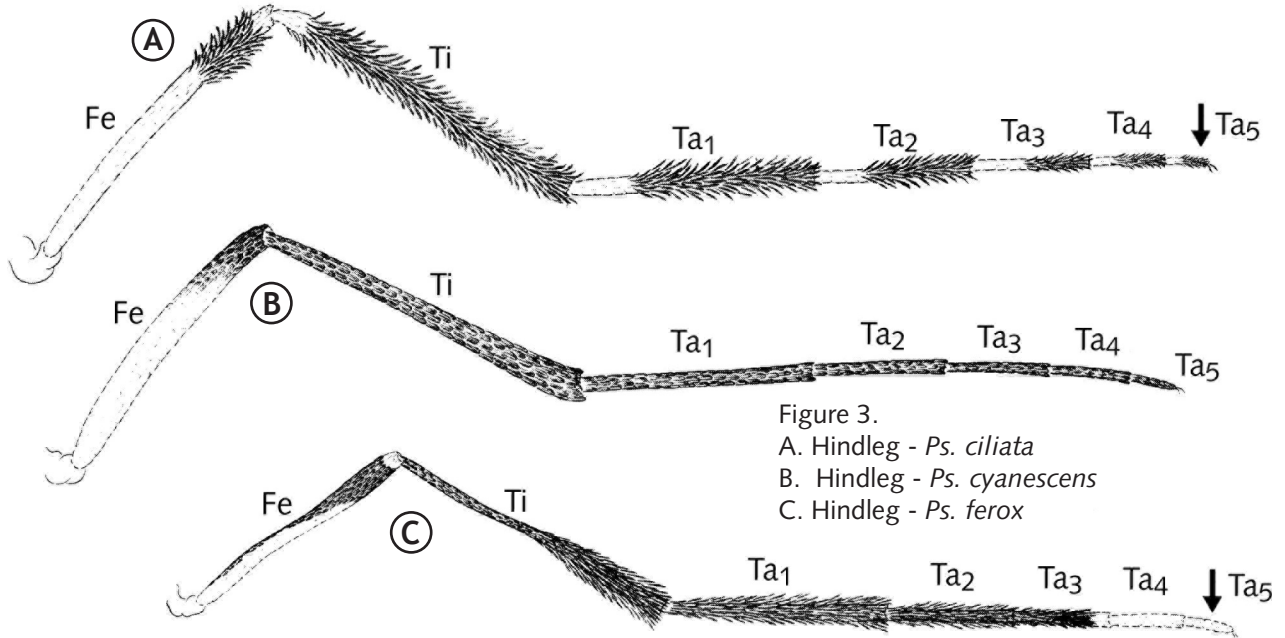


Figure 3.  
 A. Hindleg - *Ps. ciliata*  
 B. Hindleg - *Ps. cyanescens*  
 C. Hindleg - *Ps. ferox*

- 4(3). Scutum with a narrow median longitudinal stripe of golden scales (Fig. 4a); proboscis yellow-scaled in distal 0.5, except labella (Fig. 4b).....*Ps. ciliata*
- 4'. Scutum with a median longitudinal stripe of black scales (Fig. 4c); proboscis dark-scaled (Fig. 4d).....*Ps. howardii*

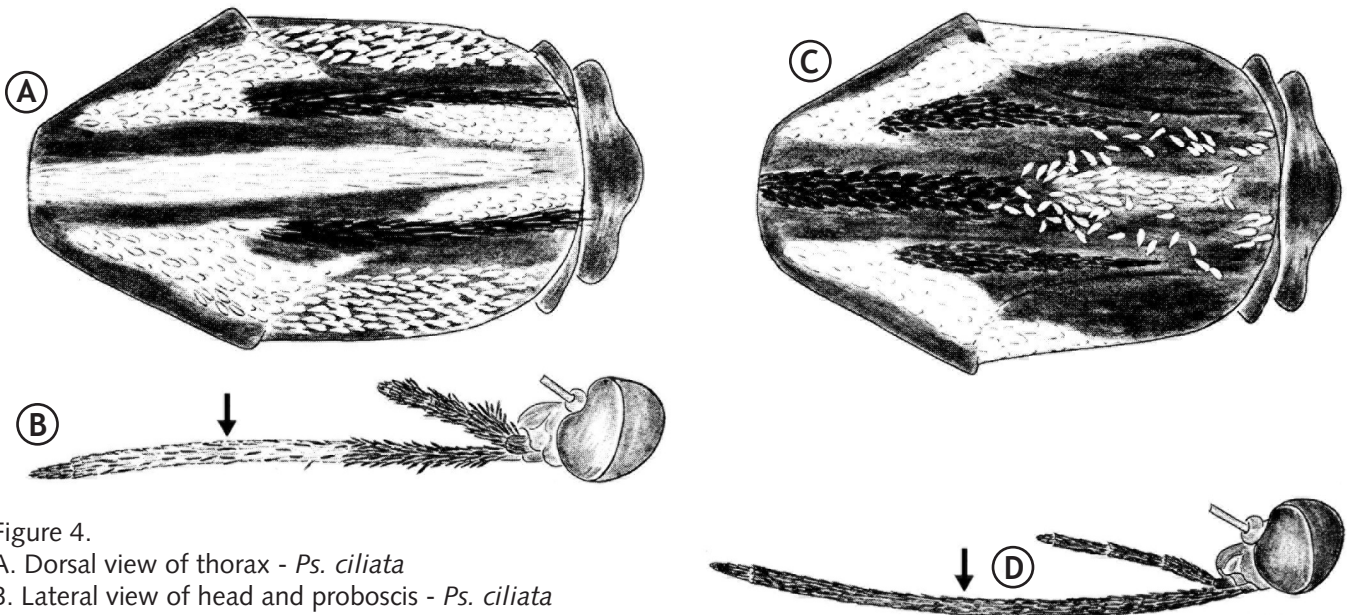


Figure 4.  
 A. Dorsal view of thorax - *Ps. ciliata*  
 B. Lateral view of head and proboscis - *Ps. ciliata*  
 C. Dorsal view of thorax - *Ps. howardii*  
 D. Lateral view of head and proboscis - *Ps. howardii*

- 5(3'). Hindtarsomeres dark-scaled (Fig. 5a); abdominal terga with dorsal patches of golden scales (Fig. 5b).....*Ps. cyanescens*
- 5'. Hindtarsomeres with at least some pale scaling (Fig. 5c); abdominal terga with pale to yellow scales, if present, restricted to apicolateral corners (Fig. 5d).....6

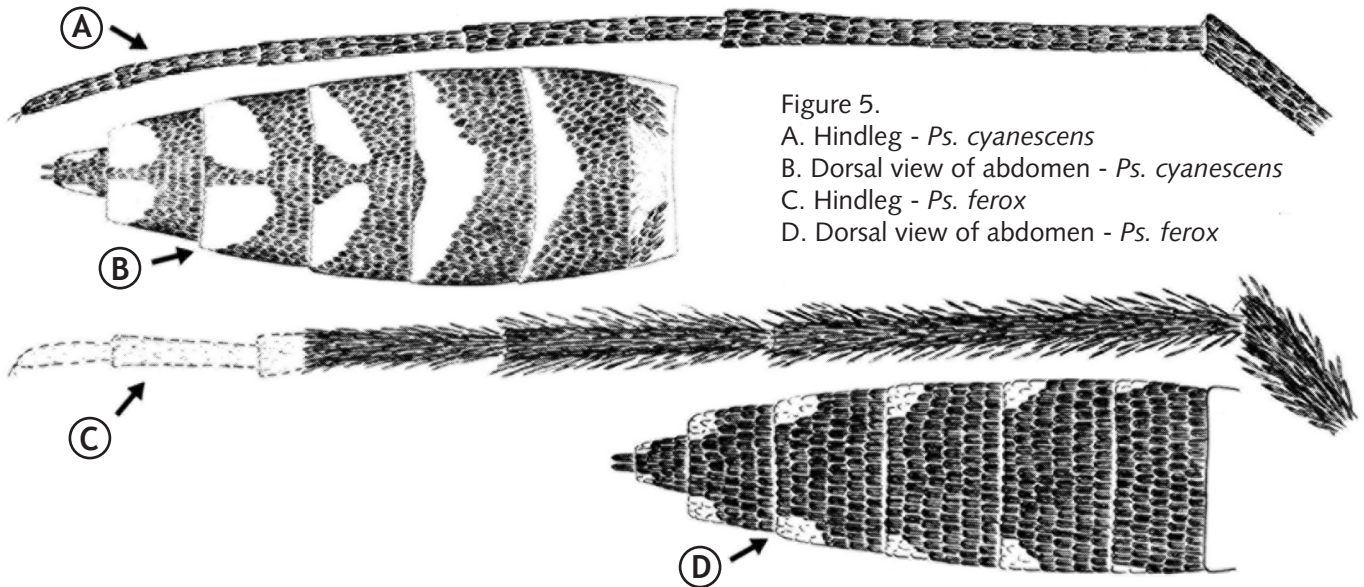


Figure 5.  
 A. Hindleg - *Ps. cyanescens*  
 B. Dorsal view of abdomen - *Ps. cyanescens*  
 C. Hindleg - *Ps. ferox*  
 D. Dorsal view of abdomen - *Ps. ferox*

- 6(5'). Only hindtarsomere 4 pale-scaled on at least one side, other hindtarsomeres dark-scaled (Fig. 6a).....7
- 6'. Hind leg with tarsomeres 4, 5, and often part of 3 pale-scaled (Fig. 6b).....

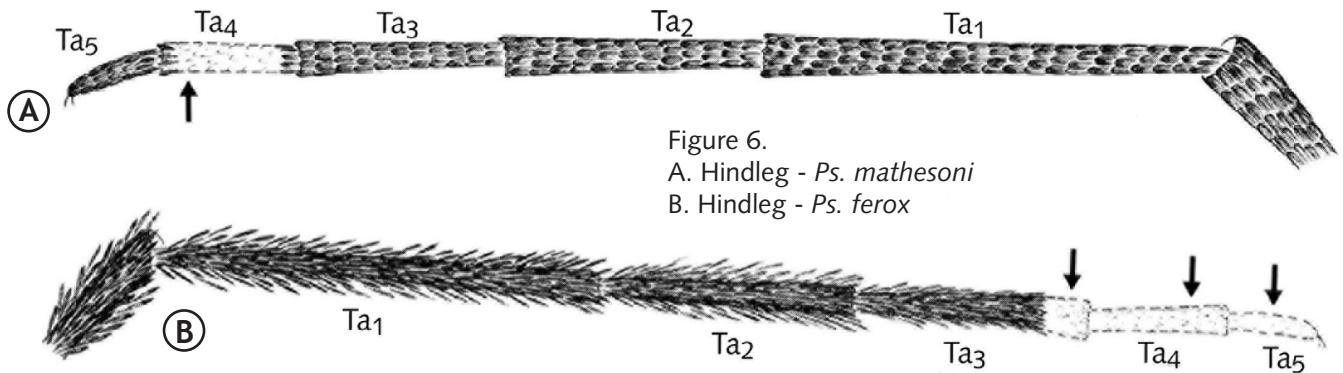


Figure 6.  
 A. Hindleg - *Ps. mathesoni*  
 B. Hindleg - *Ps. ferox*

- 7(6). Scutum entirely covered with yellowish-white scales (Fig. 7a).....*Ps. johnstonii*
- 7'. Scutum with broad median longitudinal stripe of dark scales, with pale yellow or grayish-white scales laterally (Fig. 7b).....*Ps. mathesoni*

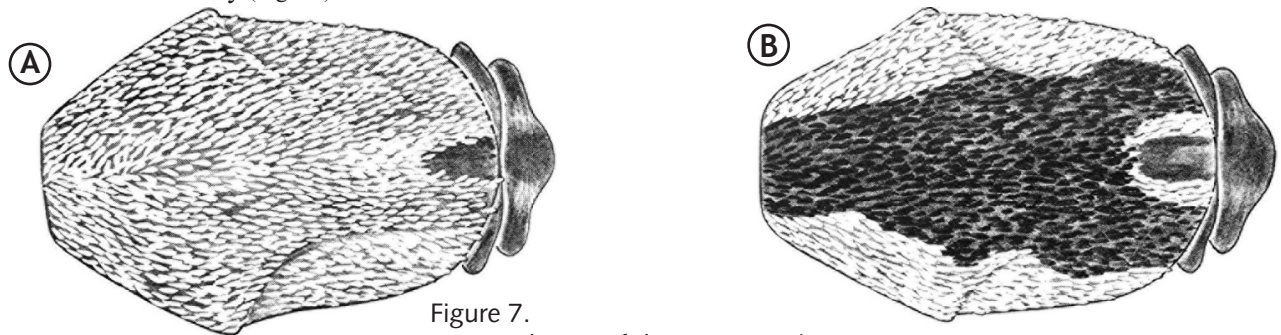


Figure 7.  
 A. Dorsal view of thorax - *Ps. johnstonii*  
 B. Dorsal view of thorax - *Ps. mathesoni*



- 8(6'). Scutum clothed with a scattered mix of dark brown and golden yellow scales (Fig. 8a); abdominal tergum I with purplish scales medially (Fig. 8b).....*Ps. ferox*
- 8'. Scutum with a broad median longitudinal stripe of dark scales, with pale yellow or grayish-white scales laterally (Fig. 8c); tergum I with pale scales medially (Fig. 8d).....9

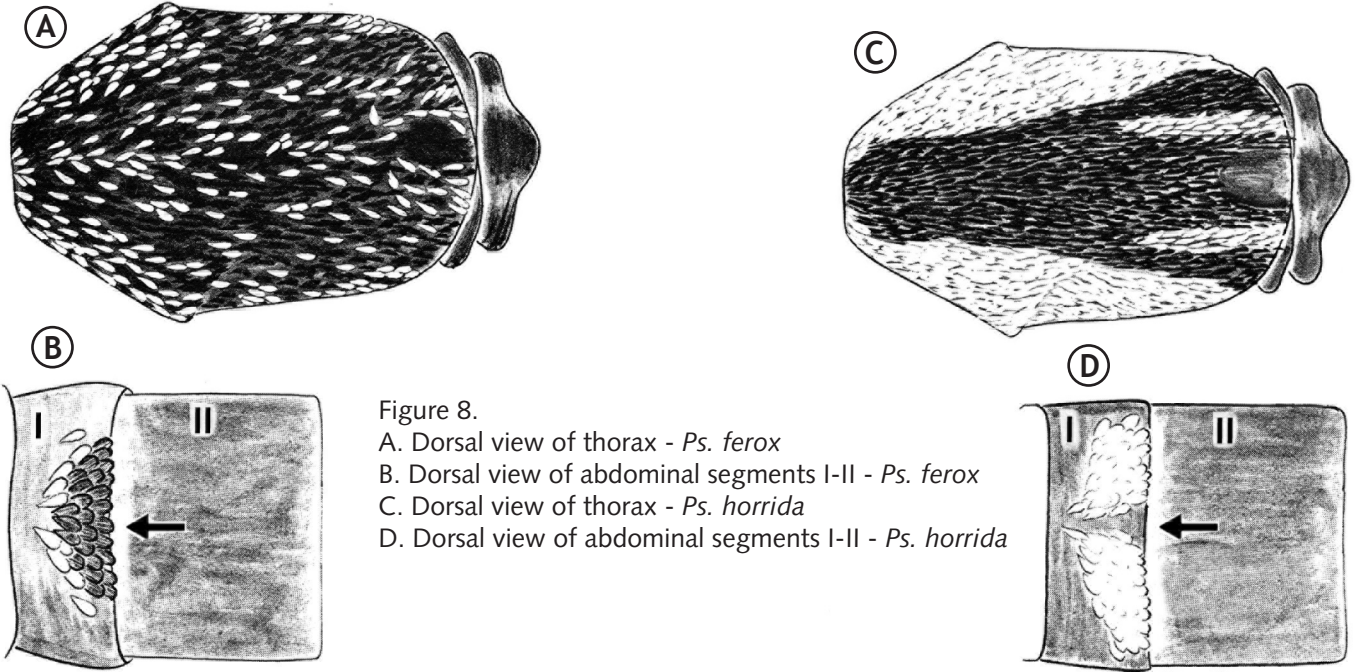
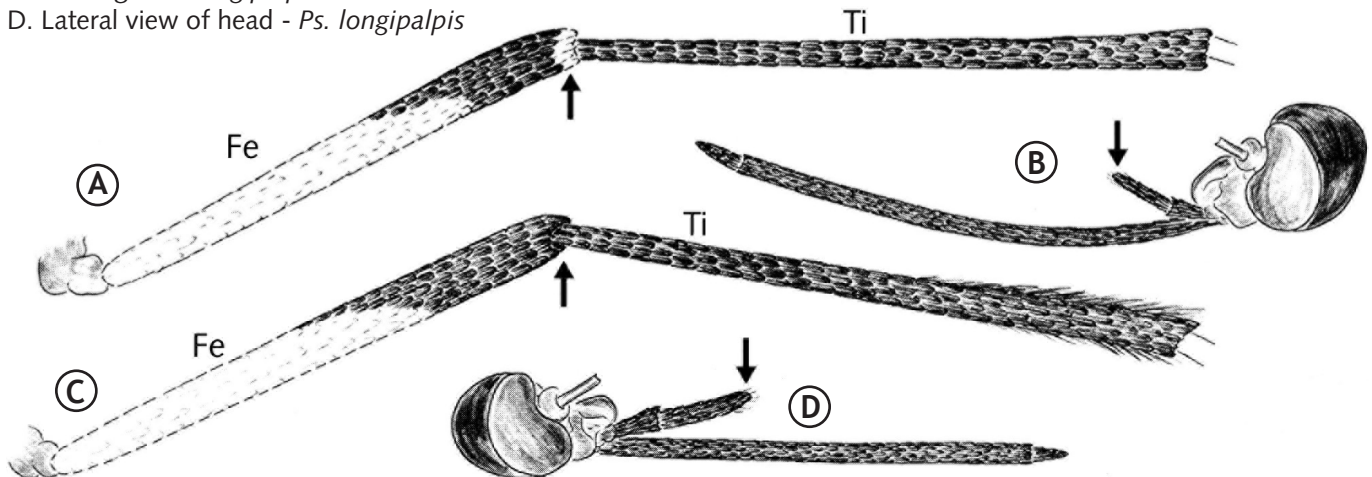


Figure 8.  
 A. Dorsal view of thorax - *Ps. ferox*  
 B. Dorsal view of abdominal segments I-II - *Ps. ferox*  
 C. Dorsal view of thorax - *Ps. horrida*  
 D. Dorsal view of abdominal segments I-II - *Ps. horrida*

- 9(8'). Pale knee spots present on femora (Fig. 9a); palpus less than 0.3 as long as proboscis (Fig. 9b).....*Ps. horrida*
- 9'. Pale knee spots absent on femora (Fig. 9c); palpus a little more than 0.3 as long as proboscis (Fig. 9d).....*Ps. longipalpis*

Figure 9.  
 A. Hindleg - *Ps. horrida*  
 B. Lateral view of head - *Ps. horrida*  
 C. Hindleg - *Ps. longipalpis*  
 D. Lateral view of head - *Ps. longipalpis*



**Culiseta Adults**

- 1. Dorsum of abdomen with distinct basal, pale bands (Fig. 1a); wing with pale and dark scales intermixed on anterior veins (Fig. 1b).....*Culiseta inornata*
- 1'. Dorsum of abdomen without basal, pale bands (Fig. 1c); wing scales entirely dark (Fig. 1d).....*Culiseta melanura*

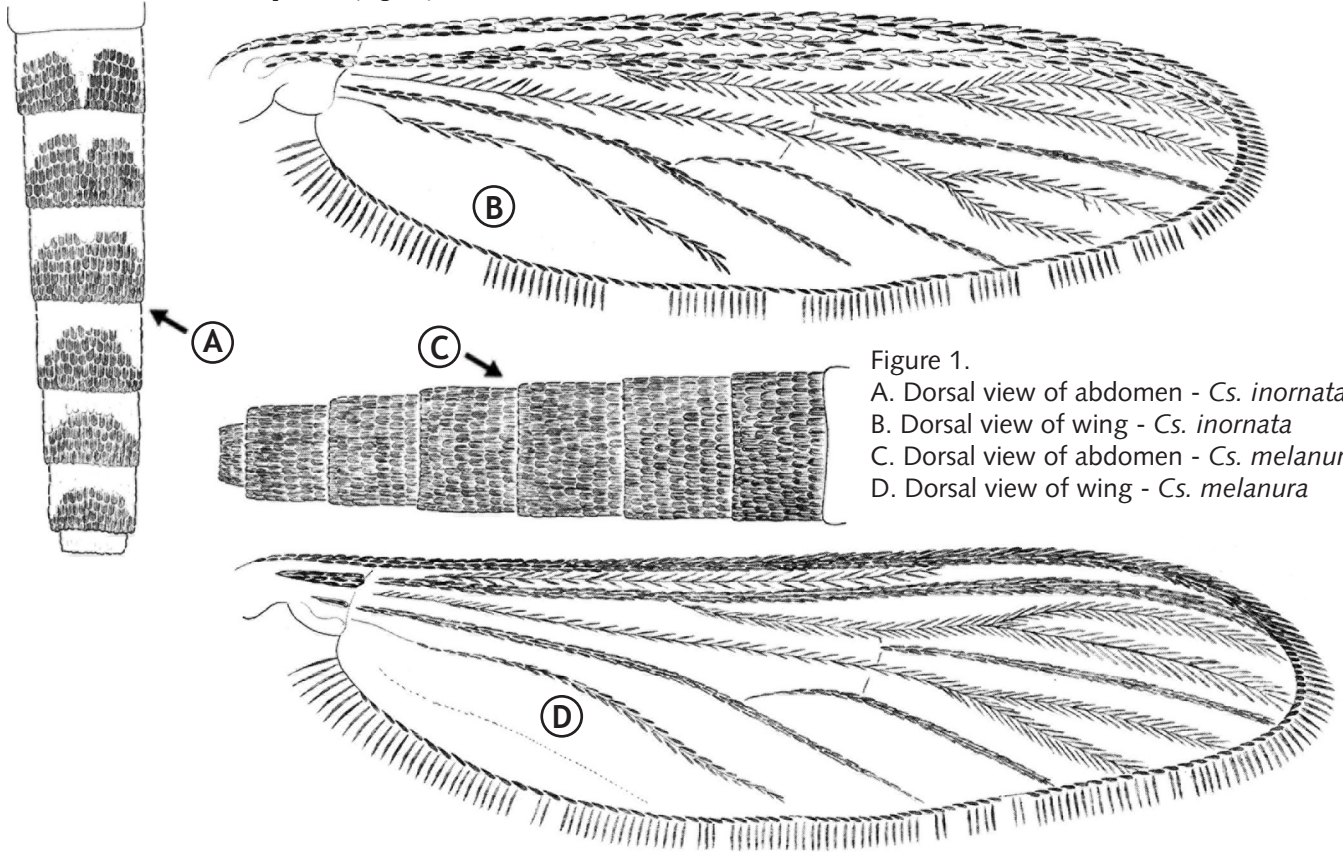


Figure 1.  
 A. Dorsal view of abdomen - *Cs. inornata*  
 B. Dorsal view of wing - *Cs. inornata*  
 C. Dorsal view of abdomen - *Cs. melanura*  
 D. Dorsal view of wing - *Cs. melanura*

**Mansonia Adults**

- 1. Apex of abdominal segment VII with row of short, dark spiniforms (Fig. 1a); ventral surface of proboscis mostly dark-scaled (Fig. 1b).....*Mansonia dyari*
- 1'. Apex of abdominal segment VII without spiniforms (Fig. 1c); ventral surface of proboscis with patch of pale scales (Fig. 1d).....*Mansonia titillans*

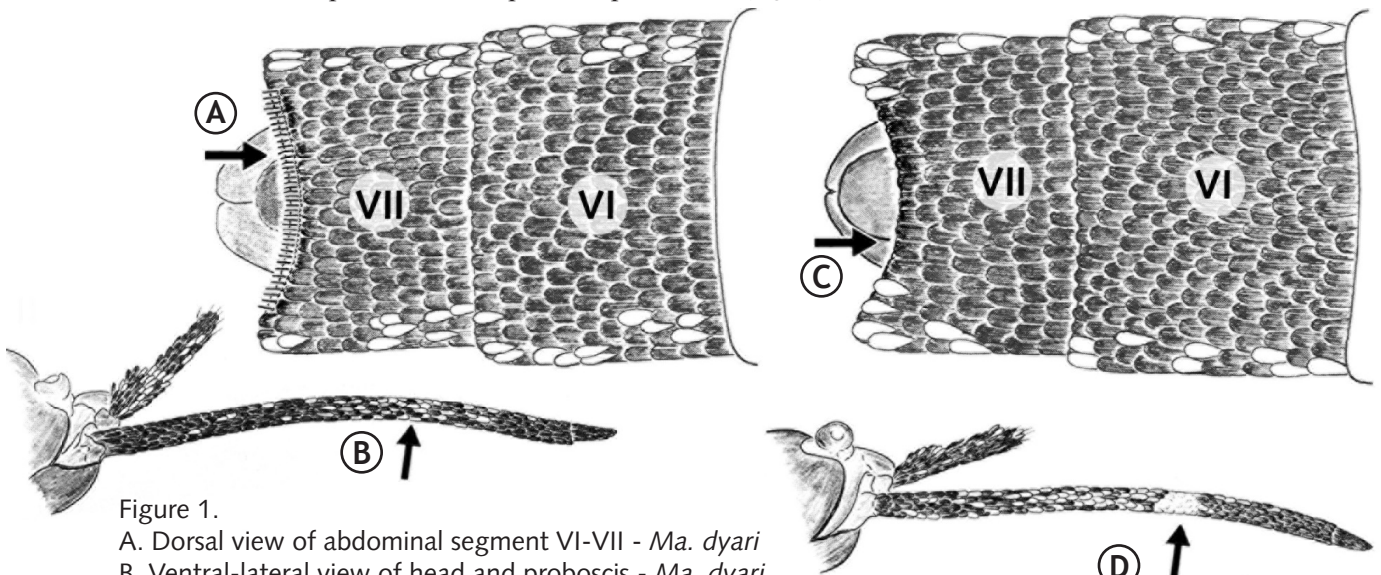


Figure 1.  
 A. Dorsal view of abdominal segment VI-VII - *Ma. dyari*  
 B. Ventral-lateral view of head and proboscis - *Ma. dyari*  
 C. Dorsal view of abdominal segment VI-VII - *Ma. titillans*  
 D. Ventral-lateral view of head and proboscis - *Ma. titillans*



