WORKING DRAFT - September 13, 2005

Key to the Medically Important Mosquitoes of Louisiana

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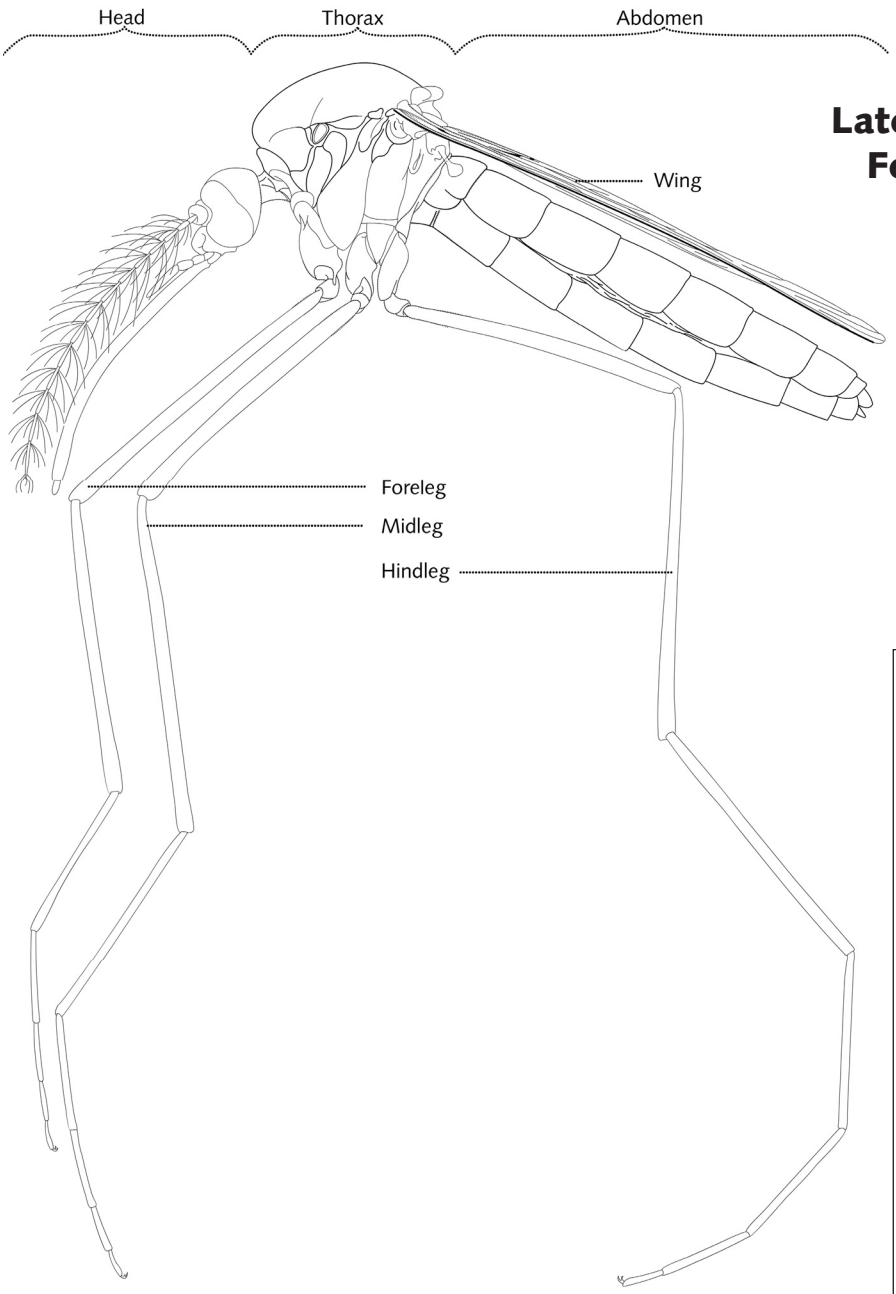
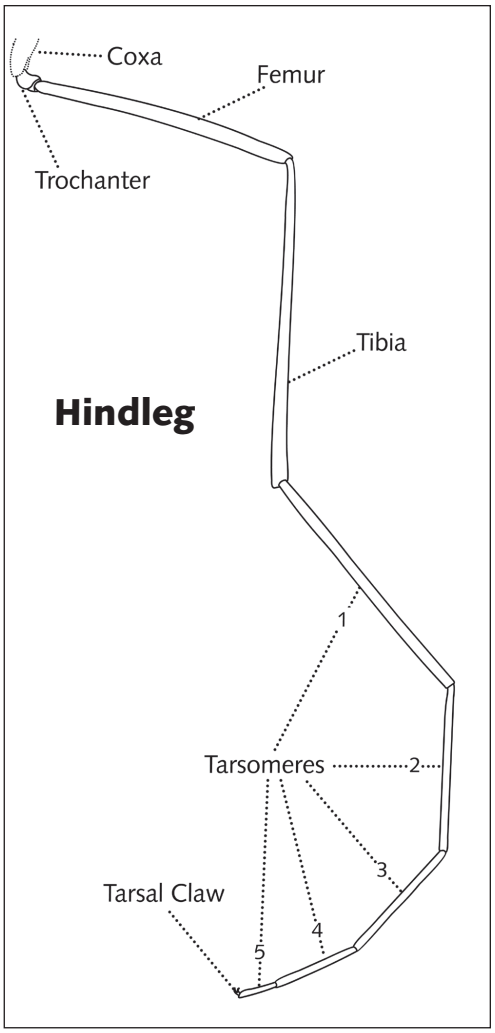
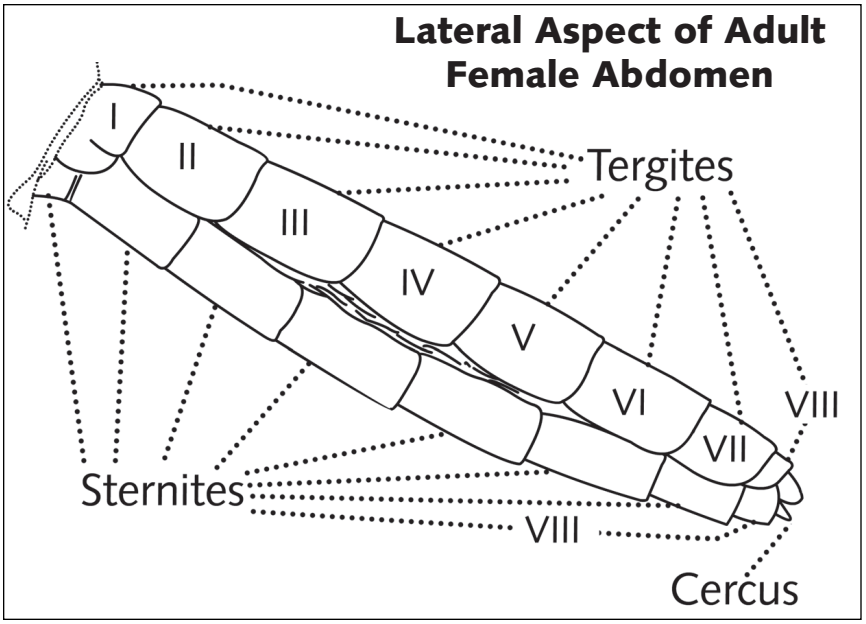
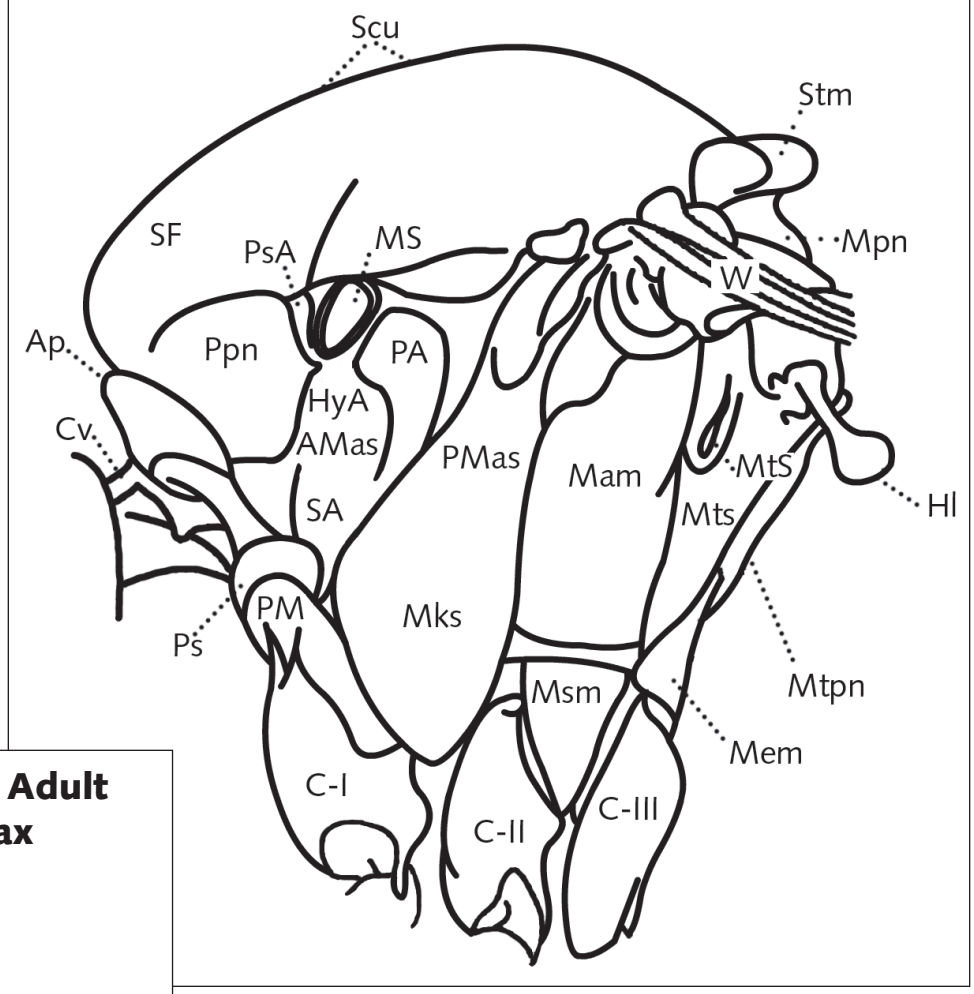