## Orthopodomyia Adults

1. Lower mesokatepisternal setae 0-2 (Fig. 1a); base of wing vein  
 $R_{4+5}$  usually dark-scaled (Fig. 1b).....*Orthopodomyia alba*
- 1'. Lower mesokatepisternal setae 4 or more (Fig. 1c); base of wing  
vein  $R_{4+5}$  usually with patch of pale scales (Fig. 1d).....*Orthopodomyia signifera*

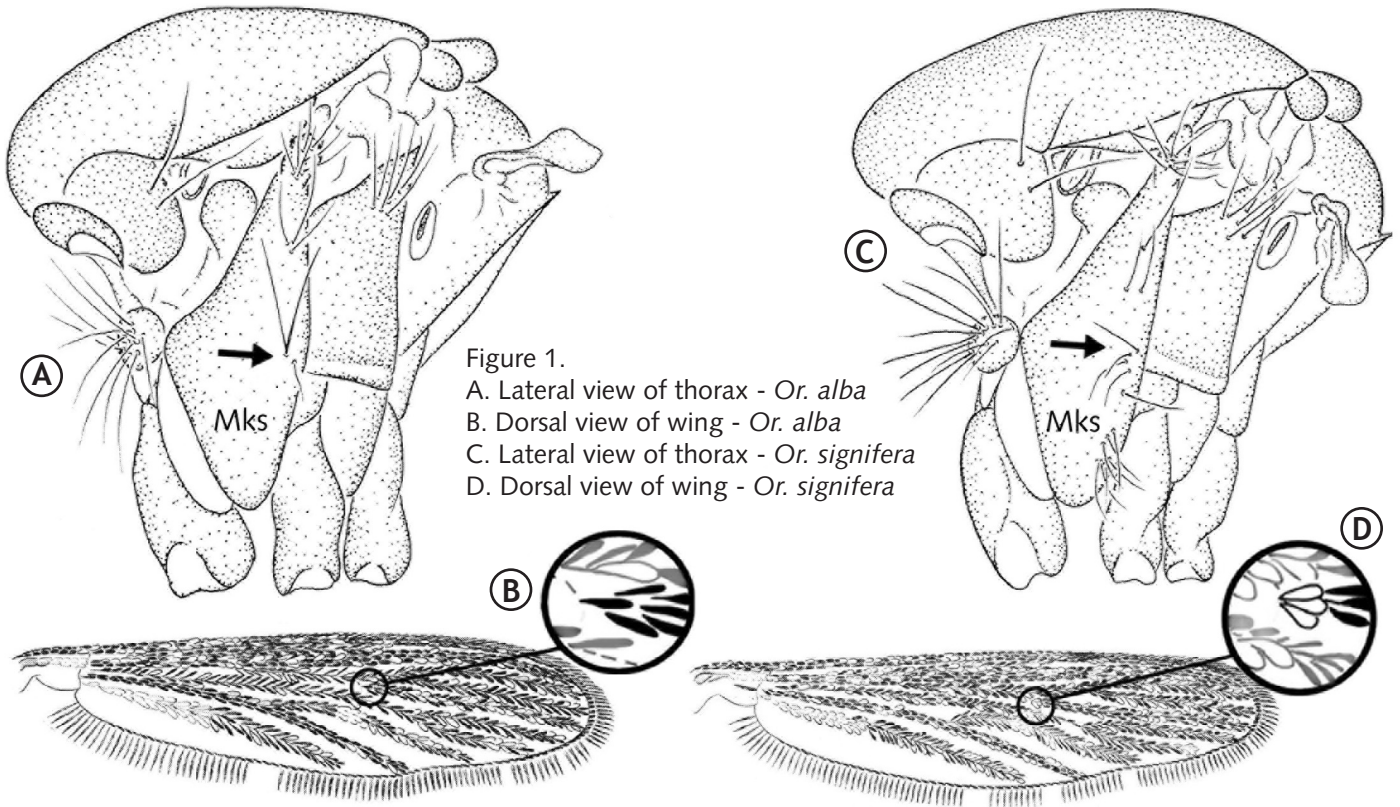


Figure 1.  
A. Lateral view of thorax - *Or. alba*  
B. Dorsal view of wing - *Or. alba*  
C. Lateral view of thorax - *Or. signifera*  
D. Dorsal view of wing - *Or. signifera*

## Uranotaenia Adults

1. Hindtarsomeres 4 and 5, and apical part of 3, pale-scaled (Fig. 1a).....*Uranotaenia lowii*
- 1'. Hindtarsomeres all dark-scaled (Fig. 1b).....*Uranotaenia sapphirina*

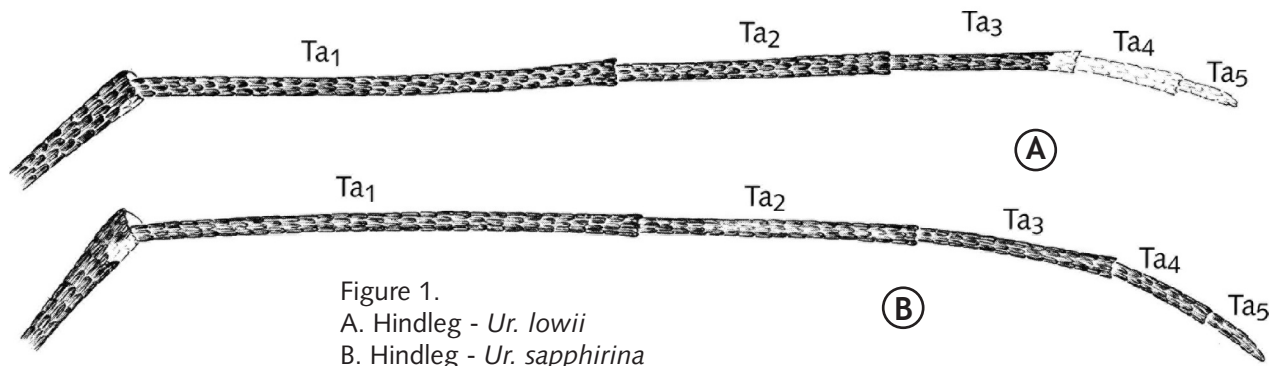
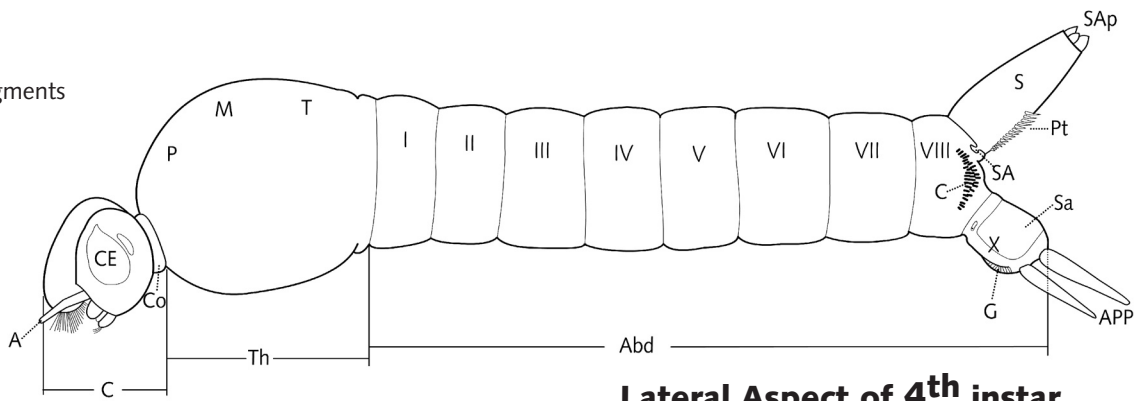
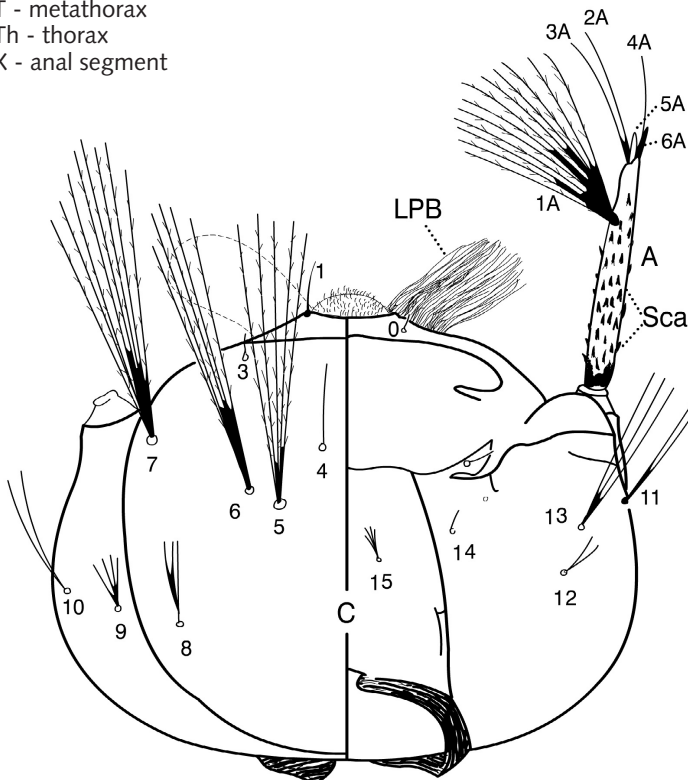


Figure 1.  
A. Hindleg - *Ur. lowii*  
B. Hindleg - *Ur. sapphirina*

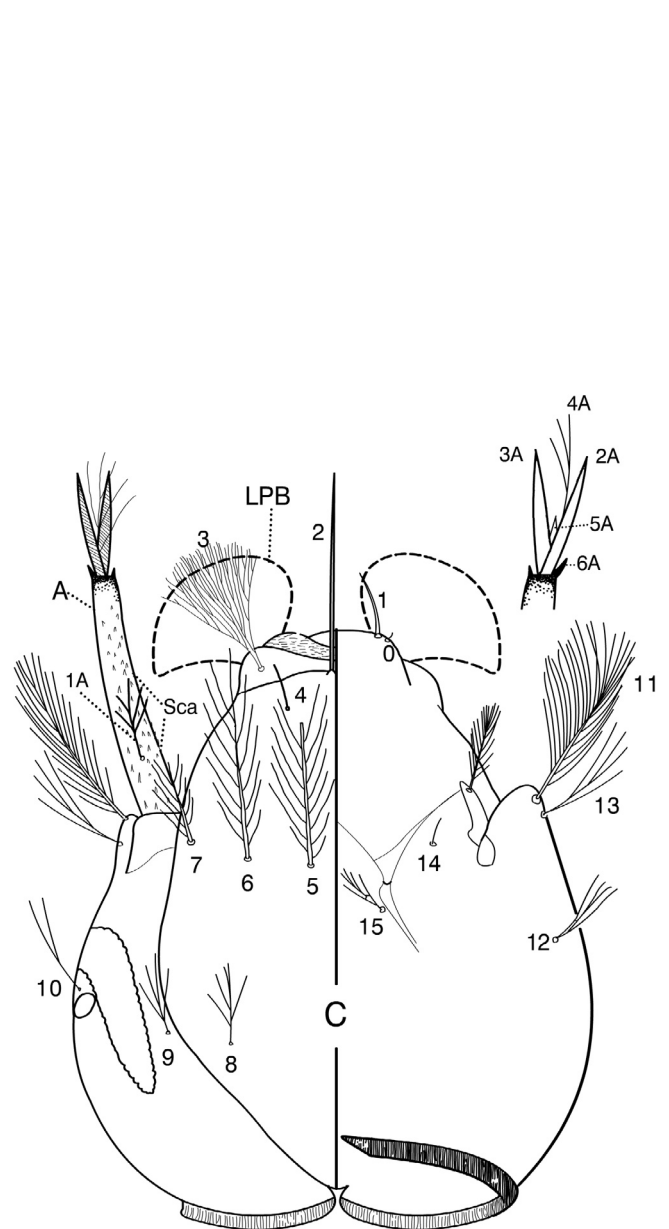
- A - antenna
- Abd - abdomen
- I-VIII - abdominal segments
- APP - anal papillae
- c - comb plate
- C - head
- CE - compound eye
- Co - collar
- G - grid
- M - mesothorax
- P - prothorax
- Pt - pecten
- S - siphon
- Sa - saddle
- SA - acus of siphon
- SAP - spiracular apparatus
- T - metathorax
- Th - thorax
- X - anal segment



**Lateral Aspect of 4<sup>th</sup> instar  
Culicine larva**



**Culicine**



**Anopheline**

**Anatomy of 4<sup>th</sup> instar  
larval head**

- C - head
- 0-C - outer preclypeal hair
- 1-C - inner preclypeal hair
- 2-C - inner clypeal hair
- 3-C - outer clypeal hair
- 4-C - postclypeal hair
- 5-C - upper head hair
- 6-C - lower head hair
- 7-C - preantennal hair
- 8-C - sutural hair
- 9-C - transsutural hair
- 10-C - supraorbital hair
- 11-C - basal hair
- 12-C - infraorbital hair
- 13-C - subbasal hair
- 14-C - postmaxillary hair
- 15-C - submental hair

- A - antenna
- 1-A - antennal tuft
- 2-A - dorsal sabre
- 3-A - ventral sabre
- 4-A - terminal antenna hair
- 5-A - papilla
- 6-A - fingerlike process

- LPB - lateral palatal brush
- Sca - scape (shaft) of antenna

Note: in drawings with a split view, the left half represents the dorsal aspect, and the right half represents the ventral aspect.

P - prothorax

0-P - accessory dorsal hair

1- to 3-P - shoulder hairs

4- to 7-P - dorsal hairs

8-P - dorsolateral hair

9- to 12-P - prothoracic pleural hairs

13-P - ventrolateral hair

14-P - median ventral hair

M - mesothorax

1- to 7-M - dorsal hairs

8-M - dorsolateral hair

9- to 12-M - mesothoracic pleural hairs

13-M - ventrolateral hair

14-M - median ventral hair

## Anatomy of 4<sup>th</sup> instar larval thorax

T - metathorax

1- to 7-T - dorsal hairs

8-T - dorsolateral hair

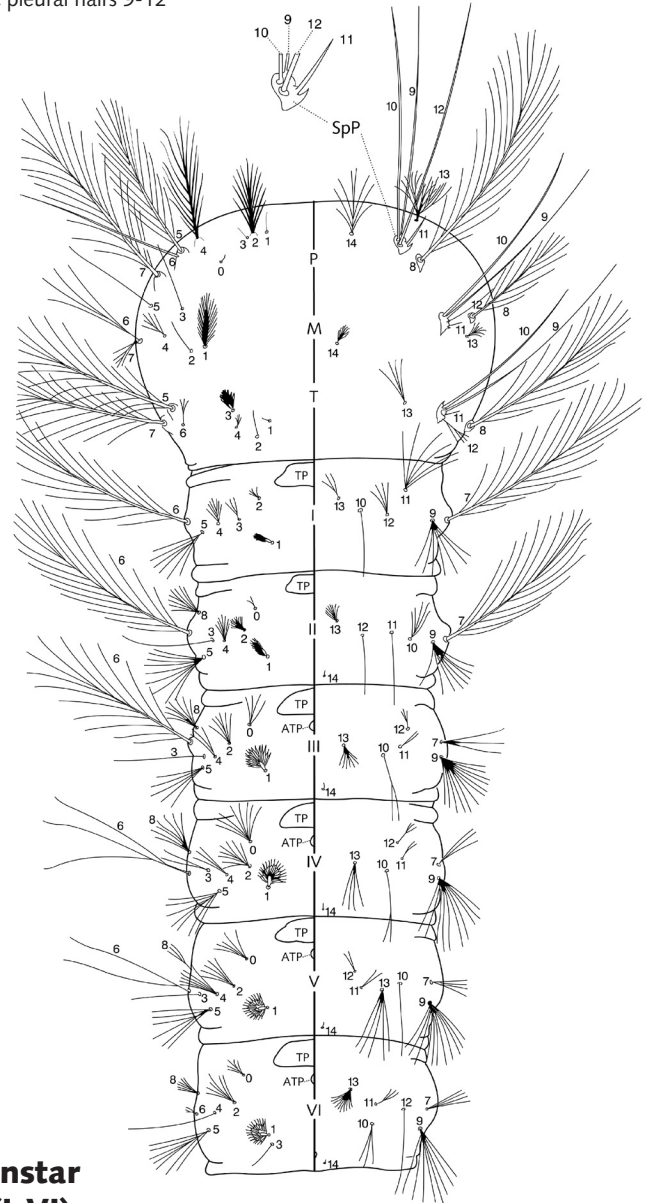
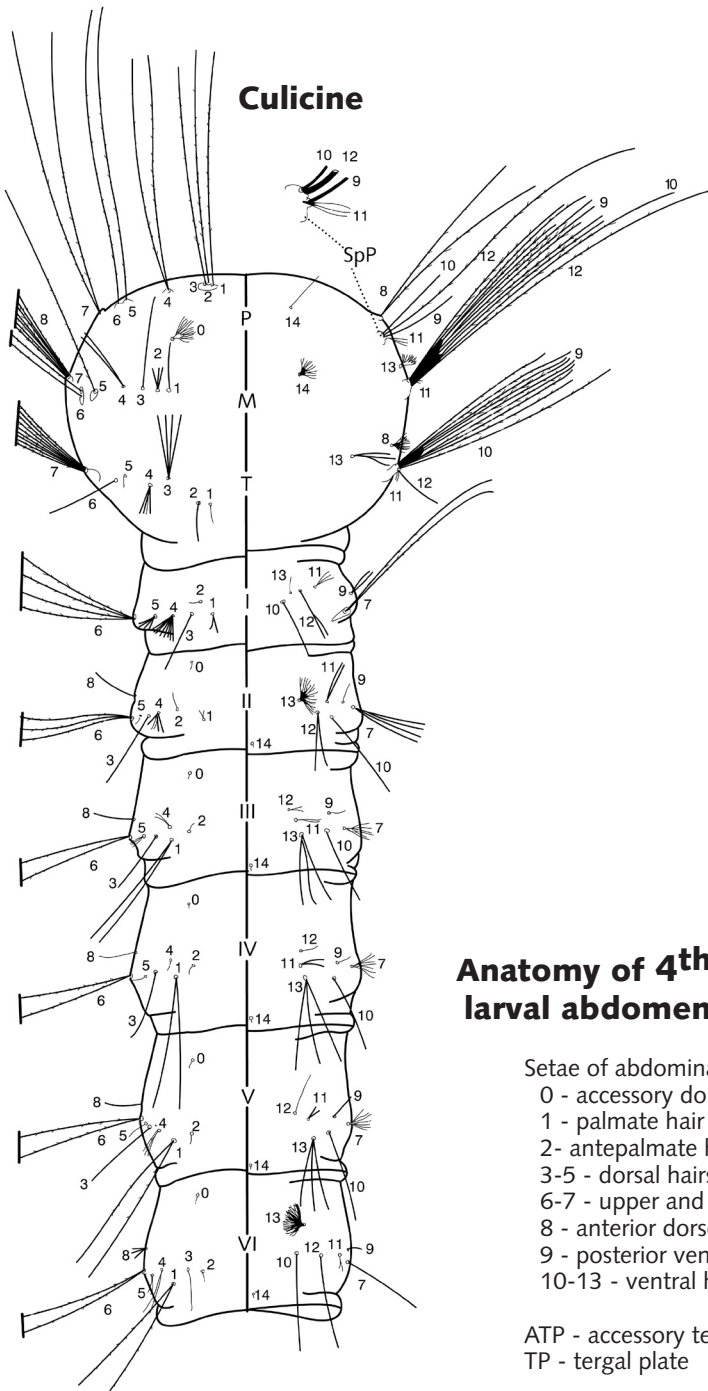
9- to 12-T - metathoracic pleural hairs

13-T - ventrolateral hair

14-T - median ventral hair

SpP - Setal support plate of thoracic pleural hairs 9-12

## Anopheline



## Anatomy of 4<sup>th</sup> instar larval abdomen (I-VI)

Setae of abdominal segments I-VII

0 - accessory dorsal hair (absent on segment I)

1 - palmate hair

2 - antepalmate hair

3-5 - dorsal hairs

6-7 - upper and lower lateral hairs

8 - anterior dorsolateral hair

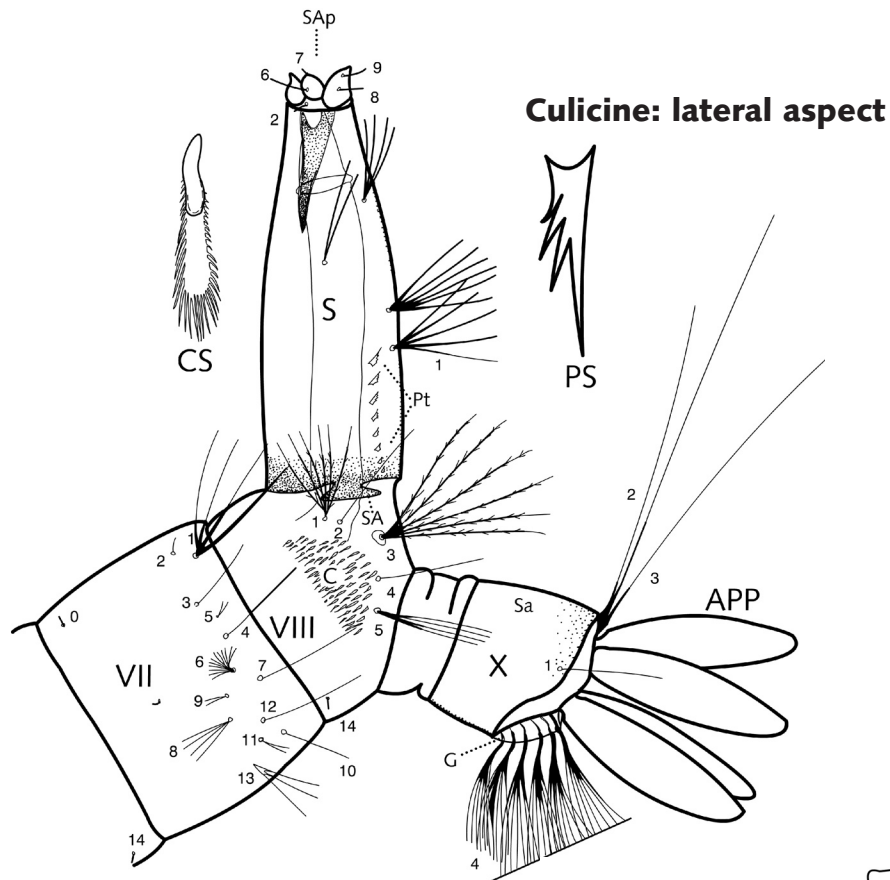
9 - posterior ventrolateral hair

10-13 - ventral hairs

ATP - accessory tergal plate

TP - tergal plate





**Culicine: lateral aspect**

- APP - anal papillae
- ATP - accessory tergal plate
- C - comb
- CS - comb scale
- G - grid
- PS - pecten spine
- Pt - pecten
- S - Siphon
- SA - acus of siphon
- Sa - saddle
- SAP - spiracular apparatus
- TP - tergal plate
- X - anal segment

**Anatomy of 4<sup>th</sup> instar larval abdomen (VII-X)**

**Setae of segment VIII**

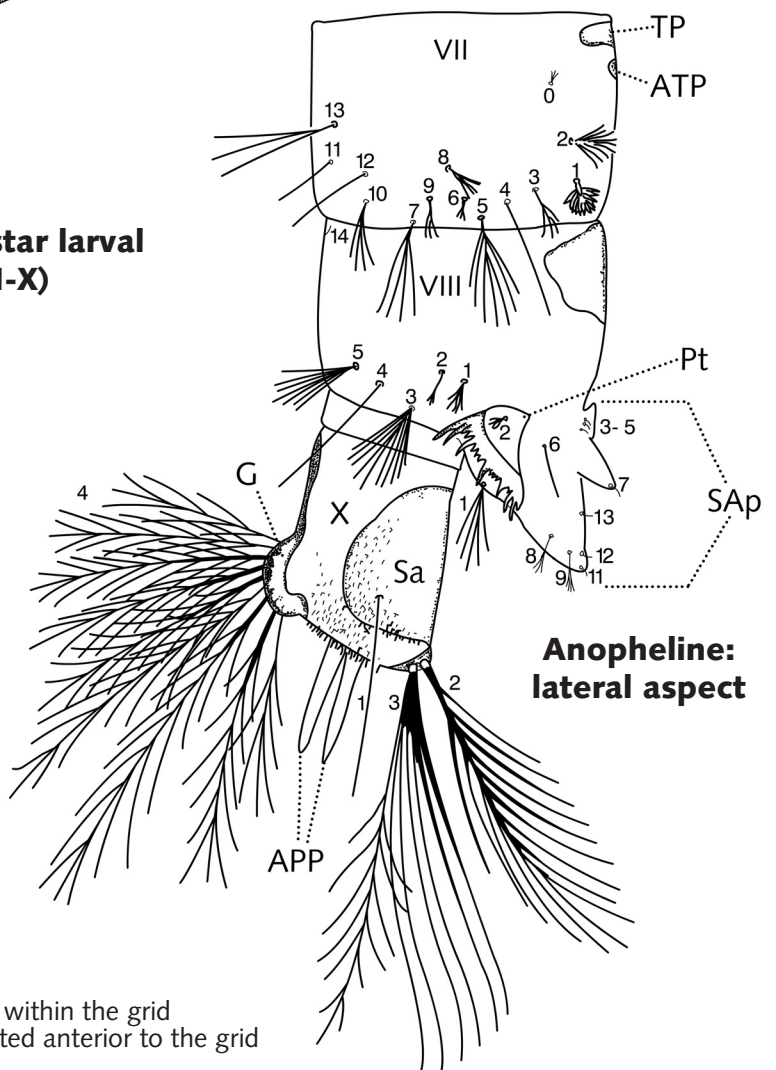
- 1 - first pentad
- 2 - second pentad
- 3 - third pentad
- 4 - fourth pentad
- 5 - fifth pentad

**Setae of segment S (SAP for anopheles)**

- 1-S - postspiracular hair
- 2-S - dorsolateral hair
- 6-S - proximal dorsal valve hair
- 7-S - distal dorsal valve hair
- 8-S - proximal ventral valve hair
- 9-S - distal ventral valve hair

**Setae of segment X**

- 1-X - saddle hair
- 2-X - upper caudal hair of dorsal brush
- 3-X - lower caudal hair of dorsal brush
- 4-X - ventral brush
- cratal setae - individual elements of 4-X inserted within the grid
- precratal setae - individual elements of 4-X inserted anterior to the grid



**Anopheline: lateral aspect**



Larval Genera

- 1. Respiratory siphon absent; at least some abdominal terga with seta 1 palmate (Fig. 1a).....*Anopheles*
- 1'. Respiratory siphon present; seta 1 on abdominal terga never palmate (Fig. 1b).....2

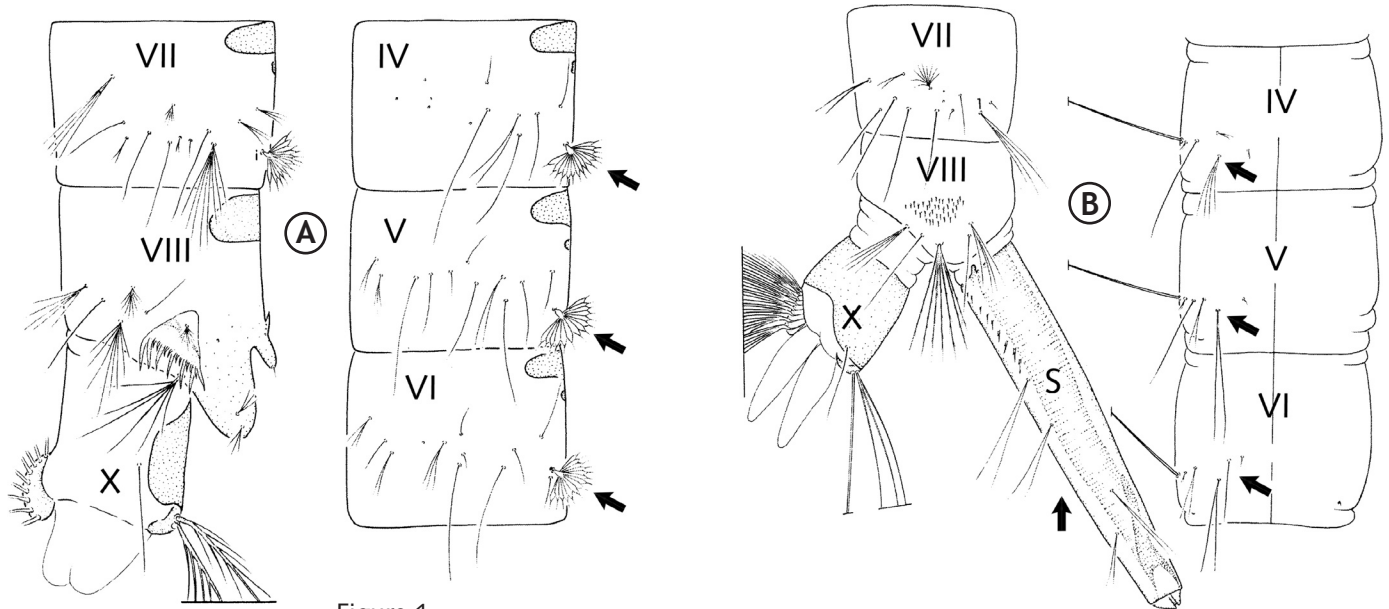


Figure 1.  
 A. Lateral view of abdominal segments IV-X - *An. quadrimaculatus*  
 B. Lateral view of abdominal segments IV-X - *Cx. pipiens*

- 2(1'). Siphon attenuated apically, with dorsal saw, adapted for piercing plant tissue (Fig. 2a).....3
- 2'. Siphon not attenuated apically, not adapted for piercing plant tissue (Fig. 2b).....4

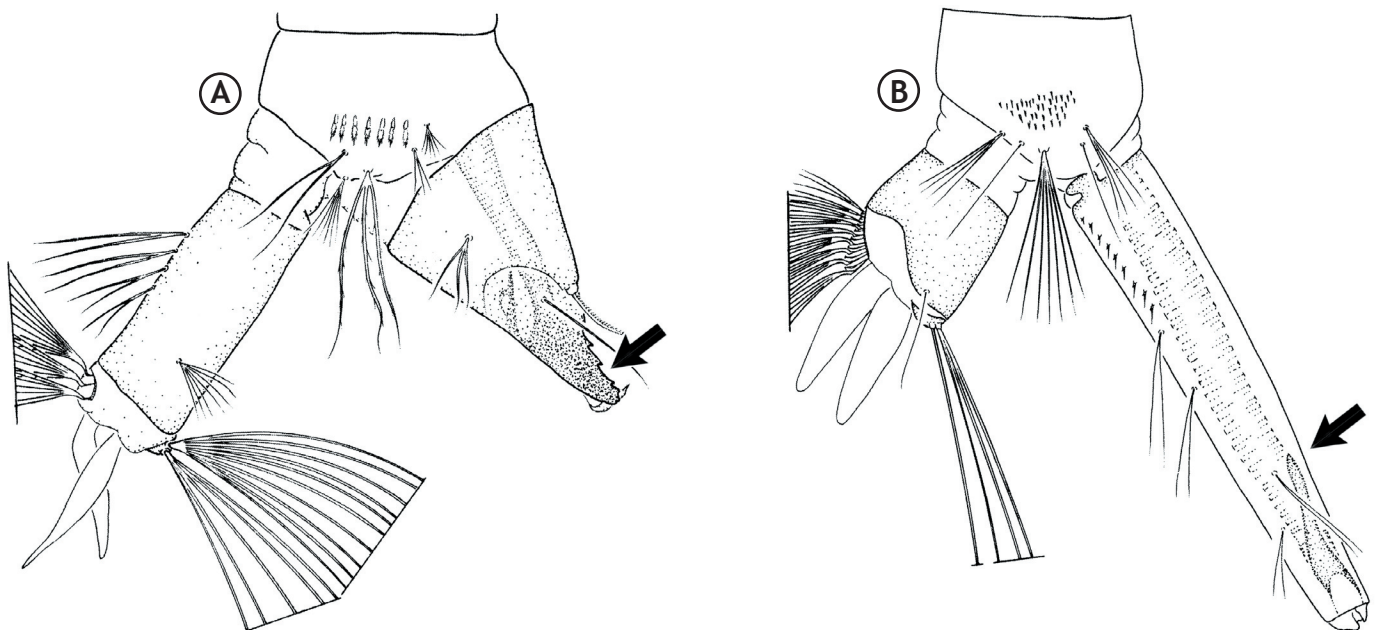


Figure 2.  
 A. Lateral view of abdominal segments VIII-X - *Ma. dyari*  
 B. Lateral view of abdominal segments VIII-X - *Cx. pipiens*

- 3(2). Seta 2, 3-A as long as antennal flagellum, or longer (Fig. 3a);  
 saddle bears three or four robust, precratal setae (Fig. 3b).....*Mansonia*
- 3'. Setae 2, 3-A much shorter than antennal flagellum (Fig. 3c);  
 saddle without precratal setae, or if present, no more  
 than two thin setae posteriorly (Fig. 3d).....*Coquillettidia perturbans*

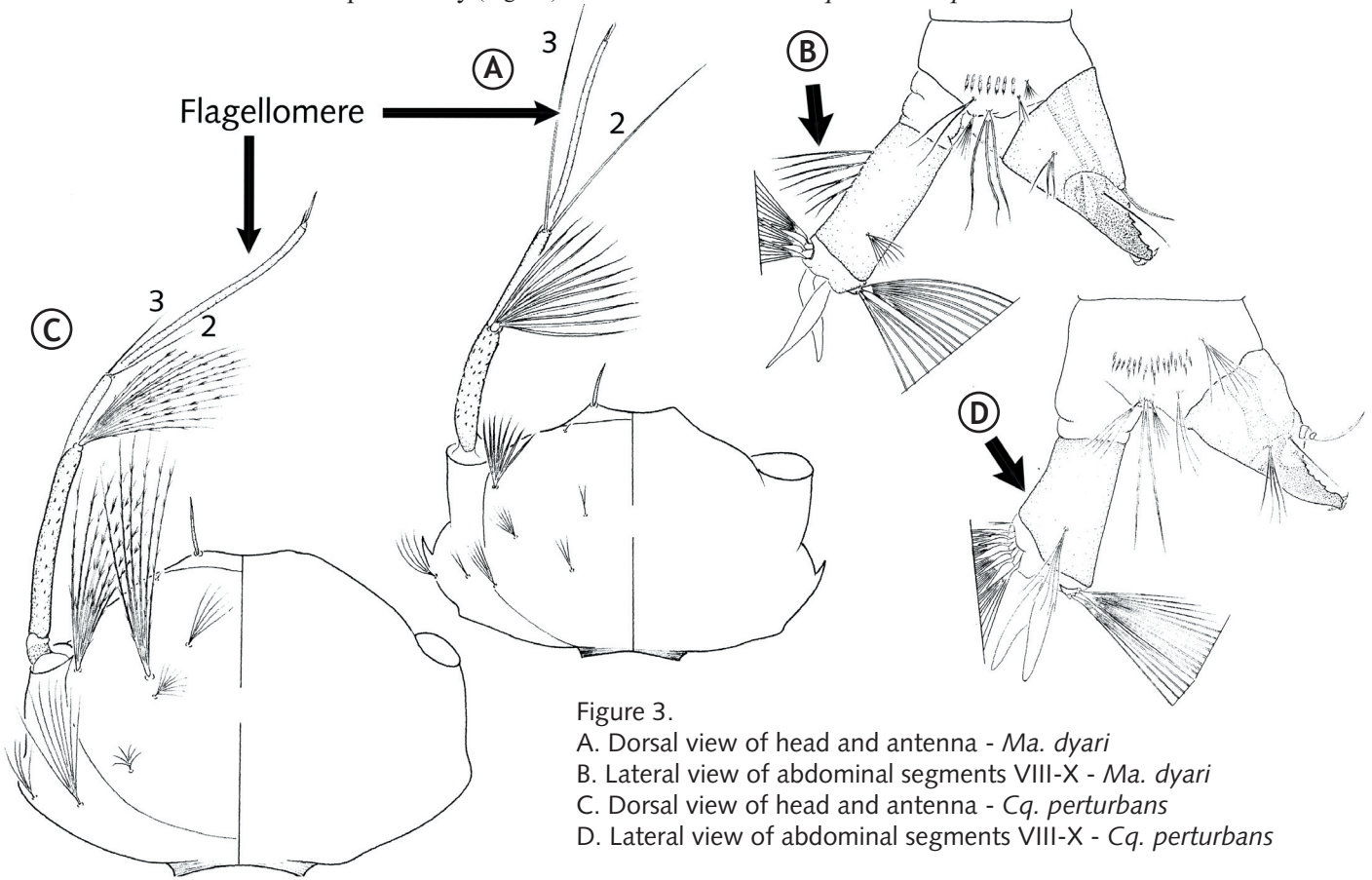


Figure 3.  
 A. Dorsal view of head and antenna - *Ma. dyari*  
 B. Lateral view of abdominal segments VIII-X - *Ma. dyari*  
 C. Dorsal view of head and antenna - *Cq. perturbans*  
 D. Lateral view of abdominal segments VIII-X - *Cq. perturbans*

- 4(2'). Siphon without pecten spines (Fig. 4a).....5
- 4'. Siphon with pecten spines (Fig. 4b).....7

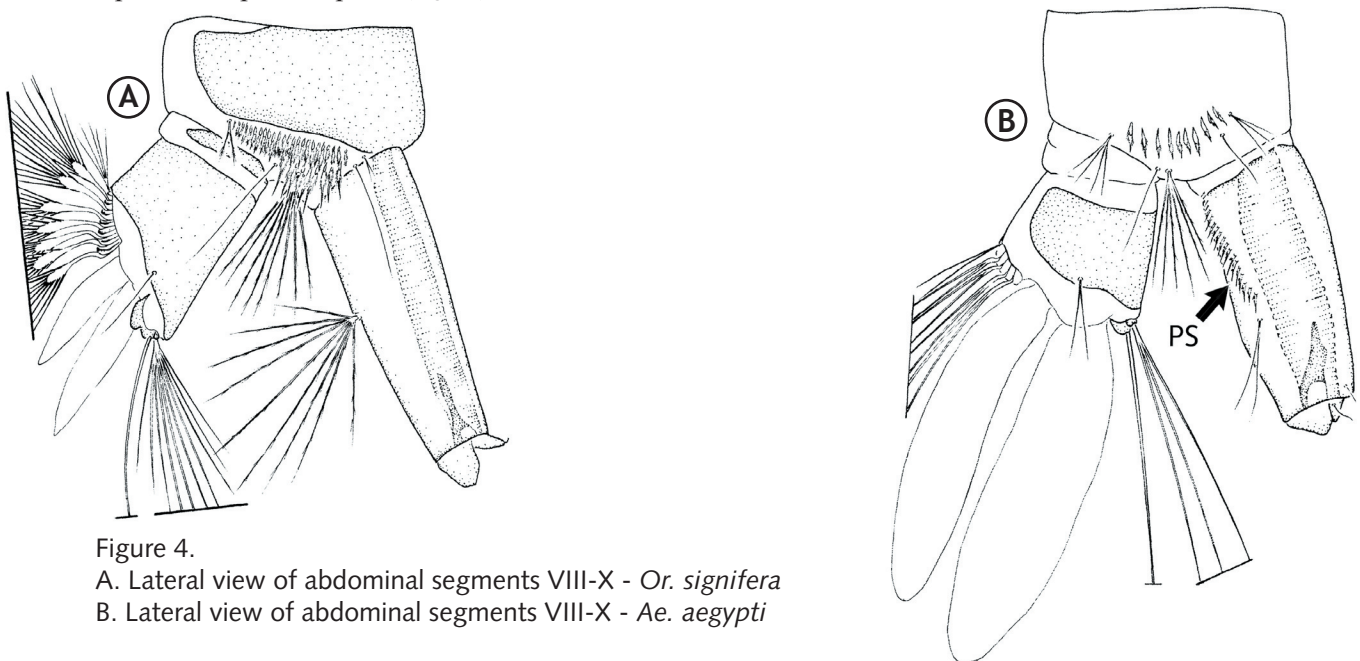


Figure 4.  
 A. Lateral view of abdominal segments VIII-X - *Or. signifera*  
 B. Lateral view of abdominal segments VIII-X - *Ae. aegypti*

- 5(4). Lateral palatal brush composed of few, stout, curved rods (Fig. 5a);  
 comb scales absent; large, dark larva (Fig. 5b).....*Toxorhynchites rutilus*
- 5'. Lateral palatal brush composed of numerous thin, some-  
 times pectinate, filaments (Fig. 5c); with comb scales (Fig. 5d).....6

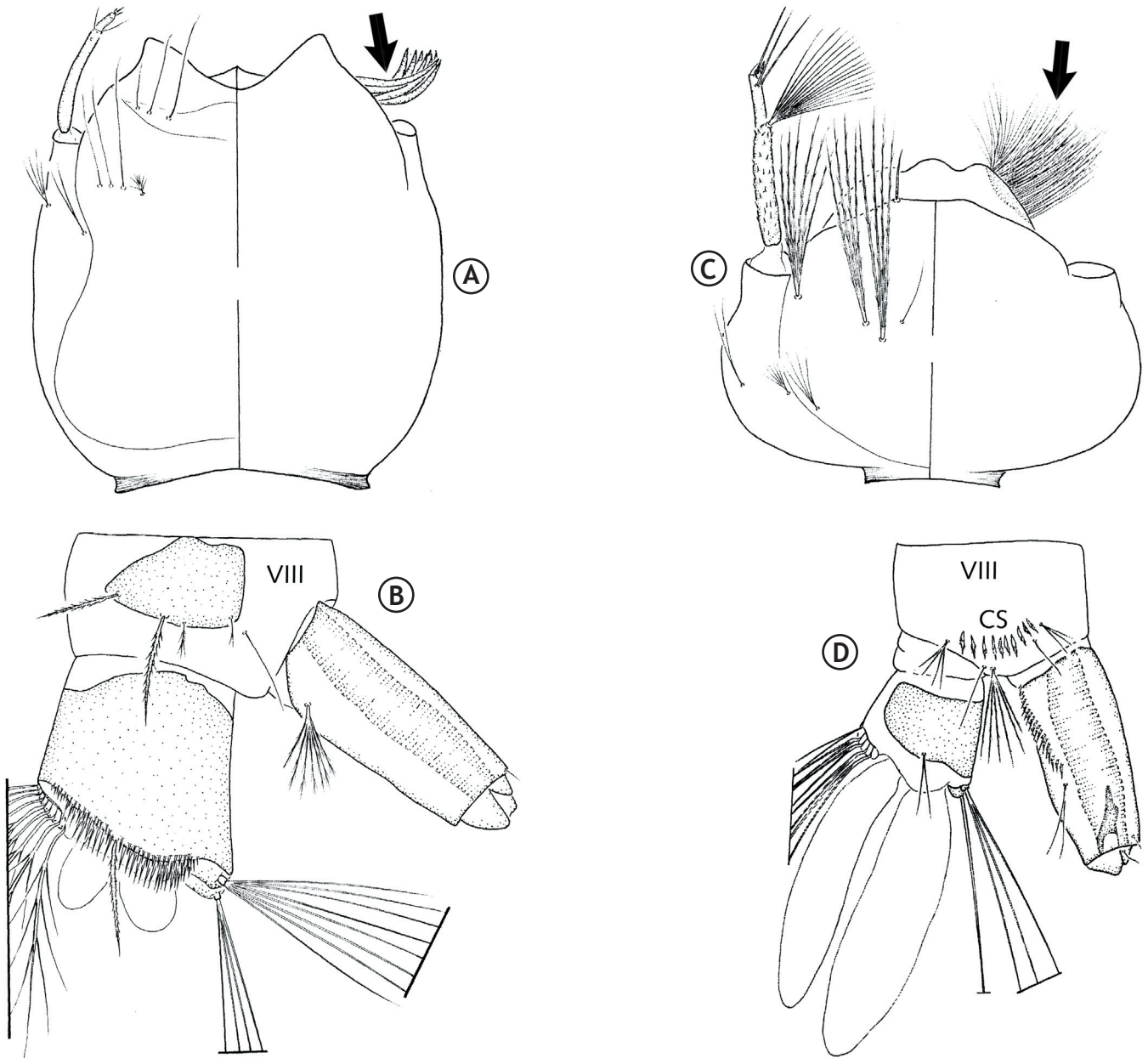


Figure 5.  
 A. Dorsal view of head - *Tx. rutilus*  
 B. Lateral view of abdominal segments VIII-X - *Tx. rutilus*  
 C. Dorsal view of head - *Cx. quinquefasciatus*  
 D. Lateral view of abdominal segments VIII-X - *Ae. aegypti*



- 6(5'). Segment X without median ventral brush, seta 4-X a pair of ventroposterolateral setae; comb scales in single row (Fig. 6a).....*Wyeomyia*
- 6'. Seta 4-X forms a well developed median, ventral brush; comb scales in two rows (Fig. 6b).....*Orthopodomyia*

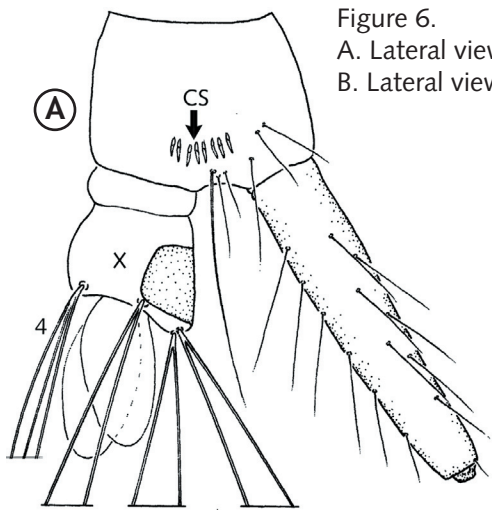
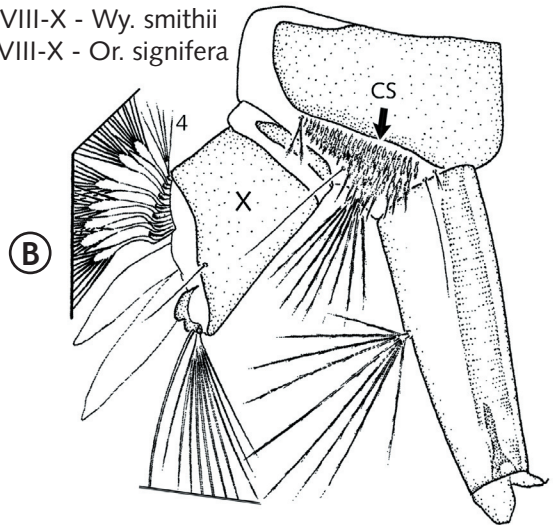


Figure 6.  
A. Lateral view of abdominal segments VIII-X - *Wy. smithii*  
B. Lateral view of abdominal segments VIII-X - *Or. signifera*



- 7(4'). Segment VIII with large, lateral comb plate bearing comb scales (Fig. 7a); head longer than wide; upper and lower frontal head hairs 5 and 6 stout and spinose (Fig. 7b).....*Uranotaenia*
- 7'. Segment VIII without comb plate (if present, small) (Fig. 7c); head wider than long; head hairs 5 and 6 not spinose (Fig. 7d).....8

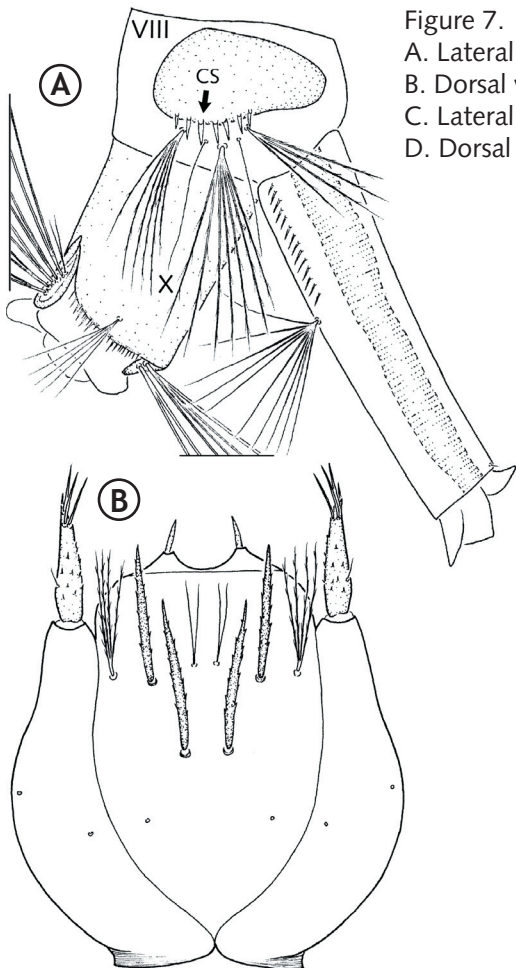
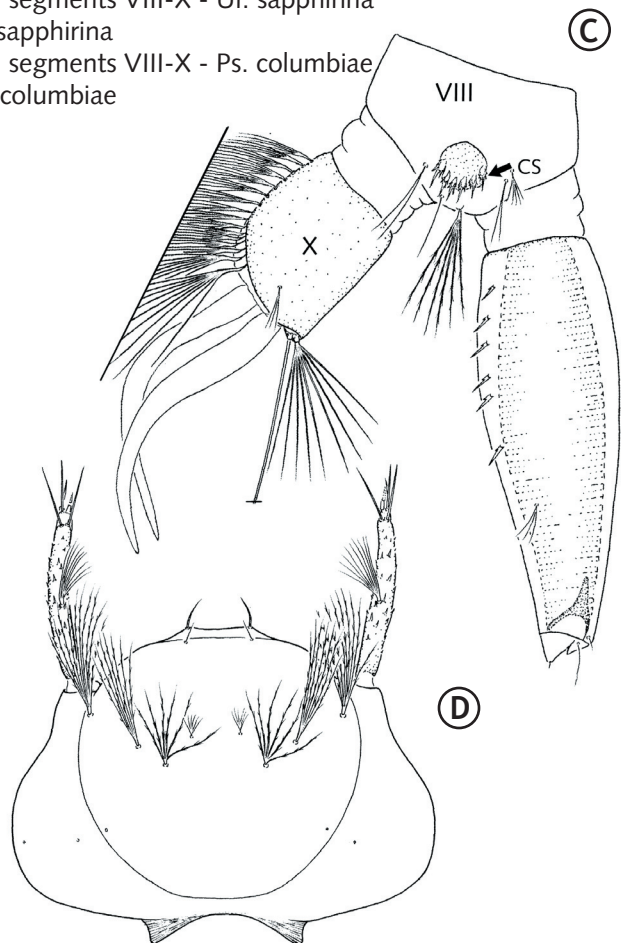


Figure 7.  
A. Lateral view of abdominal segments VIII-X - *Ur. sapphirina*  
B. Dorsal view of head - *Ur. sapphirina*  
C. Lateral view of abdominal segments VIII-X - *Ps. columbiae*  
D. Dorsal view of head - *Ps. columbiae*



- 8(7). Head capsule widest near level of bases of antennae (Fig. 8a);  
 segment X with dorsal and ventral sclerotized plates (Fig. 8b).....*Deinocerites cancer*
- 8'. Head capsule widest in posterior 0.5 (Fig. 8c); segment X with  
 single sclerotized saddle (Fig. 8d).....9

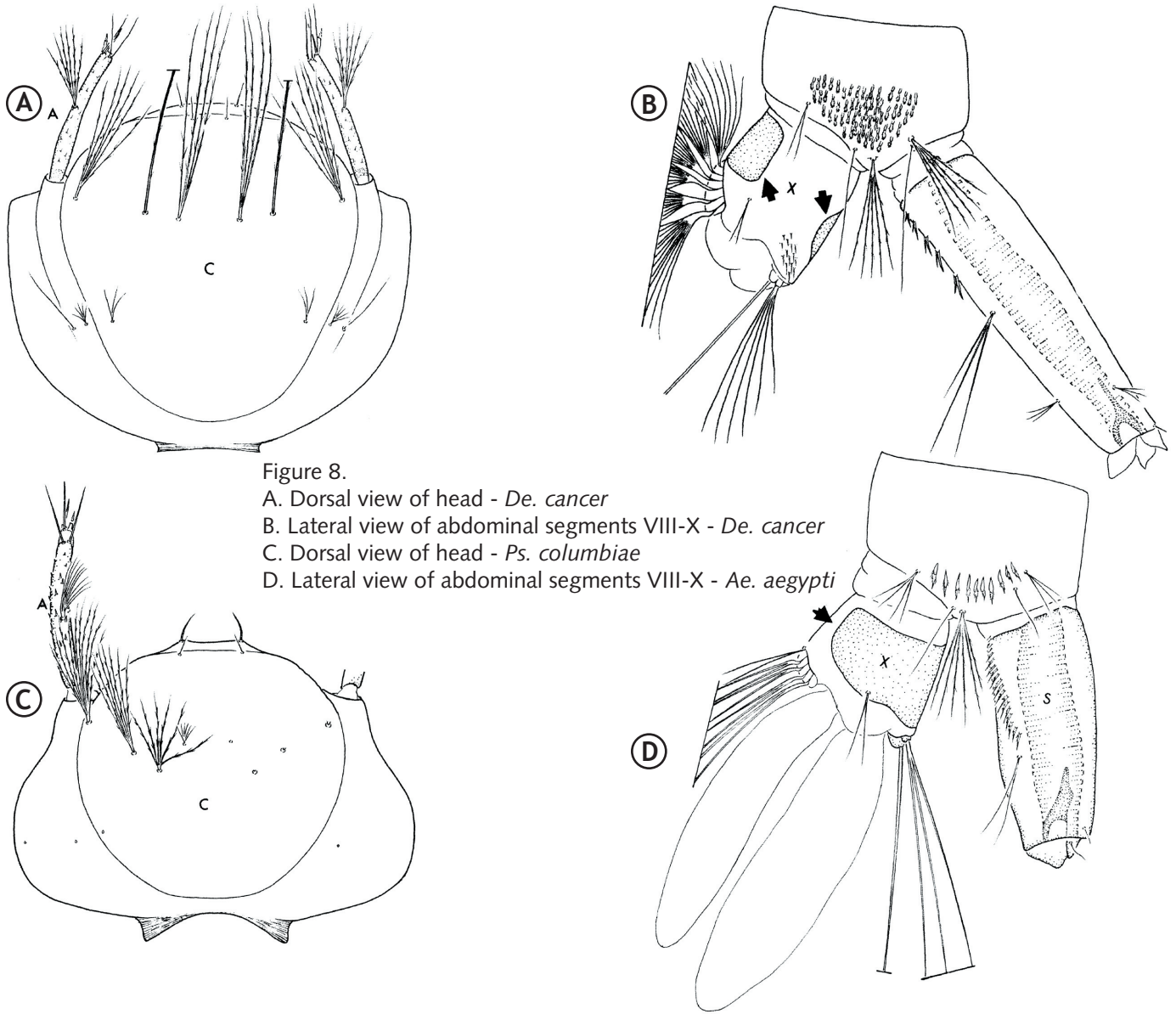


Figure 8.  
 A. Dorsal view of head - *De. cancer*  
 B. Lateral view of abdominal segments VIII-X - *De. cancer*  
 C. Dorsal view of head - *Ps. columbiae*  
 D. Lateral view of abdominal segments VIII-X - *Ae. aegypti*

- 9(8'). Siphon with at least a basal pair of ventral setae (Fig. 9a).....*Culiseta*  
 9'. Siphon with setae elsewhere, not ventrally near base (Fig. 9b).....10

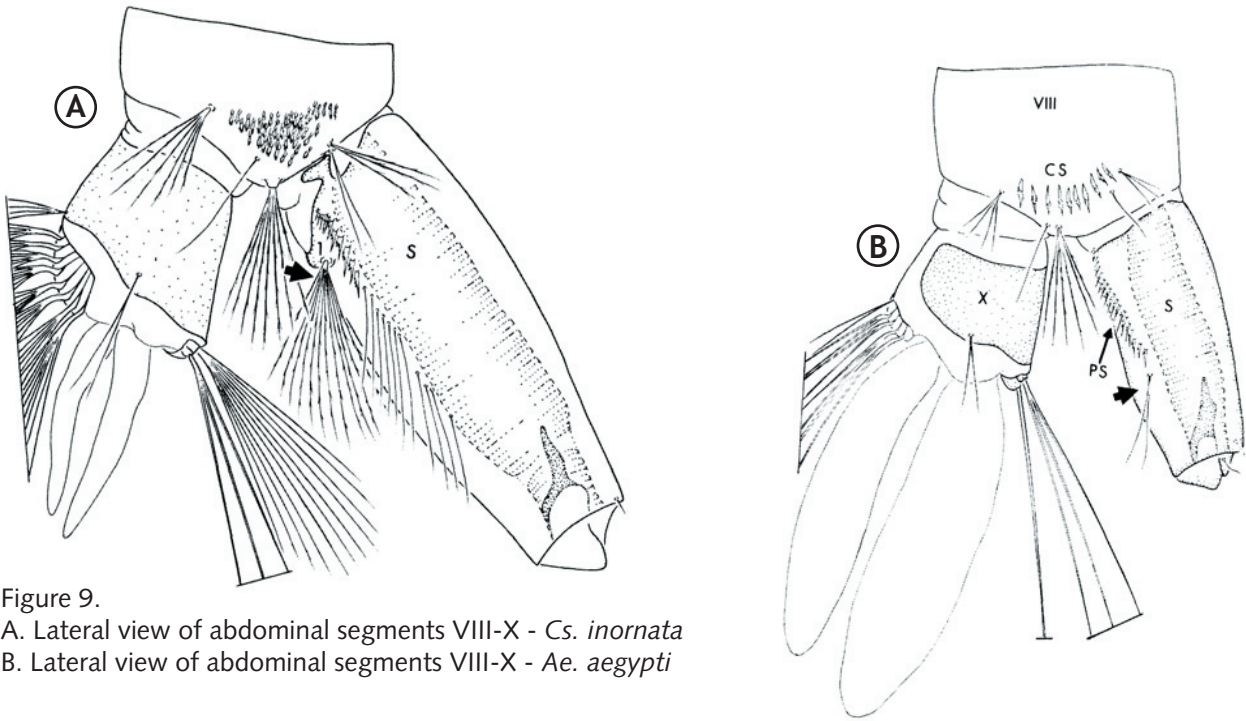


Figure 9.  
 A. Lateral view of abdominal segments VIII-X - *Cs. inornata*  
 B. Lateral view of abdominal segments VIII-X - *Ae. aegypti*

- 10(9'). Siphon with three or more pairs of setae (Fig. 10a).....*Culex*  
 10'. Siphon with but one pair of setae (Fig. 10b).....11

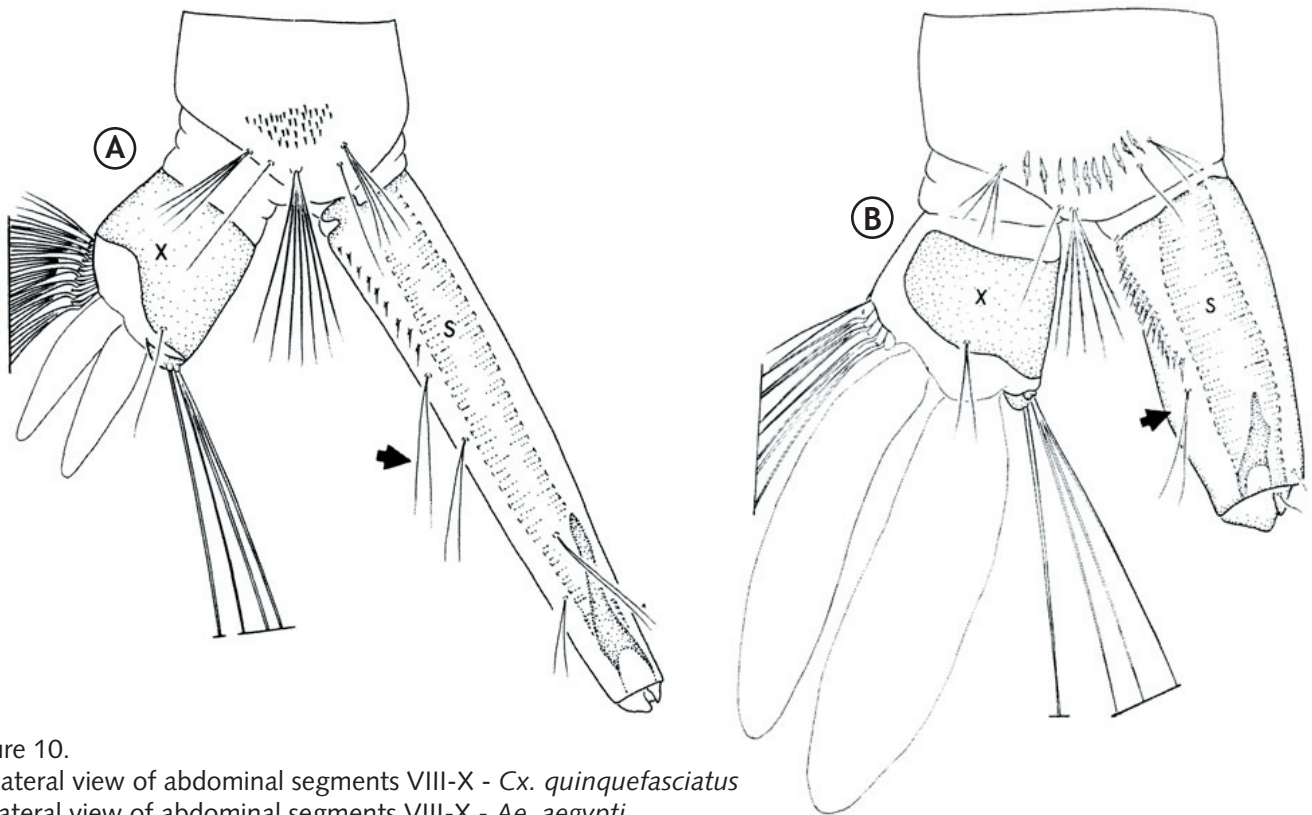


Figure 10.  
 A. Lateral view of abdominal segments VIII-X - *Cx. quinquefasciatus*  
 B. Lateral view of abdominal segments VIII-X - *Ae. aegypti*



- 11(10'). Saddle completely encircling segment X, pierced along midventral line by row of precratal setal tufts (Fig. 11a).....*Psorophora*
- 11'. Saddle usually not encircling segment X (Fig. 11b) but if so, setal tufts of ventral brush are confined posterior to it (Fig. 11c).....*Ochlerotatus* and *Aedes*

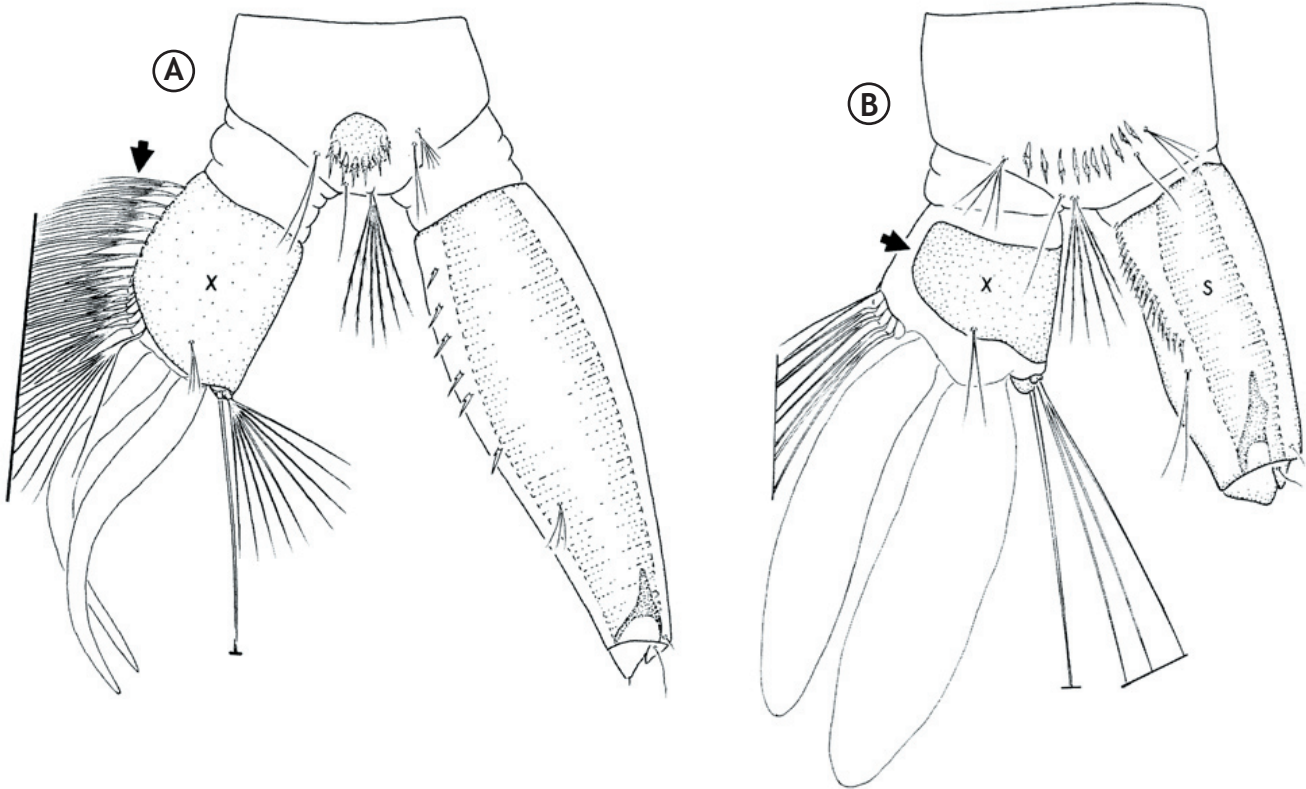
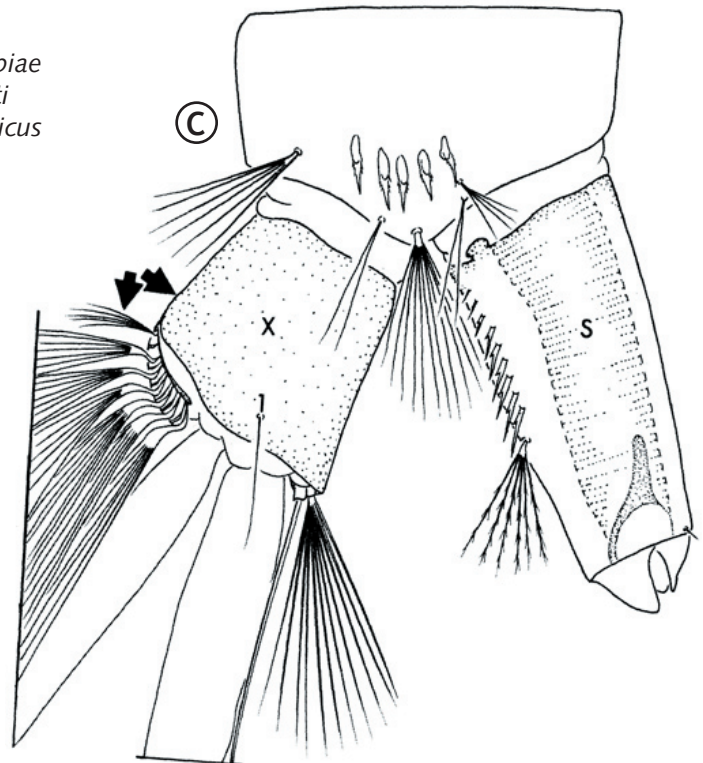


Figure 11.  
 A. Lateral view of abdominal segments VIII-X - *Ps. columbiae*  
 B. Lateral view of abdominal segments VIII-X - *Ae. aegypti*  
 C. Lateral view of abdominal segments VIII-X - *Oc. atlanticus*



Anopheles Larvae

1. Outer clypeal hairs with five to ten branches (Fig. 1a).....*An. atropos*  
 1'. Outer clypeal hairs with 25 or more branches (Fig. 1b).....2

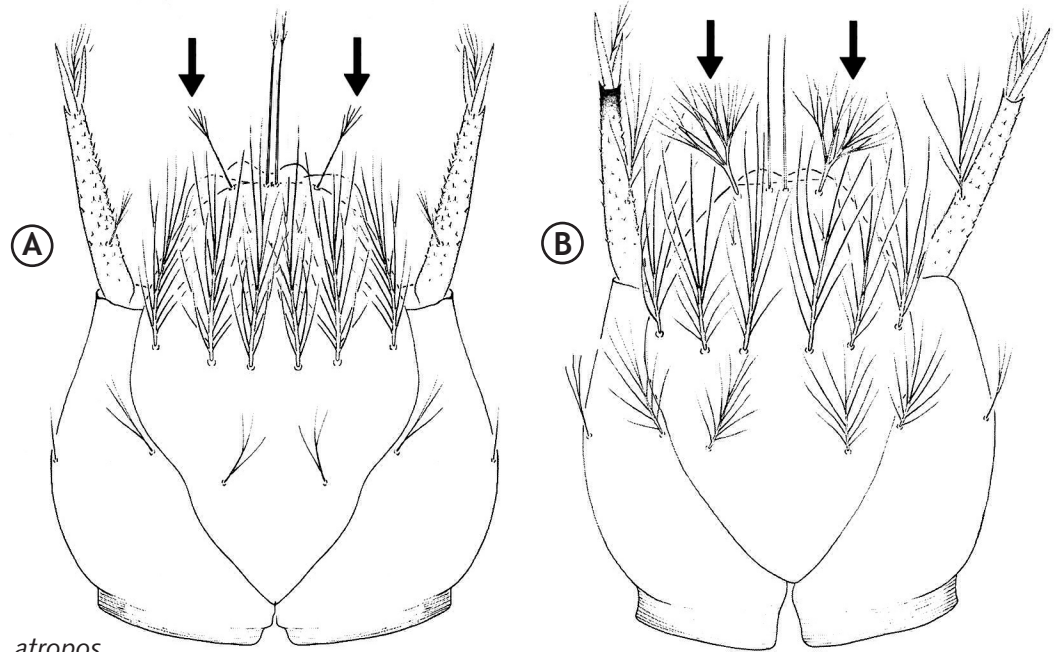


Figure 1.  
 A. Dorsal view of head - *An. atropos*  
 B. Dorsal view of head - *An. quadrimaculatus*

- 2(1'). Hairs 0 and 2 on abdominal segments IV and V multiple (Fig. 2a).....*An. crucians*  
 2'. Hair 0 on abdominal segments IV and V rudimentary or apparently absent; hair 2 single or double (Fig. 2b).....3

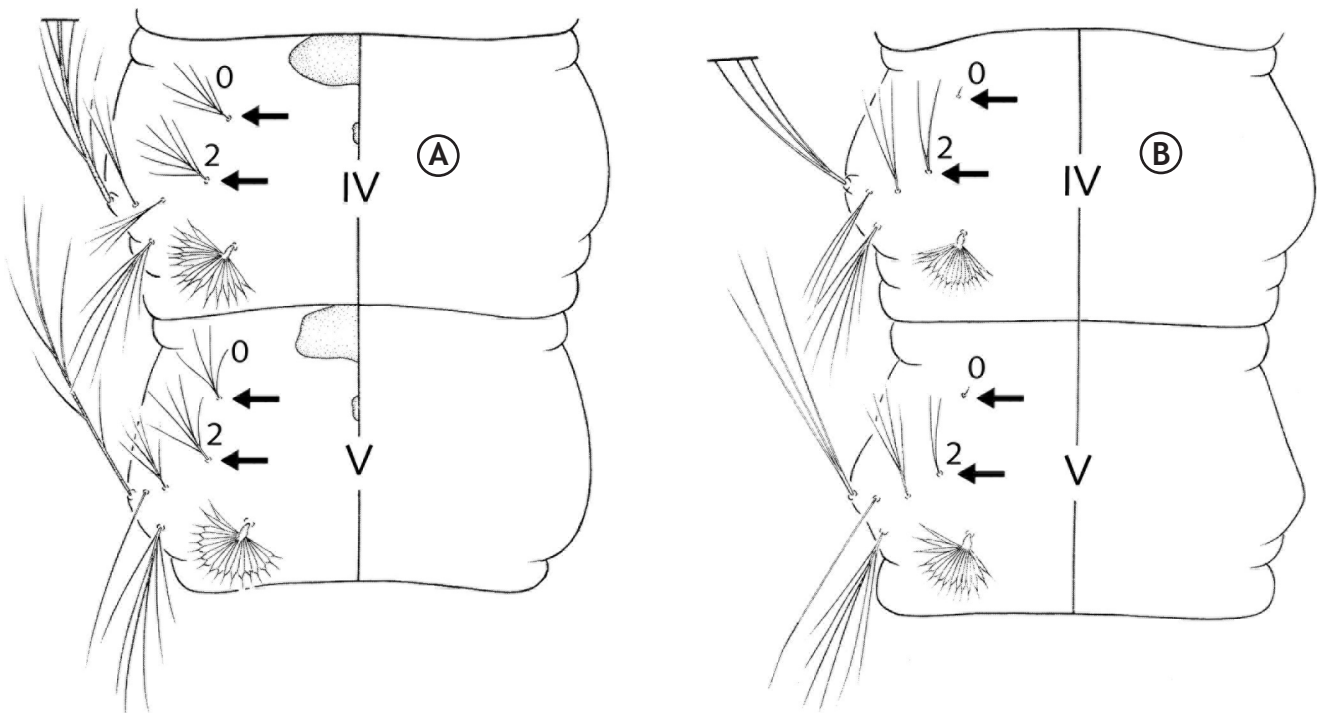


Figure 2.  
 A. Dorsal view of abdominal segments IV-V - *An. crucians*  
 B. Dorsal view of abdominal segments IV-V - *An. punctipennis*

- 3(2'). Antenna largely brownish (Fig. 3a missing); palmate hairs on abdominal segments III and VII definitely smaller than those on segments IV, V and VI (Fig. 3b).....*An. bradleyi*
- 3'. Antenna pale, darker at apex (Fig. 3c missing); palmate hairs on abdominal segments III-VII uniform in size (Fig. 3d).....4

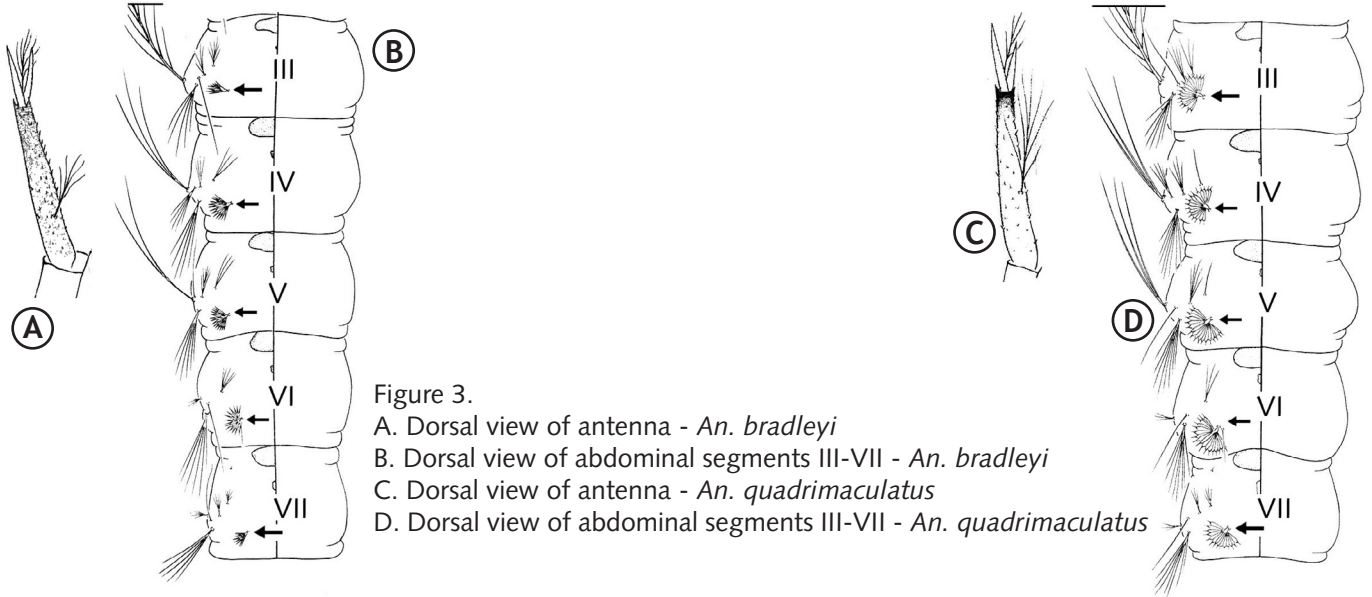


Figure 3.  
 A. Dorsal view of antenna - *An. bradleyi*  
 B. Dorsal view of abdominal segments III-VII - *An. bradleyi*  
 C. Dorsal view of antenna - *An. quadrimaculatus*  
 D. Dorsal view of abdominal segments III-VII - *An. quadrimaculatus*

- 4(3'). Inner clypeal hairs separated by less than the width of a basal tubercle (Fig. 4a); hair 2 on abdominal segments IV and V usually double (Fig. 4b).....*An. punctipennis*
- 4'. Inner clypeal hairs separated by at least the width of a basal tubercle (Fig. 4c); hair 2 on abdominal segments IV and V single (Fig. 4d).....5

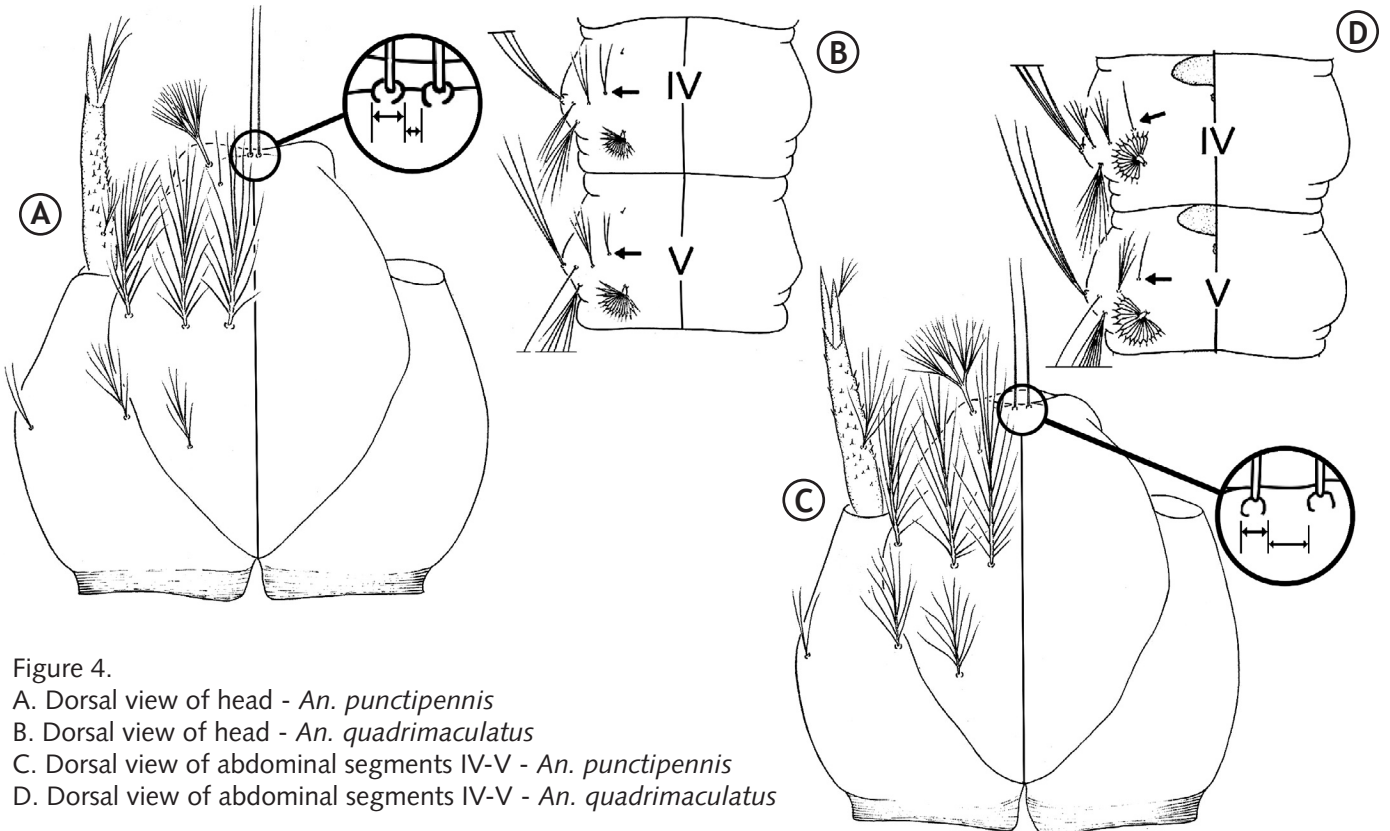


Figure 4.  
 A. Dorsal view of head - *An. punctipennis*  
 B. Dorsal view of head - *An. quadrimaculatus*  
 C. Dorsal view of abdominal segments IV-V - *An. punctipennis*  
 D. Dorsal view of abdominal segments IV-V - *An. quadrimaculatus*



- 5(4'). Antennal tuft 1 branched, inserted at the middle of antenna shaft; outer clypeal hair 3 densely dichotomously branched (Fig. 5a).....*An. quadrimaculatus* complex\*
- 5'. Antennal hair 1 single, inserted before the middle of antenna shaft; outer clypeal hair 3 simple (Fig. 5b).....*An. pseudopunctipennis*

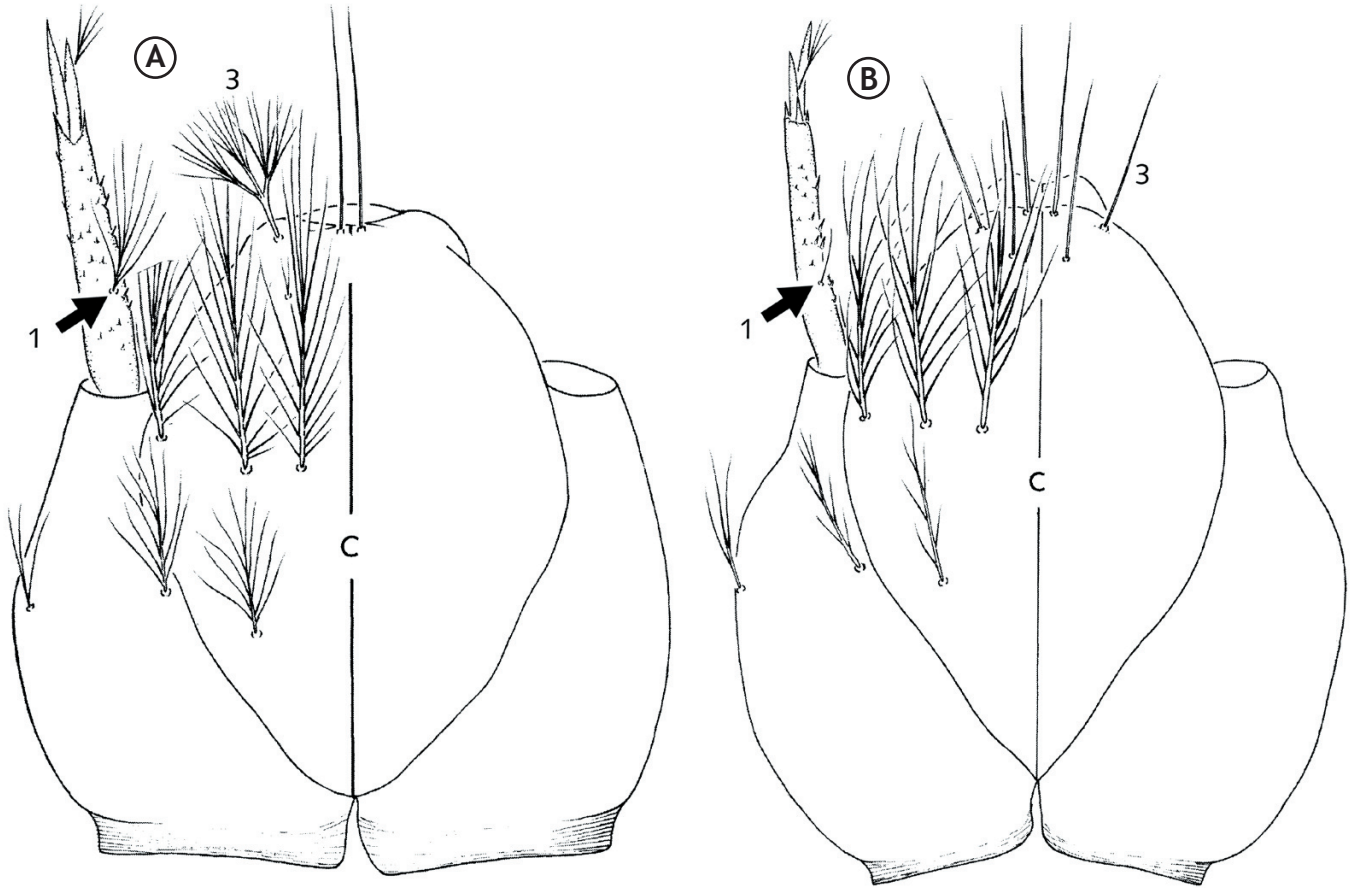


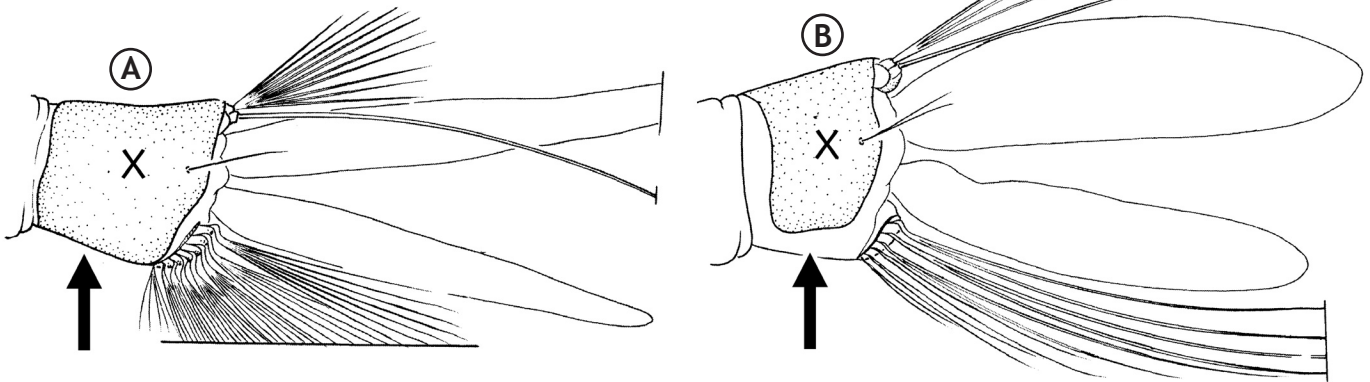
Figure 5.  
 A. Dorsal view of head - *An. quadrimaculatus*  
 B. Dorsal view of head - *An. pseudopunctipennis*

Aedes Larvae

- 1. Saddle completely encircling segment X (Fig. 1a).....2
- 1'. Saddle not completely encircling segment X (Fig. 1b).....10

Figure 1.

A. Lateral view of abdominal segment X - *Oc. atlanticus*  
 B. Lateral view of abdominal segment X - *Oc. aegypti*



- 2(1). Pecten on siphon with one or more distal spines detached apically (Fig. 2a).....*Oc. fulvus pallens*
- 2'. Pecten with spines more or less evenly spaced (Fig. 2b).....3

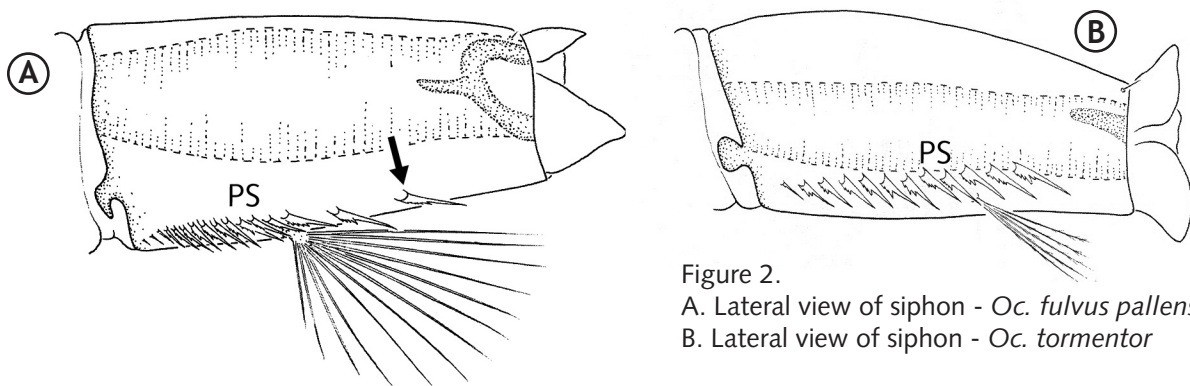


Figure 2.  
 A. Lateral view of siphon - *Oc. fulvus pallens*  
 B. Lateral view of siphon - *Oc. tormentor*

- 3(2'). Seta 1-S attached within pecten (Fig. 3a).....*Oc. tormentor*
- 3'. Seta 1-S attached distal to pecten (Fig. 3b).....4

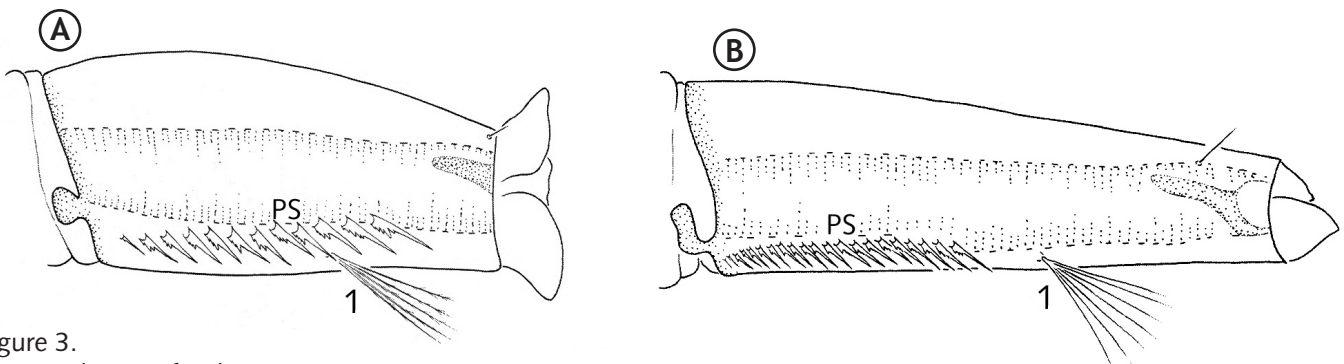


Figure 3.  
 A. Lateral view of siphon - *Oc. tormentor*  
 B. Lateral view of siphon - *Oc. mitchellae*

- 4(3'). Comb scale with apical spine at least four times the length of subapical spinules (Fig. 4a); thoracic integument smooth (Fig. 4b).....5
- 4'. Comb scale with apical spine not more than three times length of subapical spinules or fringed with subequal spinules (Fig. 4c); thoracic integument usually aculeate (Fig. 4d).....8

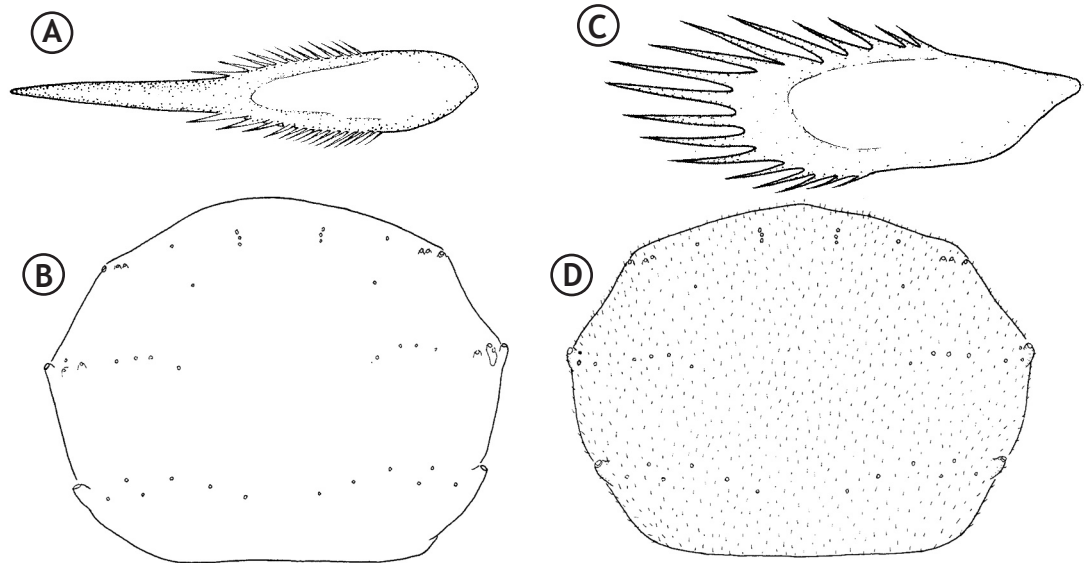


Figure 4.  
 A. Comb scale - *Oc. atlanticus*  
 B. Dorsal view of thorax - *Oc. sollicitans*  
 C. Comb scale - *Oc. taeniorhynchus*  
 D. Dorsal view of thorax - *Oc. taeniorhynchus*

- 5(4). Anal papilla-saddle index at least 8.0; papilla with darkly pigmented tracheae; seta 2-X with two or three branches (Fig. 5a).....*Oc. dupreei*
- 5'. Anal papilla-saddle index 5.0 at most, usually much less, papilla lacking dark tracheae; seta 2-X with four or more branches (Fig. 4b).....

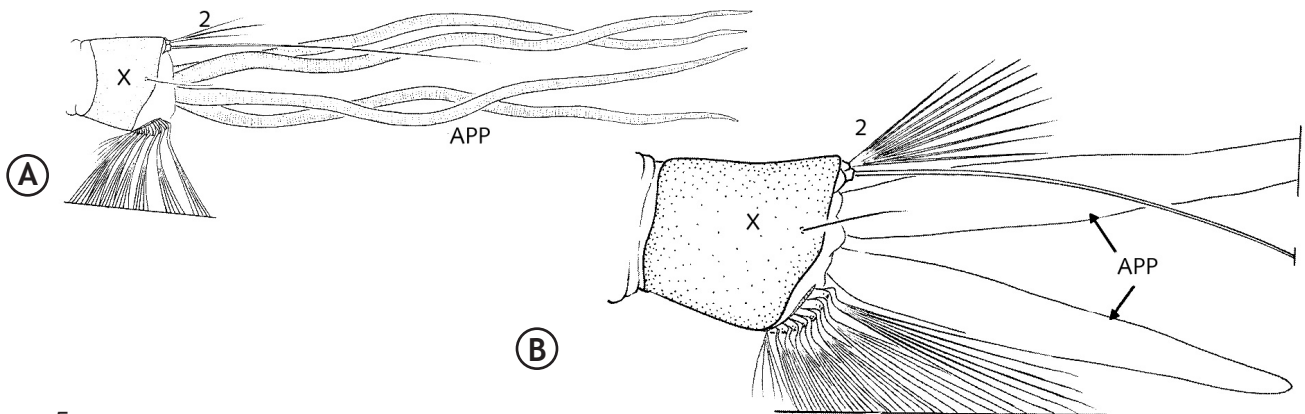


Figure 5.  
 A. Lateral view of abdominal segment X - *Oc. dupreei*  
 B. Lateral view of abdominal segment X - *Oc. atlanticus*



- 6(5'). Four to nine large comb scales on abdominal segment VIII (Fig. 6a).....*Oc. atlanticus*  
 6'. Comb scales on segment VIII small, usually number 10-30 (Fig. 6b).....7

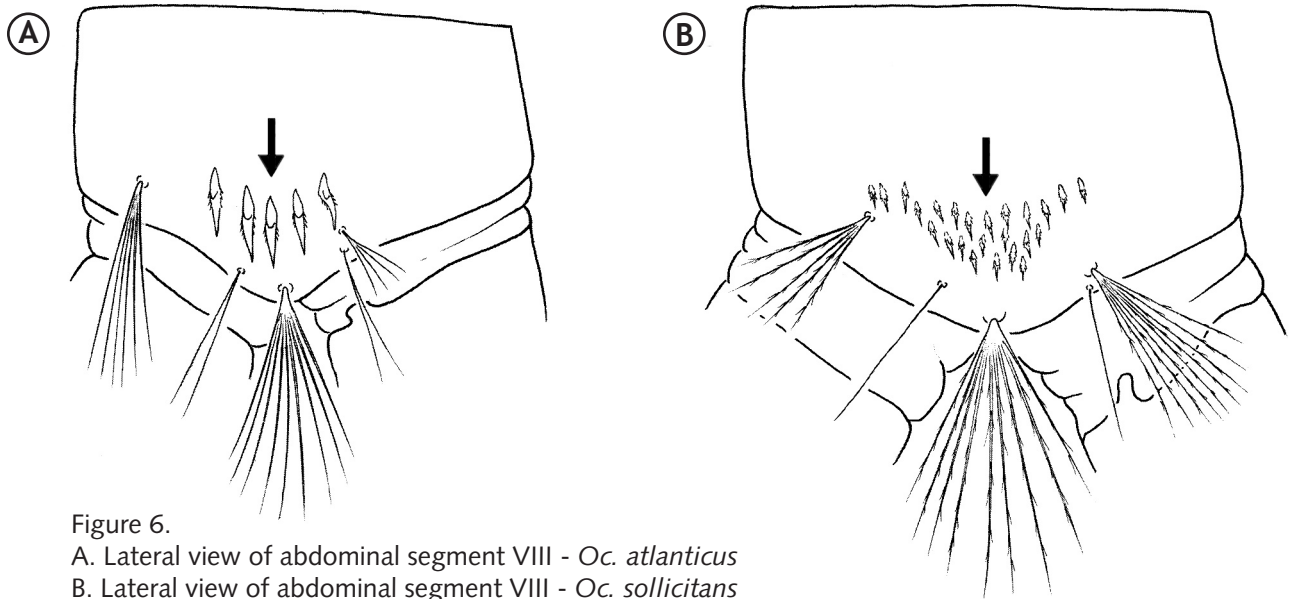


Figure 6.  
 A. Lateral view of abdominal segment VIII - *Oc. atlanticus*  
 B. Lateral view of abdominal segment VIII - *Oc. sollicitans*

- 7(6'). Siphon index 3.0 - 3.5; pecten not reaching to middle of siphon (Fig. 7a); setae 5, 6-C coarse, uniform in diameter (Fig. 7b).....*Oc. mitchellae*  
 7'. Siphon index 2.0 - 2.5; pecten extending beyond midpoint of siphon (Fig. 7c); seta 5, 6-C fine, attenuated apically (Fig. 7d).....*Oc. sollicitans*

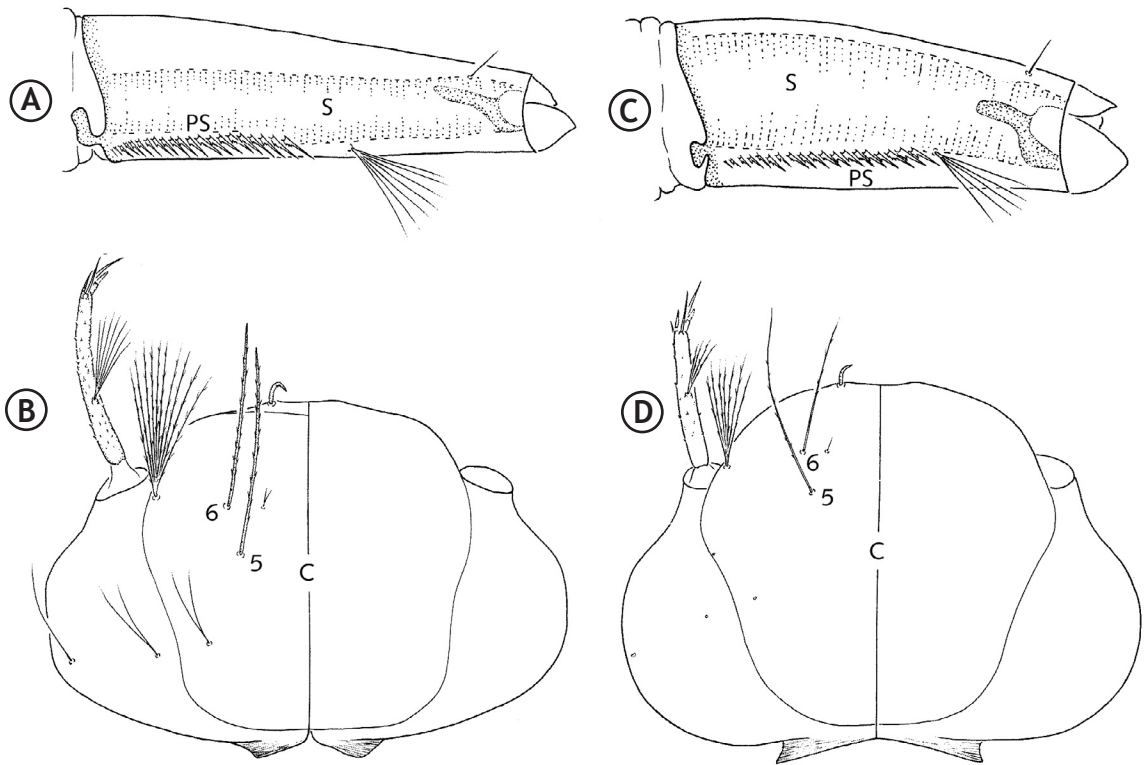


Figure 7.  
 A. Lateral view of siphon - *Oc. mitchellae*  
 B. Dorsal view of head - *Oc. mitchellae*  
 C. Lateral view of siphon - *Oc. sollicitans*  
 D. Dorsal view of head - *Oc. sollicitans*

- 8(4'). Comb scale with apical spine slightly smaller than subapical spinules, or only slightly stouter and longer (Fig. 8a).....*Oc. taeniorhynchus*
- 8'. Comb scale with apical spine 1 to 3 times length of subapical spinules (Fig. 8b).....9



Figure 8.  
 A. Comb scale - *Oc. taeniorhynchus*  
 B. Comb scale - *Oc. infirmatus*

- 9(8'). Comb scale with median spine about twice as broad and 1.3 times as long as the subapical spinules (Fig. 9a).....*Oc. trivittatus*
- 9'. Comb scale with median spine 3 to 4 times as broad and at least twice as long as the subapical spinules (Fig. 9b).....*Oc. infirmatus*

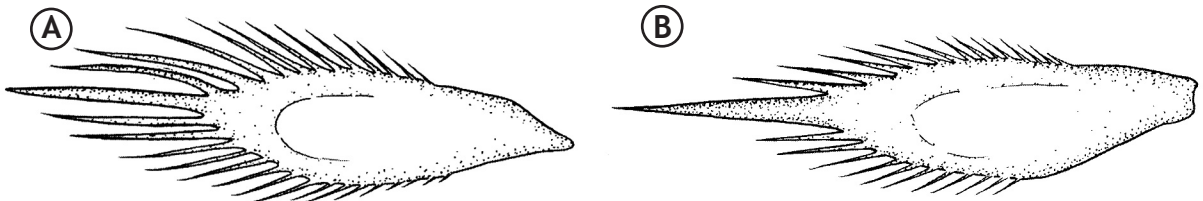


Figure 9.  
 A. Comb scale - *Oc. trivittatus*  
 B. Comb scale - *Oc. infirmatus*

- 10(1'). Pecten on siphon with one or more spines detached distally (Fig. 10a).....
- 10'. Pecten with spines more or less evenly spaced (Fig. 10b).....13

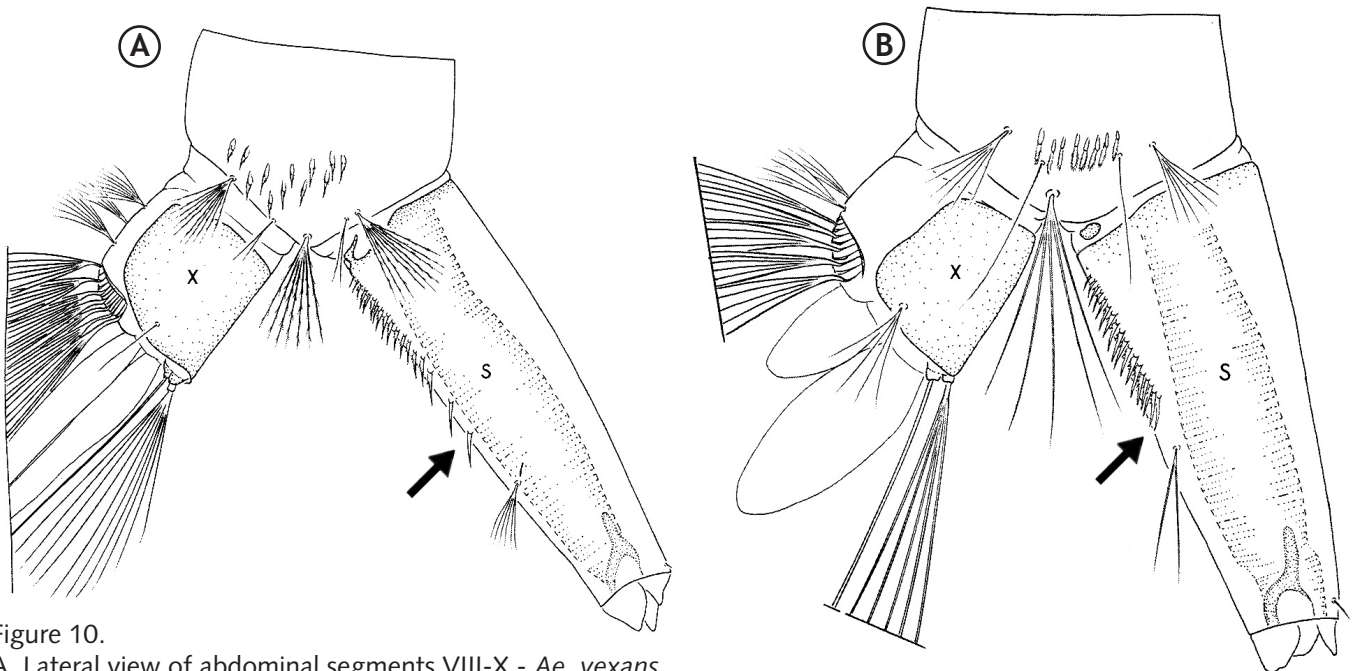


Figure 10.  
 A. Lateral view of abdominal segments VIII-X - *Ae. vexans*  
 B. Lateral view of abdominal segments VIII-X - *Oc. triseriatus*

- 11(10). Siphonal tuft inserted within pecten row (Fig. 11a).....*Oc. japonicus*  
 11'. Siphonal tuft inserted distal to pecten row (Fig. 11b).....12

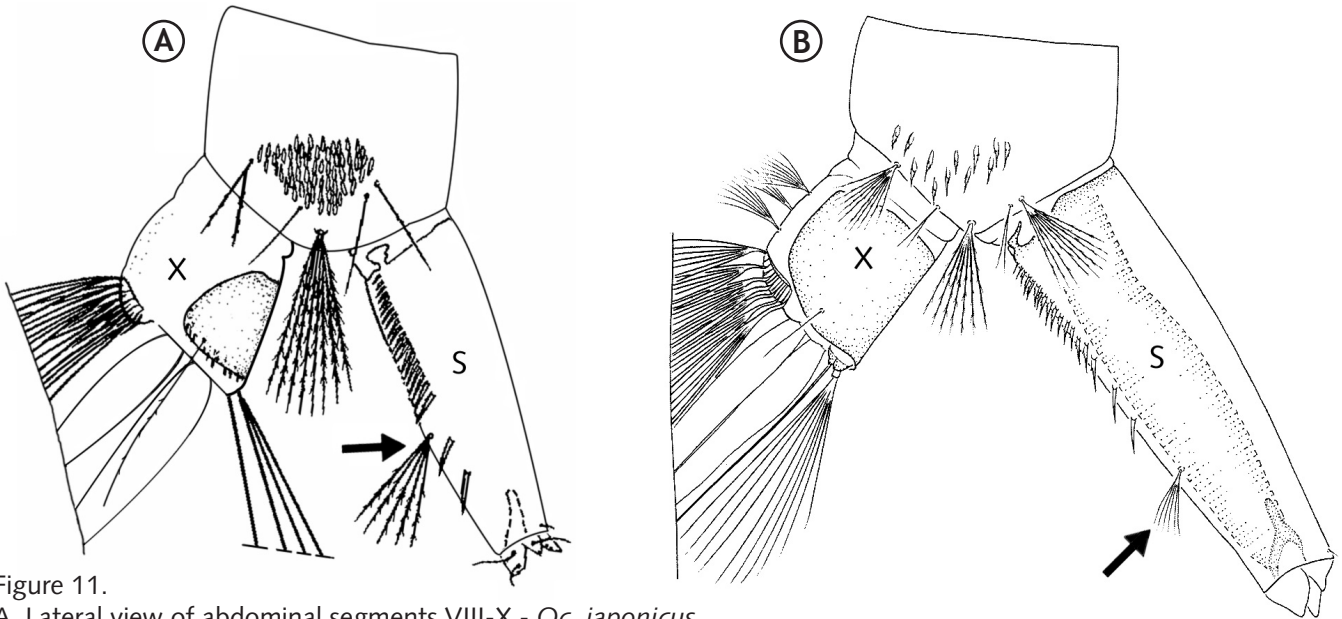


Figure 11.  
 A. Lateral view of abdominal segments VIII-X - *Oc. japonicus*  
 B. Lateral view of abdominal segments VIII-X - *Ae. vexans*

- 12(12'). Lower frontal head hair 6-C with four to eight branches;  
 head hairs 5, 6, and 7 inserted in a straight line (Fig. 12a).....*Ae. cinereus*  
 12'. Lower frontal head hair 6-C double or triple; hairs 5, 6,  
 and 7 not inserted in a straight line (Fig. 12b).....*Ae. vexans*

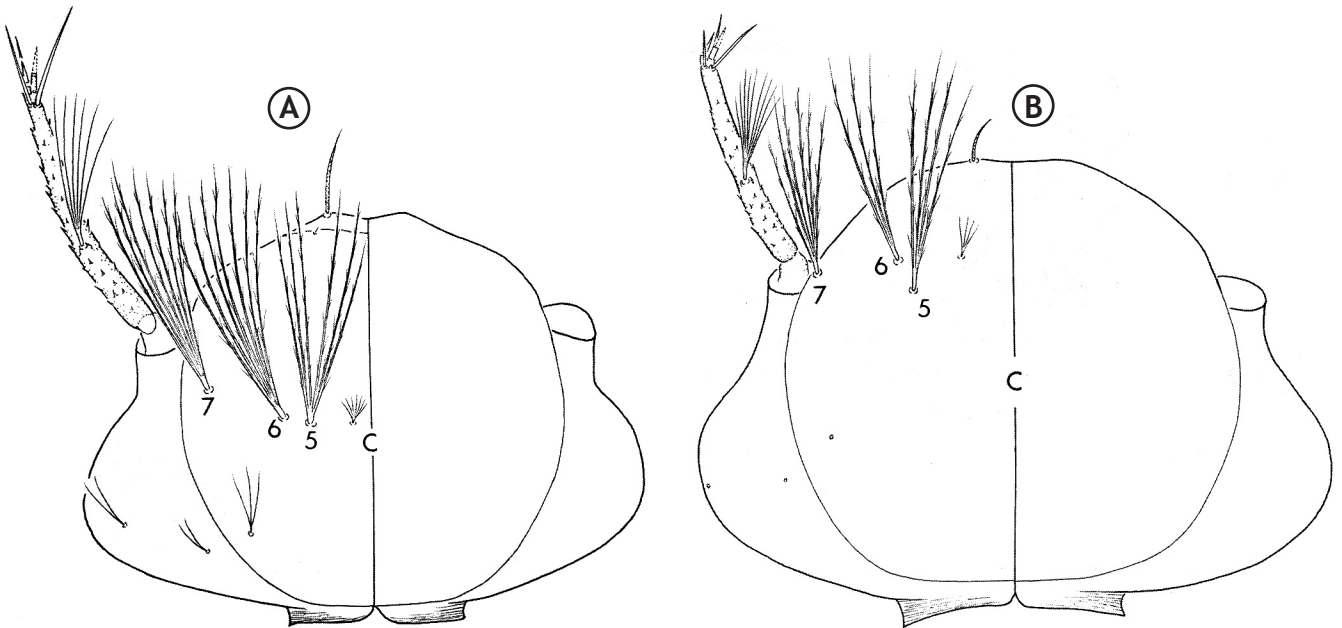


Figure 12.  
 A. Dorsal view of head and antenna - *Ae. cinereus*  
 B. Dorsal view of head and antenna - *Ae. vexans*



- 13(10'). Antenna usually smooth, or with tiny spinules; seta 1-A single or double (Fig. 13a).....14  
 13'. Antennae with prominent, coarse spinules; seta 1-A with more than three branches (Fig. 13b).....17

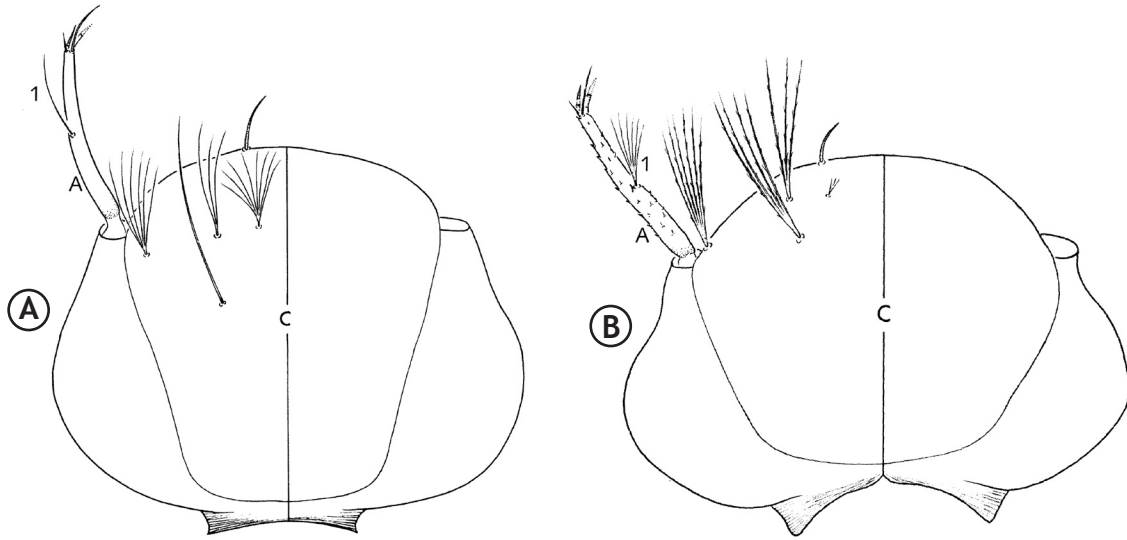


Figure 13.  
 A. Dorsal view of head and antenna - *Oc. triseriatus*  
 B. Dorsal view of head and antenna - *Oc. sticticus*

- 14(13). Comb scale with pointed, unfringed, median spine with subequal short spinules (Fig. 14a).....15  
 14'. Comb scale rather blunt apically, evenly fringed (Fig. 14b).....16

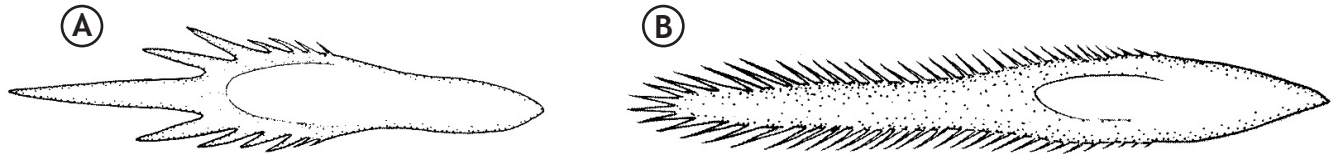
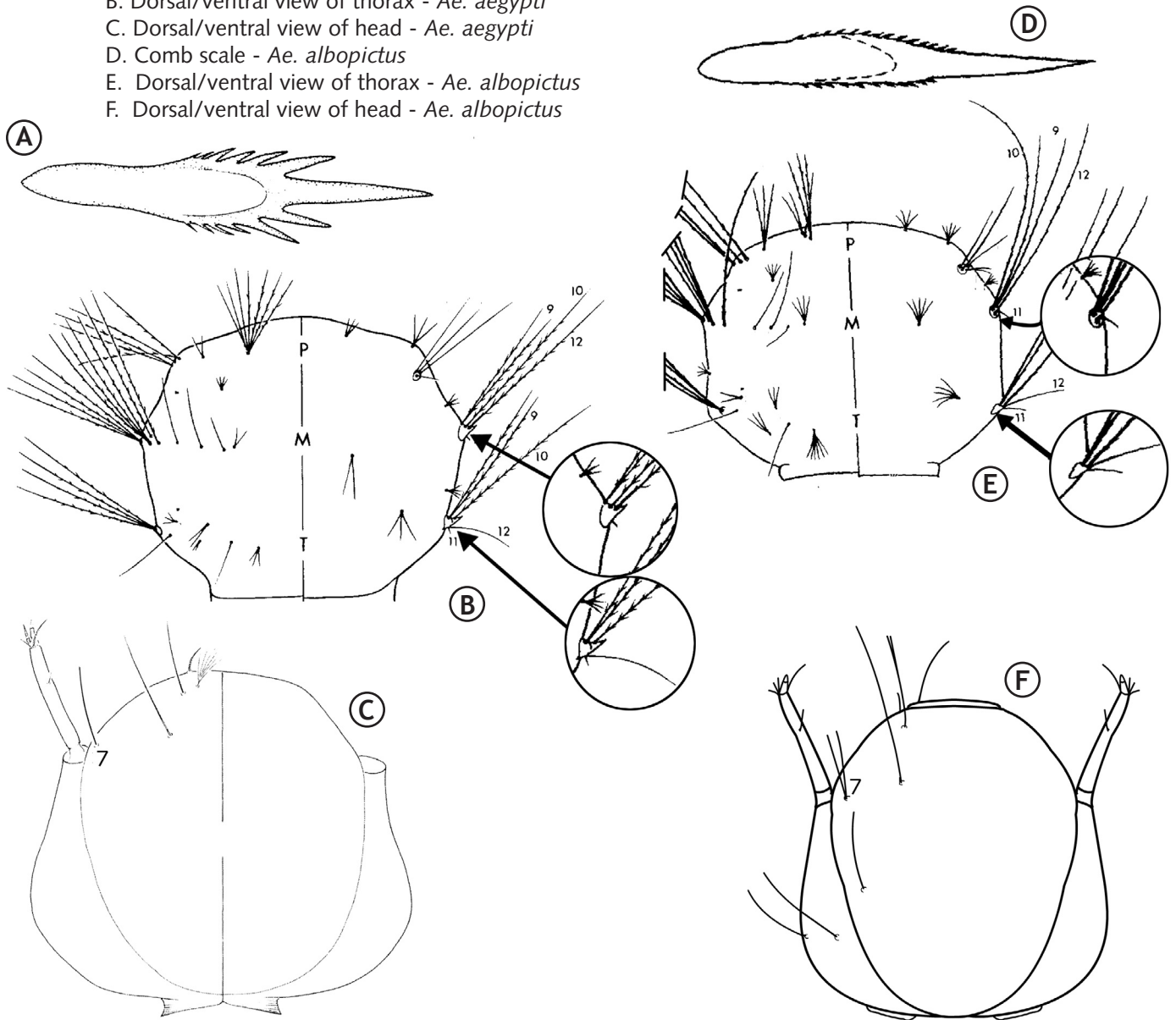


Figure 14.  
 A. Comb scale - *Ae. aegypti*  
 B. Comb scale - *Oc. triseriatus*

- 15(14). Comb scales with strong subapical spines (Fig. 15a); setal support plate of meso- and metathoracic setae 9-12 with prominent spine (Fig. 15b); seta 7-C single (Fig. 15c).....*Ae. aegypti*
- 15'. Comb scale with basolateral fringe of fine spicules (Fig. 15d); setal support plate of meso- and metathoracic setae 9-12 with short thin spine (Fig. 15e); seta 7-C double (Fig. 15f).....*Ae. albopictus*

Figure 15.

- A. Comb scale - *Ae. aegypti*  
 B. Dorsal/ventral view of thorax - *Ae. aegypti*  
 C. Dorsal/ventral view of head - *Ae. aegypti*  
 D. Comb scale - *Ae. albopictus*  
 E. Dorsal/ventral view of thorax - *Ae. albopictus*  
 F. Dorsal/ventral view of head - *Ae. albopictus*



16(14'). Seta 4-X with six pairs of fanlike setae; anal papillae not bulbous, dorsal pair longer than ventral pair (Fig. 16a); acus usually attached to siphon, if detached, situated close to its base (Fig. 16b).....*Oc. triseriatus*

16'. Seta 4-X with five pairs of fanlike setae; both pairs of anal papillae about same length, bulbous (Fig. 16c); acus detached and removed from base of siphon (Fig. 16d).....*Oc. hendersoni*

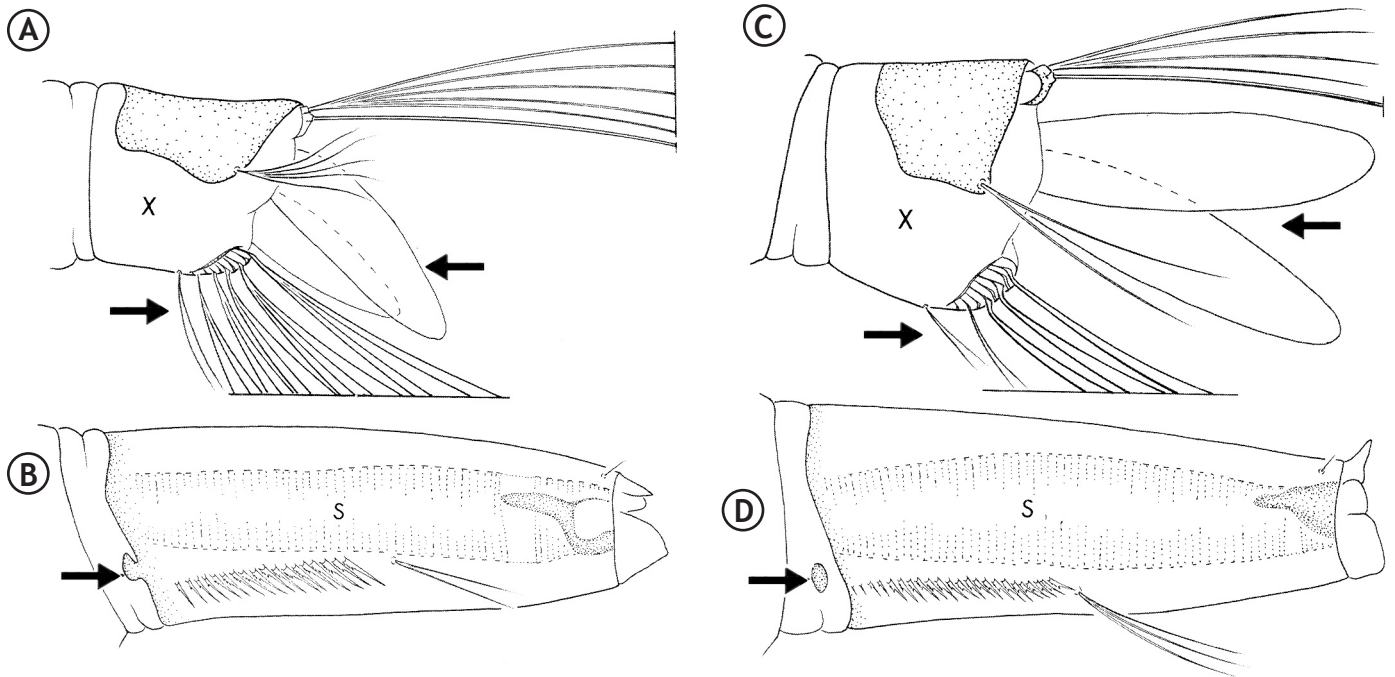


Figure 16.  
 A. Lateral view of abdominal segment X - *Oc. triseriatus*  
 B. Lateral view of siphon - *Oc. triseriatus*  
 C. Lateral view of abdominal segment X - *Oc. hendersoni*  
 D. Lateral view of siphon - *Oc. hendersoni*

17(13'). Comb scale with median spine at least 1.5 times the length of subapical spinules (Fig. 17a).....*Oc. sticticus*

17'. Comb scale fringed with subequal spinules or with short median spine less than 1.5 times the length of subapical spinules (Fig. 17b).....



Figure 17.  
 A. Comb scale - *Oc. sticticus*  
 B. Comb scale - *Oc. c. canadensis*



- 18(17'). Comb scale fringed with subequal spinules (Fig. 18a); seta 6 on abdominal terga I, II double (Fig. 18b).....*Oc. canadensis canadensis*, *Oc. c. mathesoni*
- 18'. Comb scale with apical and subapical spines much stouter than lateral spinules (Fig. 18c); seta 6 on abdominal terga I and II three- or four-branched (Fig. 18d).....*Oc. thibaulti*

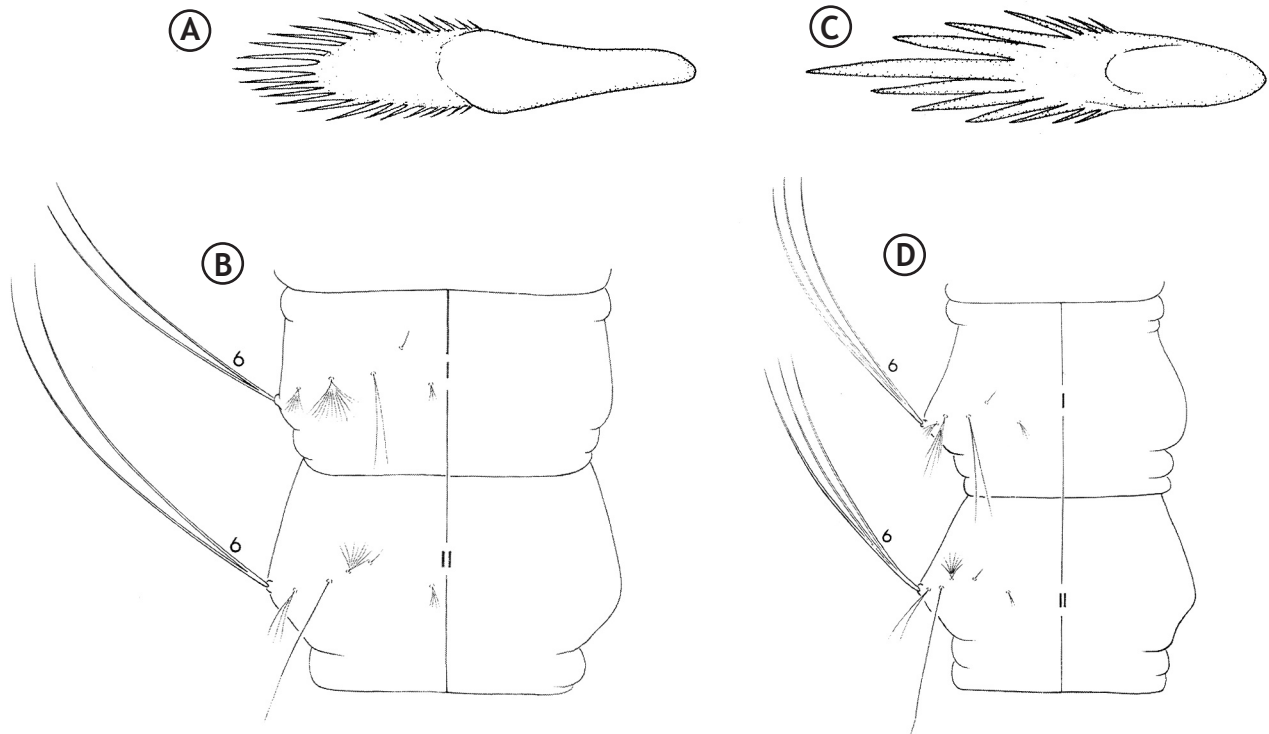


Figure 18.  
 A. Comb scale - *Oc. c. canadensis*  
 B. Dorsal view of abdominal segments I and II - *Oc. c. canadensis*  
 C. Comb scale - *Oc. thibaulti*  
 D. Dorsal view of abdominal segments I and II - *Oc. thibaulti*

Culex Larvae

- 1. Seta 6-C with three or more branches (Fig. 1a).....2
- 1'. Seta 6-C single or double (Fig. 1b).....7

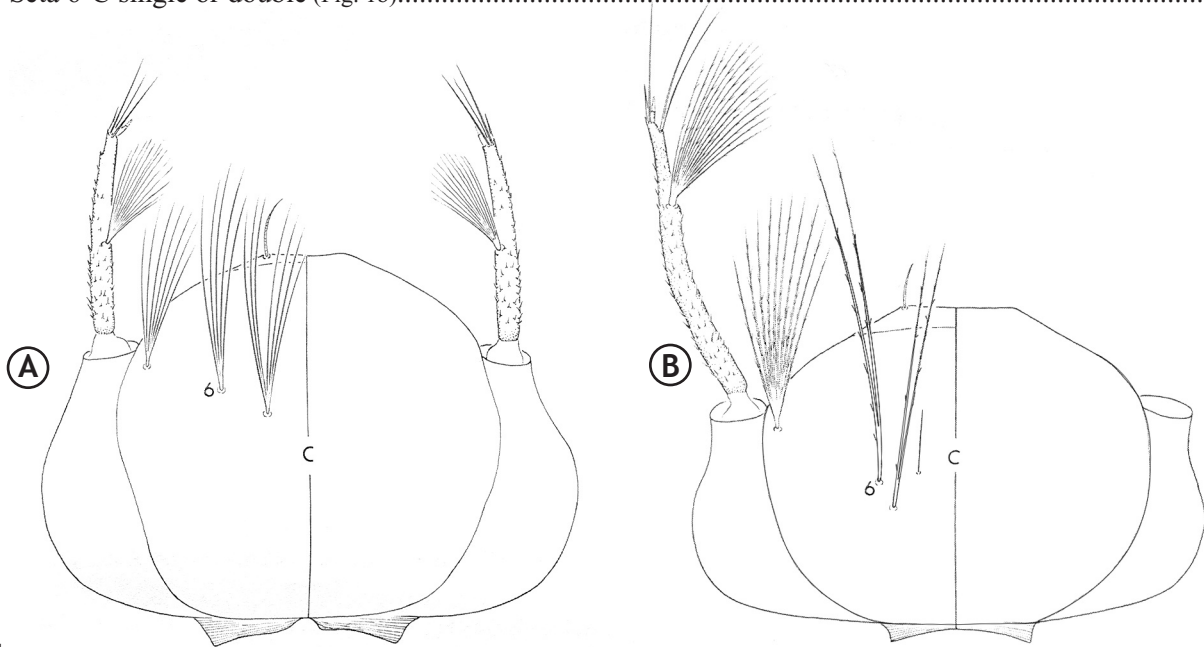


Figure 1.  
 A. Dorsal view of head - *Cx. restuans*  
 B. Dorsal view of head - *Cx. territans*

- 2(1). Siphonal setae long, irregularly placed, mostly single (Fig. 2a).....*Cx. restuans*
- 2'. Siphonal setae placed linearly, sometimes with one or two pairs dorsally out of line, mostly branched (Fig. 2b).....3

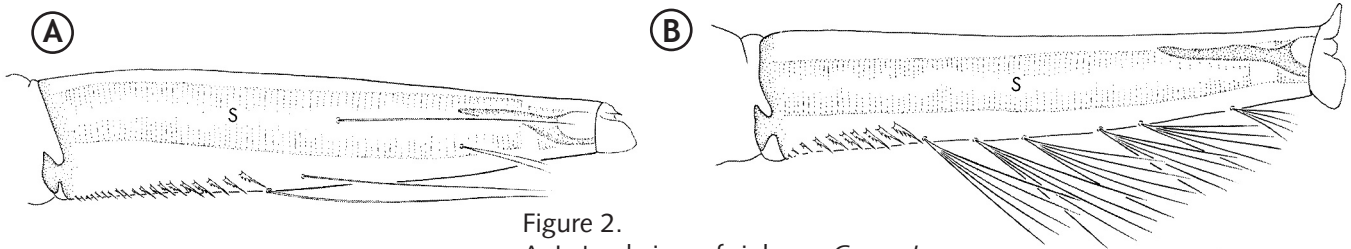


Figure 2.  
 A. Lateral view of siphon - *Cx. restuans*  
 B. Lateral view of siphon - *Cx. tarsalis*

- 3(2'). Siphon with setae in straight line, usually with five to nine pairs (Fig. 3a).....*Cx. tarsalis*
- 3'. Siphon with three to five pairs of setae not all in straight line, one or two pairs dorsally out of line (Fig. 3b).....4

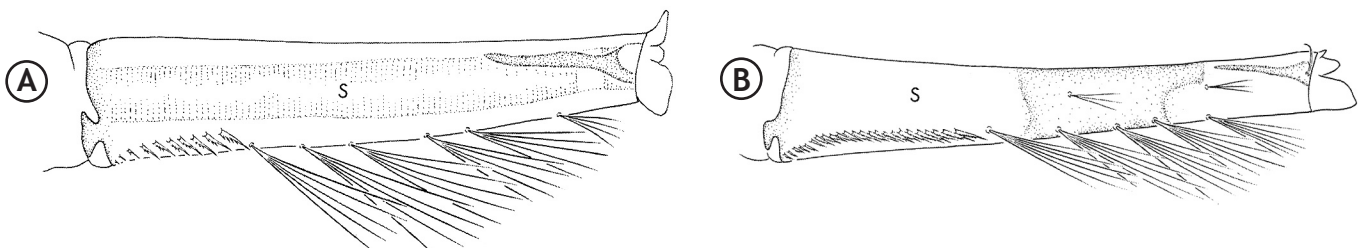


Figure 3.  
 A. Lateral view of siphon - *Cx. tarsalis*  
 B. Lateral view of siphon - *Cx. peccator*

- 4(3'). Siphonal index 4.0 - 5.0 (Fig. 4a).....*Cx. quinquefasciatus*  
 4'. Siphonal index 6.0 - 10.0 (Fig. 4b).....5

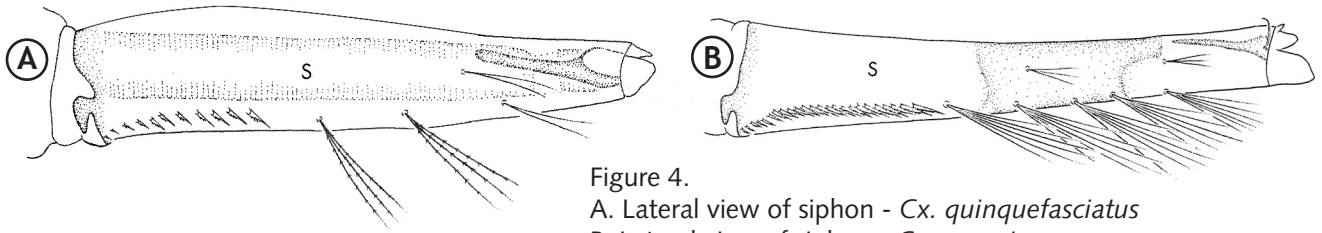


Figure 4.  
 A. Lateral view of siphon - *Cx. quinquefasciatus*  
 B. Lateral view of siphon - *Cx. peccator*

- 5(4'). Thoracic integument with fine aculeae; seta 1-M sub-equal to 2-M (Fig. 5a); seta 1-X single (Fig. 5b).....*Cx. nigripalpus*  
 5'. Thoracic integument glabrous; seta 1-M much longer than 2-M (Fig. 5c); seta 1-X usually double (Fig. 5d).....6

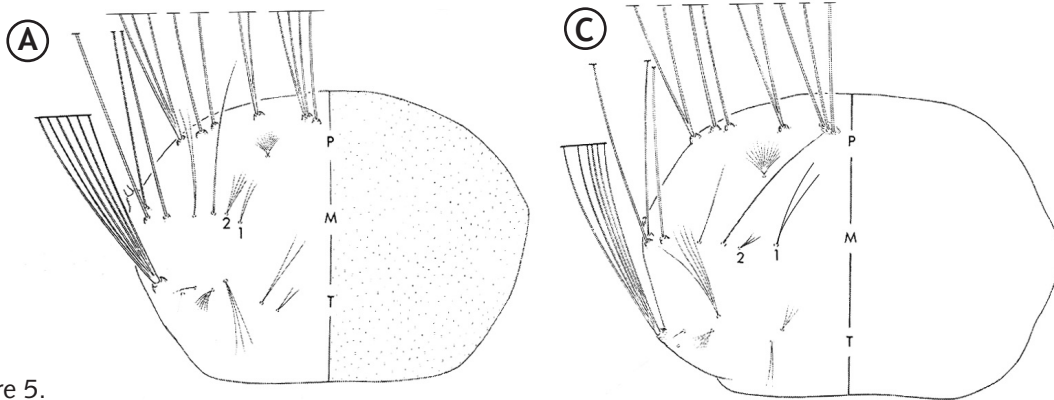
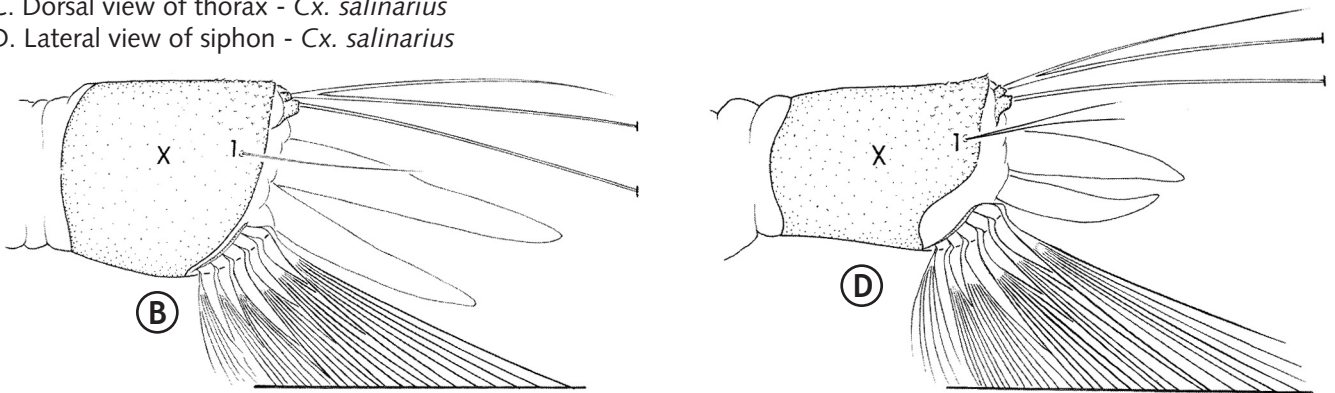


Figure 5.  
 A. Dorsal view of thorax - *Cx. nigripalpus*  
 B. Lateral view of siphon - *Cx. nigripalpus*  
 C. Dorsal view of thorax - *Cx. salinarius*  
 D. Lateral view of siphon - *Cx. salinarius*



- 6(5'). Siphon with strong subapical spines (Fig. 6a).....*Cx. coronator*  
 6'. Siphon lacking strong subapical spines (Fig. 6b).....*Cx. salinarius*

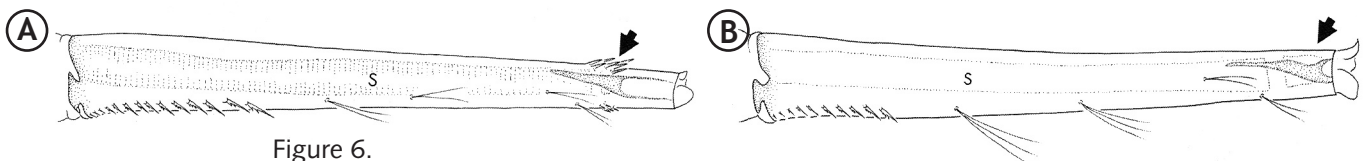


Figure 6.  
 A. Lateral view of siphon - *Cx. coronator*  
 B. Lateral view of siphon - *Cx. salinarius*



- 7(1'). Pecten spines with one to four lateral denticles; seta 2-S straight; siphon without subdorsal setae (Fig. 7a).....*Cx. territans*
- 7'. Pecten spines with ten or more denticles; seta 2-S strongly curved; siphon with one or more pairs of subdorsal setae (Fig. 7b).....8

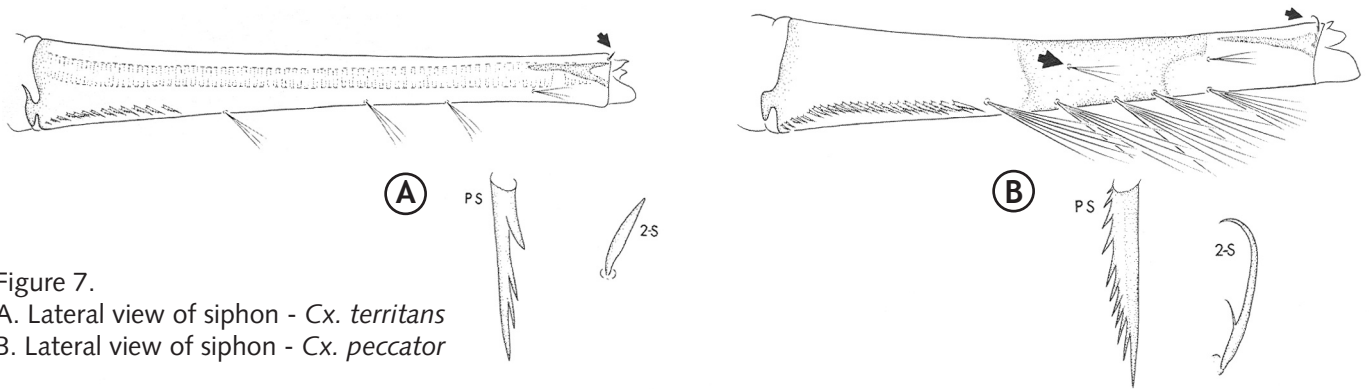


Figure 7.  
A. Lateral view of siphon - *Cx. territans*  
B. Lateral view of siphon - *Cx. peccator*

- 8(7'). All comb scales evenly fringed with subequal spinules (Fig. 8a).....*Cx. peccator*
- 8'. At least some comb scales with large median spine (Fig. 8b).....9

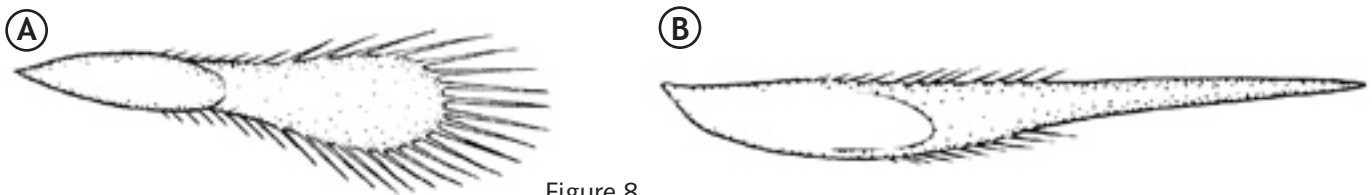


Figure 8.  
A. Comb scale - *Cx. peccator*  
B. Comb scale - *Cx. pilosus*

- 9(8'). Siphon distinctly curved; siphonal index 4.5 or less; distalmost seta very near apex (Fig. 9a).....*Cx. pilosus*
- 9'. Siphon only slightly curved, if at all; siphonal index 6.0 or more; distalmost seta not near apex (Fig. 9b).....*Cx. erraticus*

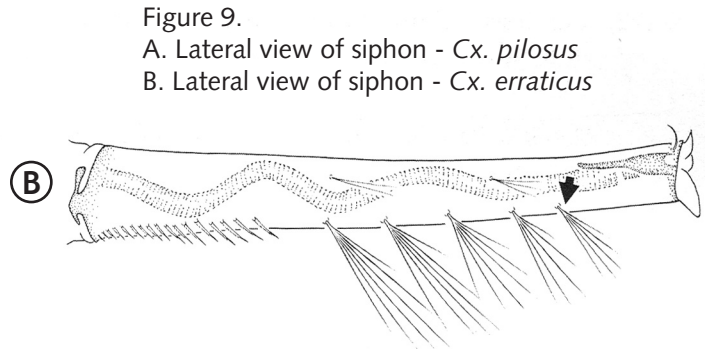
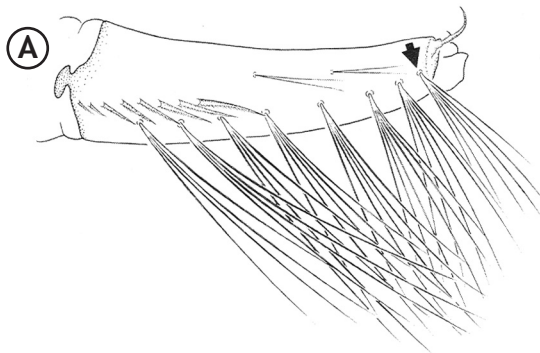


Figure 9.  
A. Lateral view of siphon - *Cx. pilosus*  
B. Lateral view of siphon - *Cx. erraticus*

Psorophora Larvae

- 1. Pecten teeth numerous (12 or more), each terminating in a hairlike filament; siphonal tuft represented by a single long hair (Fig. 1a)...
- 1'. Pecten teeth fewer than ten, not prolonged into hairlike filaments; siphonal tuft multiple, large, small, or obsolete (Fig. 1b).....3

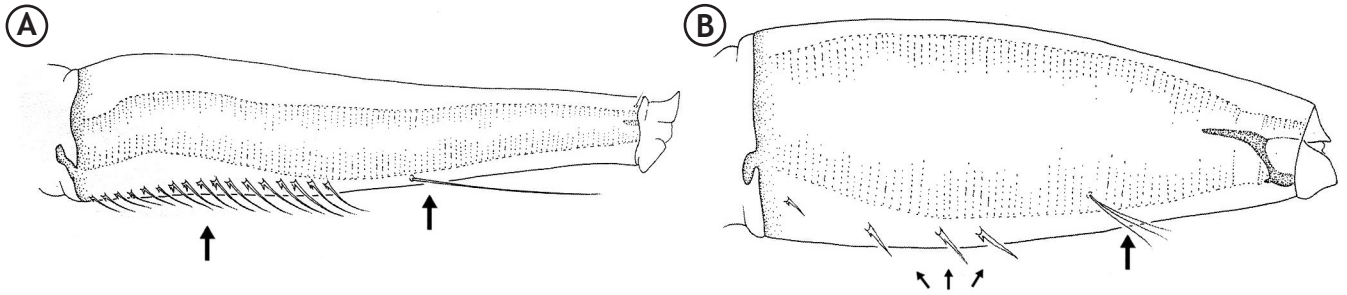


Figure 1.  
 A. Lateral view of siphon - *Ps. howardii*  
 B. Lateral view of siphon - *Ps. columbiae*

- 2(1). Seta 1-X divides near the base into three or four branches (Fig. 2a).....*Ps. ciliata*
- 2'. Seta 1-X single or forked beyond middle (Fig. 2b).....*Ps. howardii*

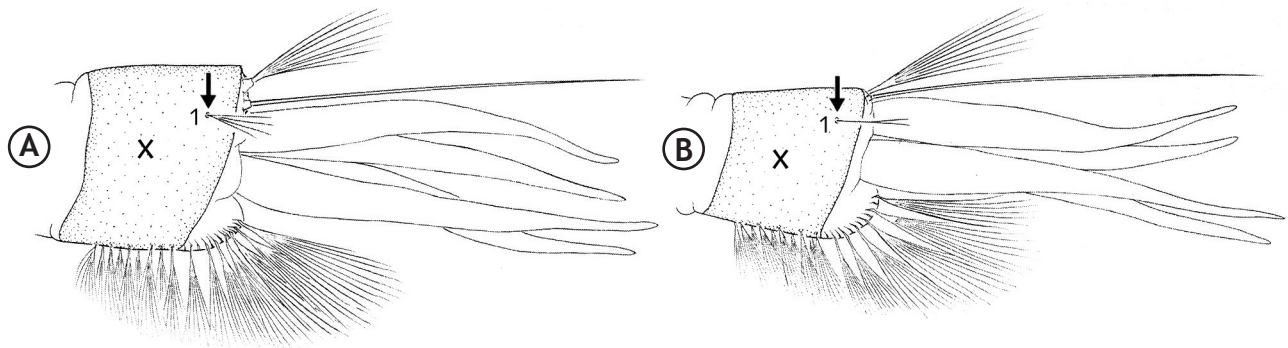
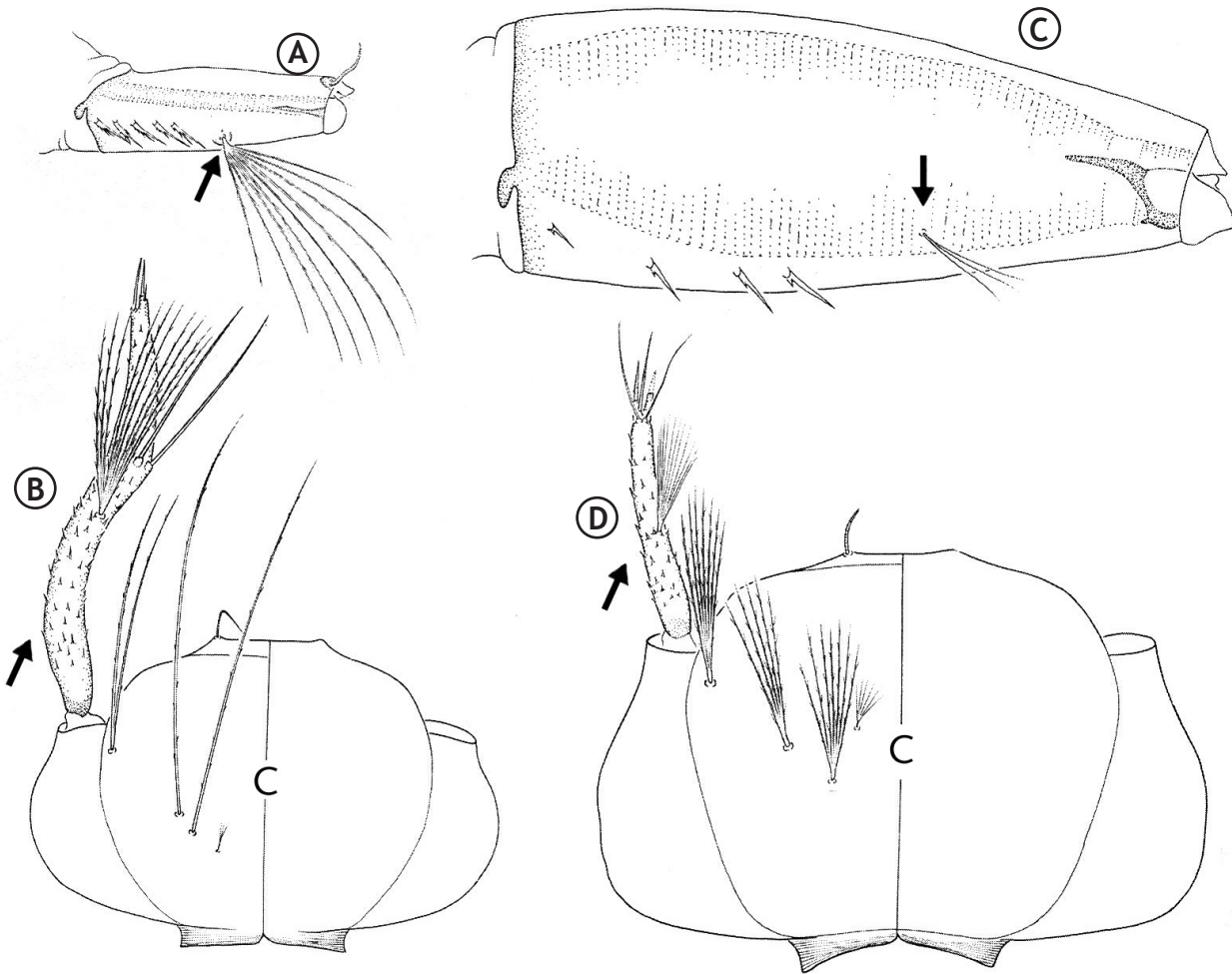


Figure 2.  
 A. Lateral view of abdominal segment X - *Ps. ciliata*  
 B. Lateral view of abdominal segment X - *Ps. howardii*

- 3(1'). Siphonal tuft large, multiple, as long as the siphon;  
 siphon small, not inflated (Fig. 3a); antennae inflated (Fig. 3b).....*Ps. discolor*
- 3'. Siphonal tuft small or obsolete, multiple; siphon large,  
 more or less inflated medially (Fig. 3c); antennae not inflated (Fig. 3d).....4



- 4(3'). Upper and lower frontal head hairs 5 and 6 multiple (Fig. 4a).....*Ps. columbiae*
- 4'. Upper frontal head hair 5 single or double (rarely triple);  
 lower frontal head hair 6 single, double or triple (Fig. 4b).....5



Figure 4.  
 A. Dorsal view of head - *Ps. columbiae*  
 B. Dorsal view of head - *Ps. cyanescens*



- 5(4'). Upper frontal head hair 5 and lower frontal hair 6 long and single (Fig. 5a).....*Ps. cyanescens*
- 5'. Upper frontal head hair 5 double, lower frontal hair 6 double or triple (Fig. 5b).....6

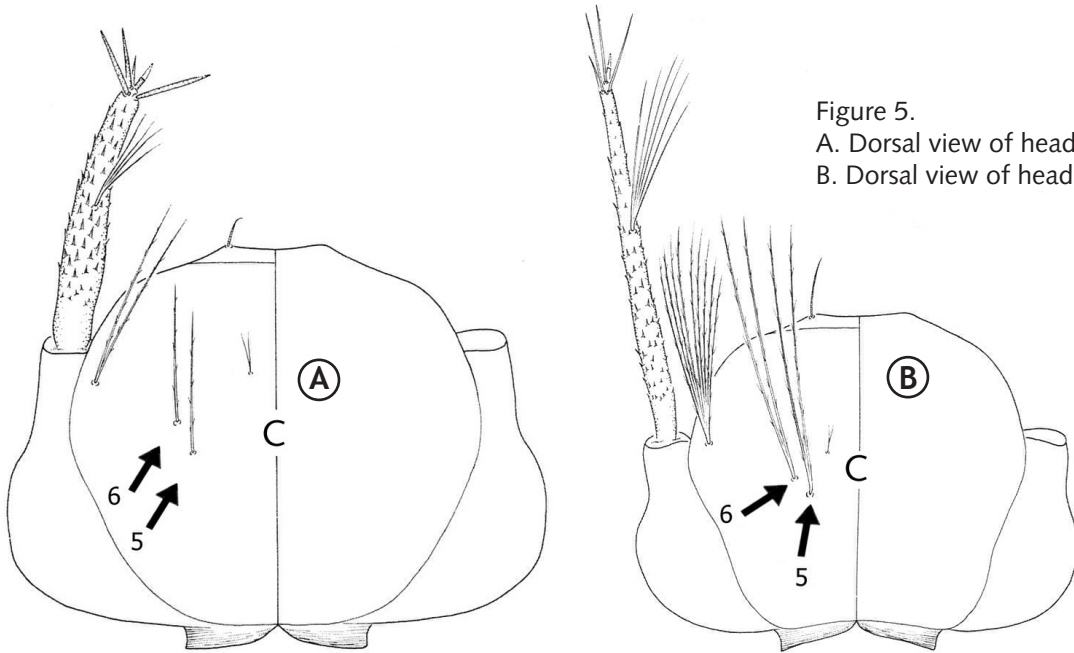


Figure 5.  
A. Dorsal view of head - *Ps. cyanescens*  
B. Dorsal view of head - *Ps. ferox*

- 6(5'). Antennae distinctly longer than the median length of the head (Fig. 6a).....7
- 6'. Antennae about as long or slightly longer than the median length of the head (Fig. 6b).....8

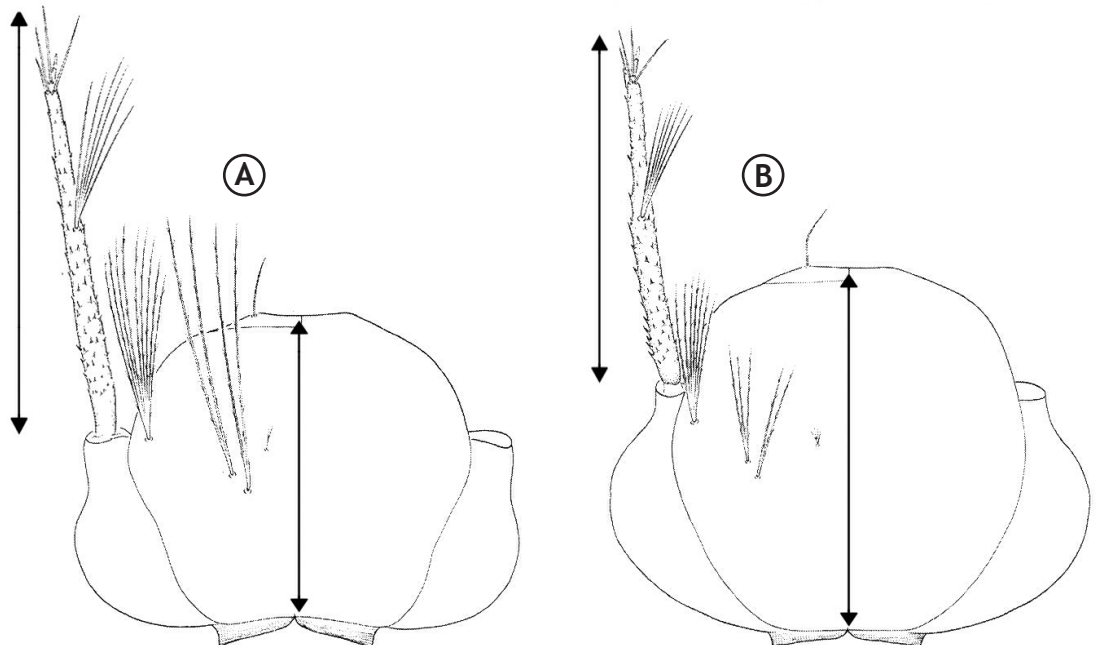


Figure 6.  
A. Dorsal view of head - *Ps. ferox*  
B. Dorsal view of head - *Ps. horrida*

- 7(6). Lateral abdominal hair 6 single or double on segments IV to VI (Fig. 7a); branches of upper frontal head hair 5 and lower frontal 6 nearly equal (Fig. 7b).....*Ps. ferox*
- 7'. Lateral abdominal hair 6 multiple on segments IV to VI (Fig. 7c); branches of upper frontal head hair 5 and lower frontal 6 not equal, one branch being shorter and weaker (Fig. 7d).....*Ps. longipalpis*

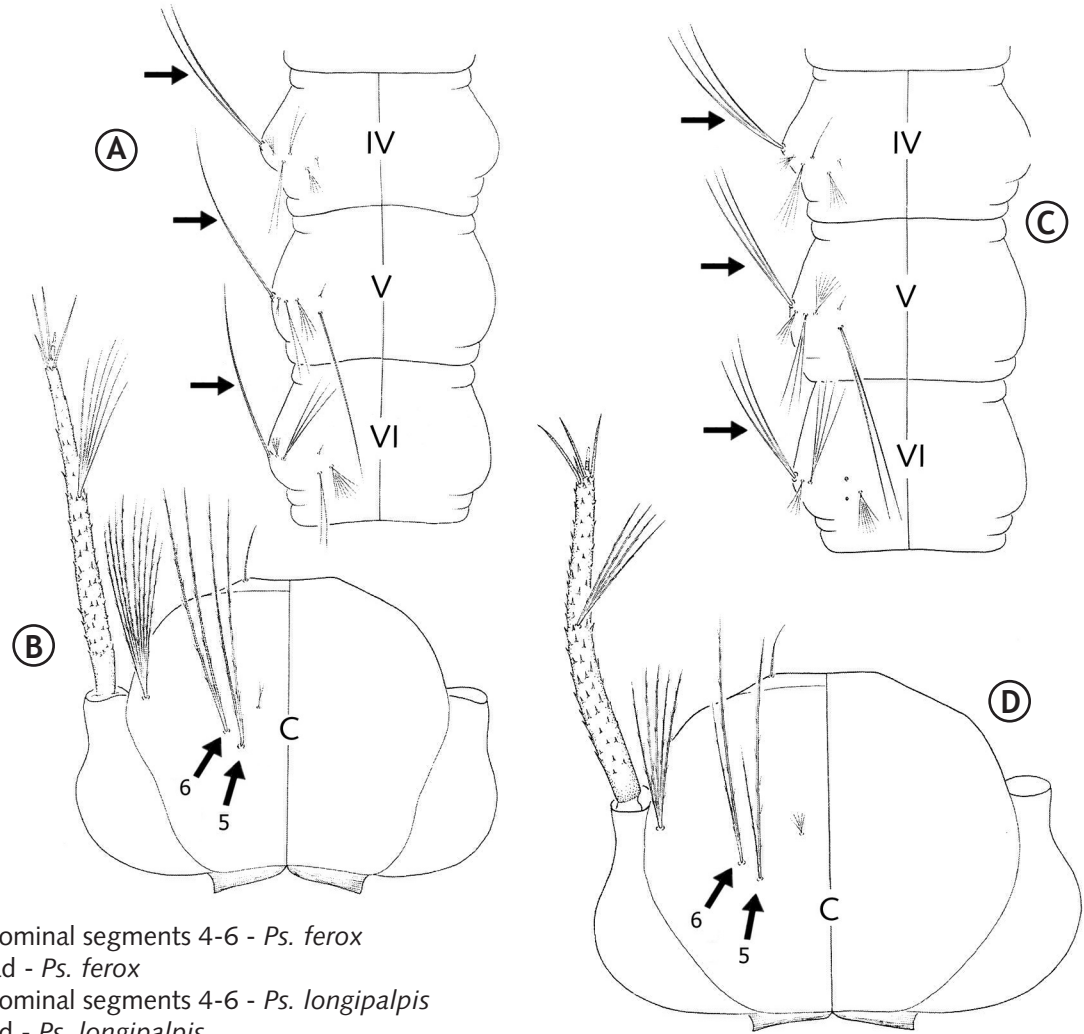


Figure 7.  
 A. Dorsal view of abdominal segments 4-6 - *Ps. ferox*  
 B. Dorsal view of head - *Ps. ferox*  
 C. Dorsal view of abdominal segments 4-6 - *Ps. longipalpis*  
 D. Dorsal view of head - *Ps. longipalpis*

- 8(6'). Siphon only slightly inflated (Fig. 8a).....*Ps. mathesoni*
- 8'. Siphon strongly inflated (Fig. 8b).....9

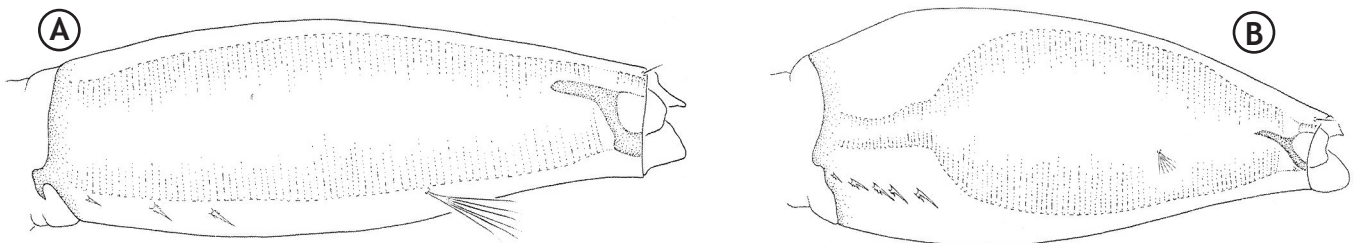


Figure 8.  
 A. Lateral view of siphon - *Ps. mathesoni*  
 B. Lateral view of siphon - *Ps. horrida*

- 9(8'). Siphonal index 3.5 or more, siphon with distinct subapical, narrowed part (Fig. 9a); abdominal segment X with 7 or more precratal fanlike setae (Fig. 9b).....*Ps. horrida*
- 9'. Siphonal index 2.5 to 3.0, siphon without subapical, narrowed part (Fig. 9c); abdominal segment X with 4-6 precratal fan-like setae (Fig. 9d).....*Ps. johnstonii*

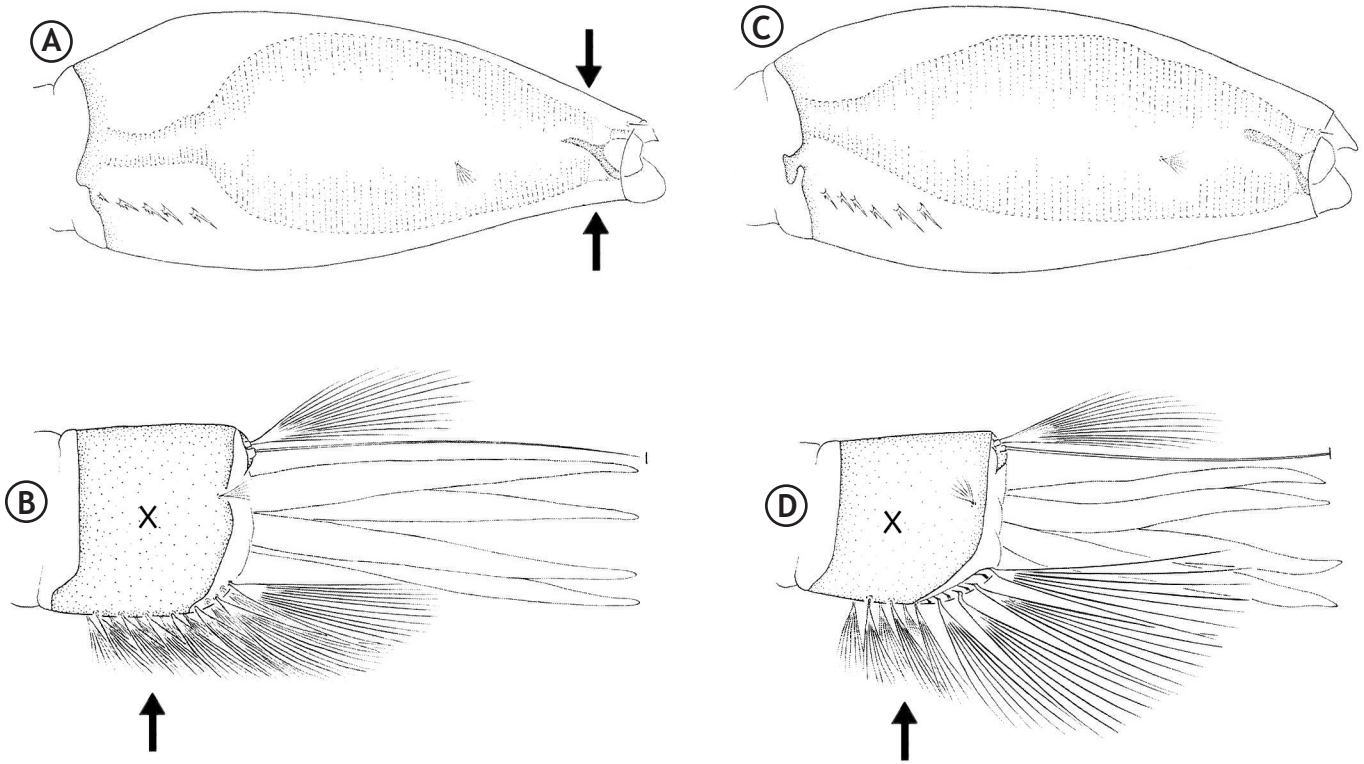


Figure 9.  
 A. Lateral view of siphon - *Ps. horrida*  
 B. Lateral view of abdominal segment X - *Ps. horrida*  
 C. Lateral view of siphon - *Ps. johnstonii*  
 D. Lateral view of abdominal segment X - *Ps. johnstonii*



Culiseta Larvae

- 1. Small two- to three-branched tuft inserted at base of siphon (Fig. 1a).....*Culiseta melanura*
- 1'. Siphonal tuft large, multiple, barbed, inserted within pecten (Fig. 1b).....*Culiseta inornata*

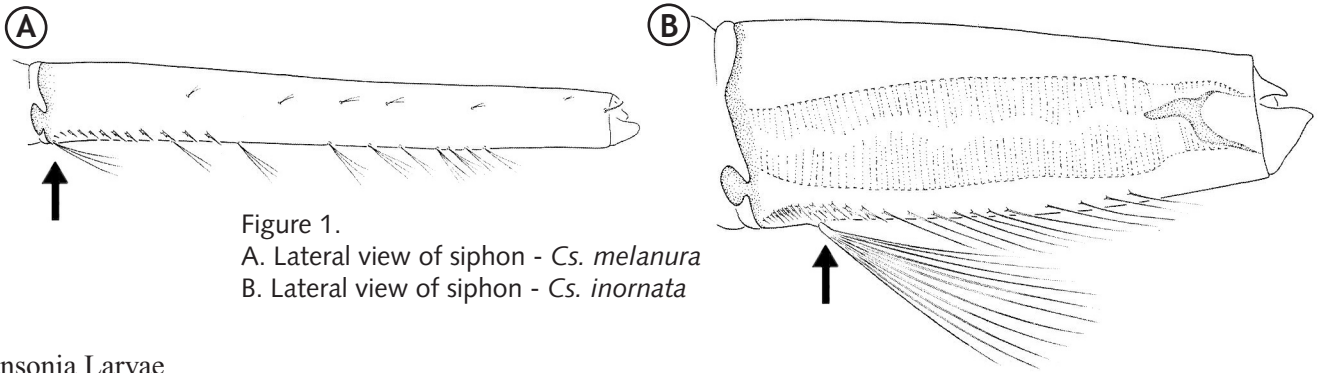


Figure 1.  
A. Lateral view of siphon - *Cs. melanura*  
B. Lateral view of siphon - *Cs. inornata*

Mansonia Larvae

- 1. Comb scale broad with several stout subequal spinules (Fig. 1a).....*Mansonia dyari*
- 1'. Comb scale slender with single spine (Fig. 1b).....*Mansonia titillans*

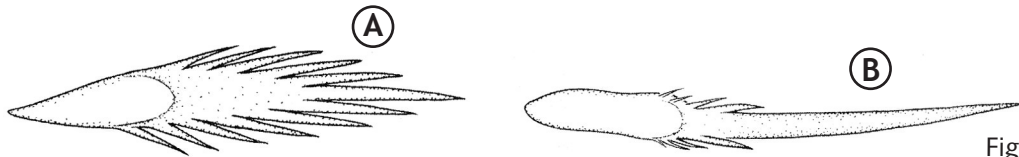


Figure 1.  
A. Comb scale - *Ma. dyari*  
B. Comb scale - *Ma. titillans*

Orthopodomyia Larvae

- 1. Siphonal tuft two- to four-branched and less than 0.75 as long as that part of the siphon beyond the tuft; abdominal segment VIII without a large dorsal sclerotized plate (Fig. 1a).....*Orthopodomyia alba*
- 1'. Siphonal tuft with more than four branches and more than 0.75 as long as that part of the siphon beyond the tuft; abdominal segment VIII with a large dorsal sclerotized plate (Fig. 1b).....*Orthopodomyia signifera*

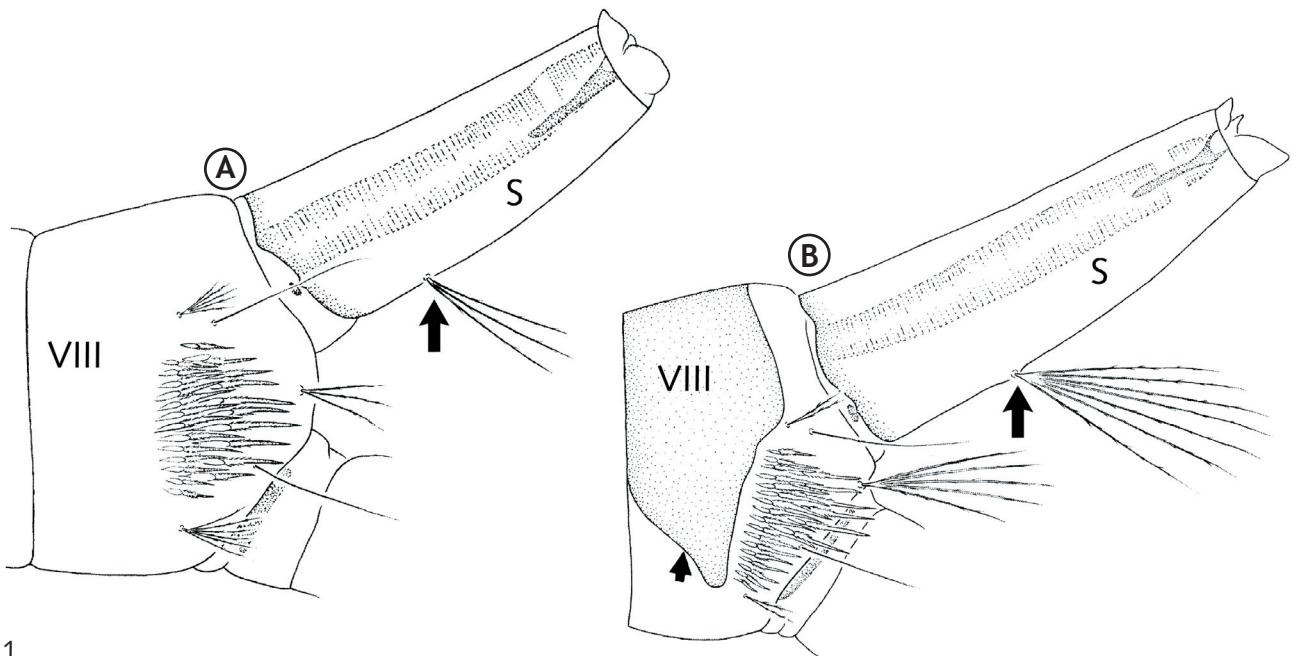


Figure 1.  
A. Lateral view of siphon and abdominal segment VIII - *Or. alba*  
B. Lateral view of siphon and abdominal segment VIII - *Or. signifera*

Uranotaenia Larvae

1. Seta 3-P four- to eight-branched, more than half as long as 1-P (Fig. 1a);  
 seta 6 double on abdominal segments I and II (Fig. 1b).....*Uranotaenia lowii*
- 1'. Seta 3-P eight- to ten-branched, much less than half as long  
 as 1-P (Fig. 1c); seta 6 triple on abdominal segments I and II (Fig. 1d).....*Uranotaenia sapphirina*

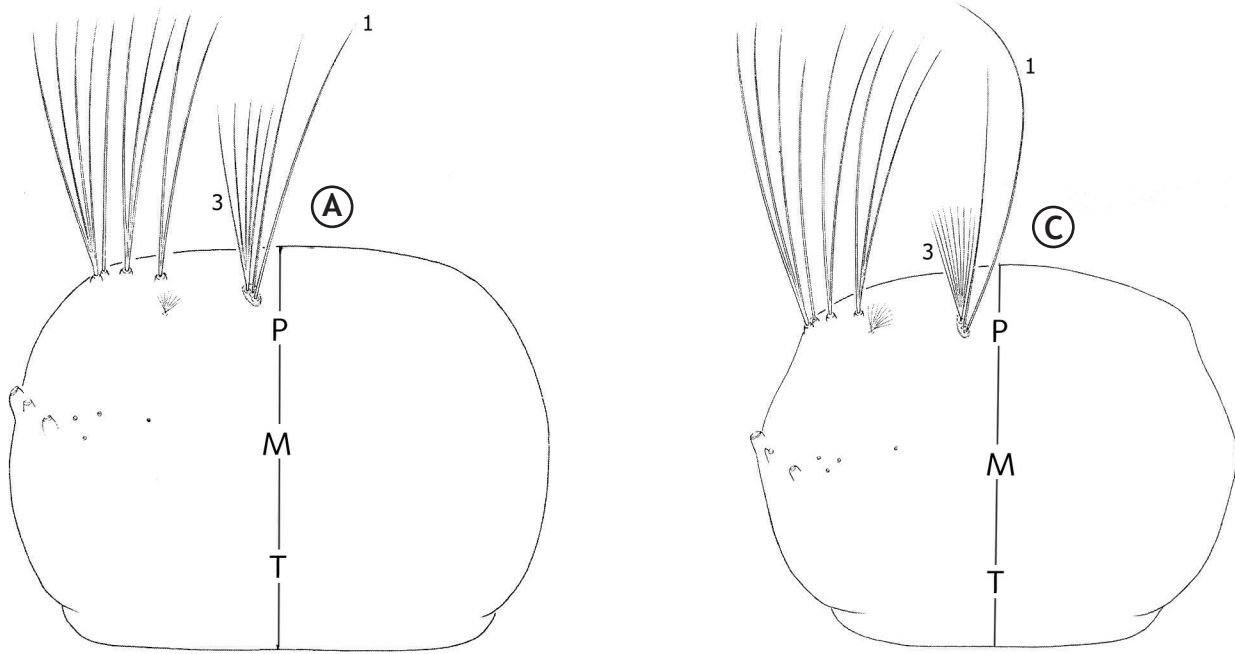


Figure 1.

- A. Dorsal view of prothorax - *Ur. lowii*  
 B. Abdominal segments I and II - *Ur. lowii*  
 C. Dorsal view of prothorax - *Ur. sapphirina*  
 D. Abdominal segments I and II - *Ur. sapphirina*