Lateral View of Adult Female Mosquito

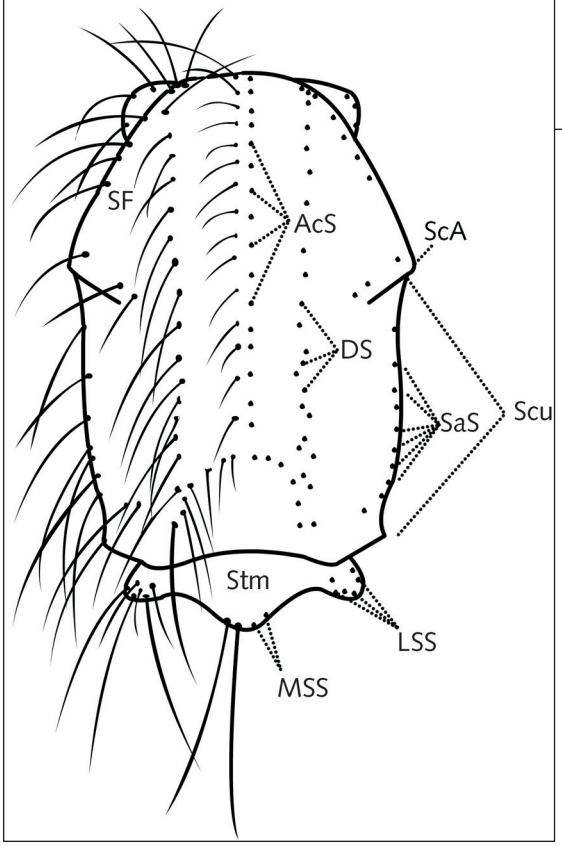




Lateral Aspect of Adult Female Thorax



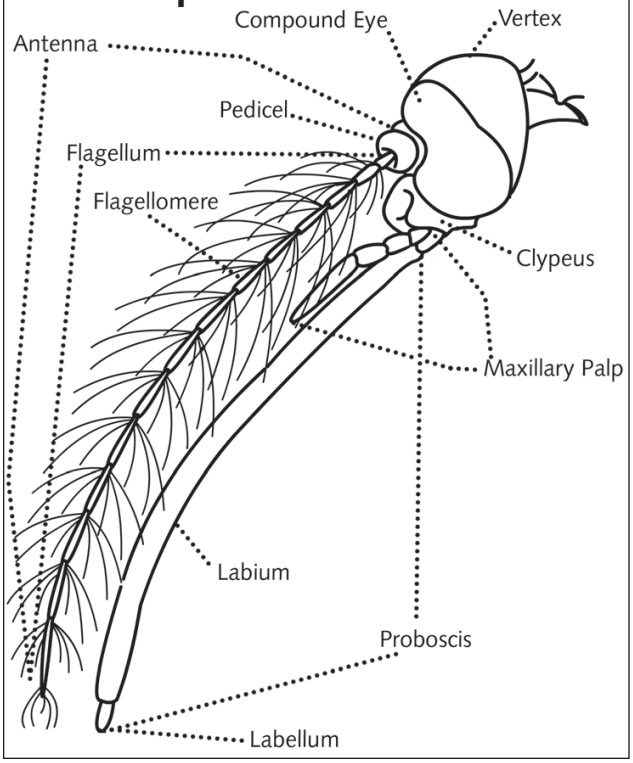
Dorsal Aspect of Adult Female Thorax

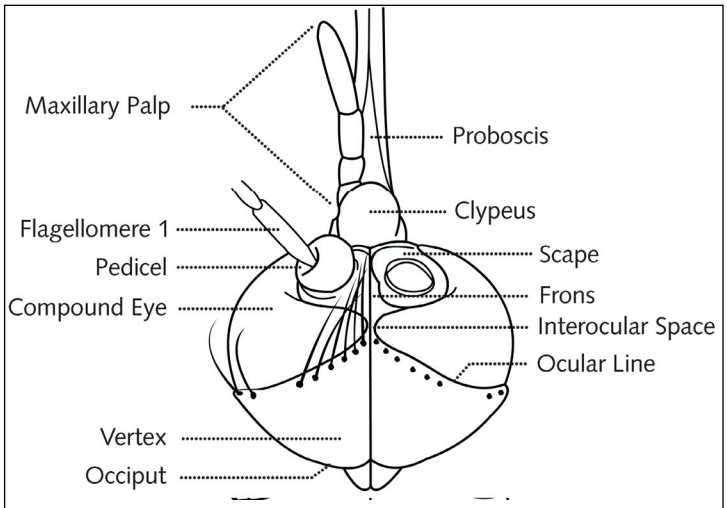


Anatomical Abbreviations for Adult Thorax

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

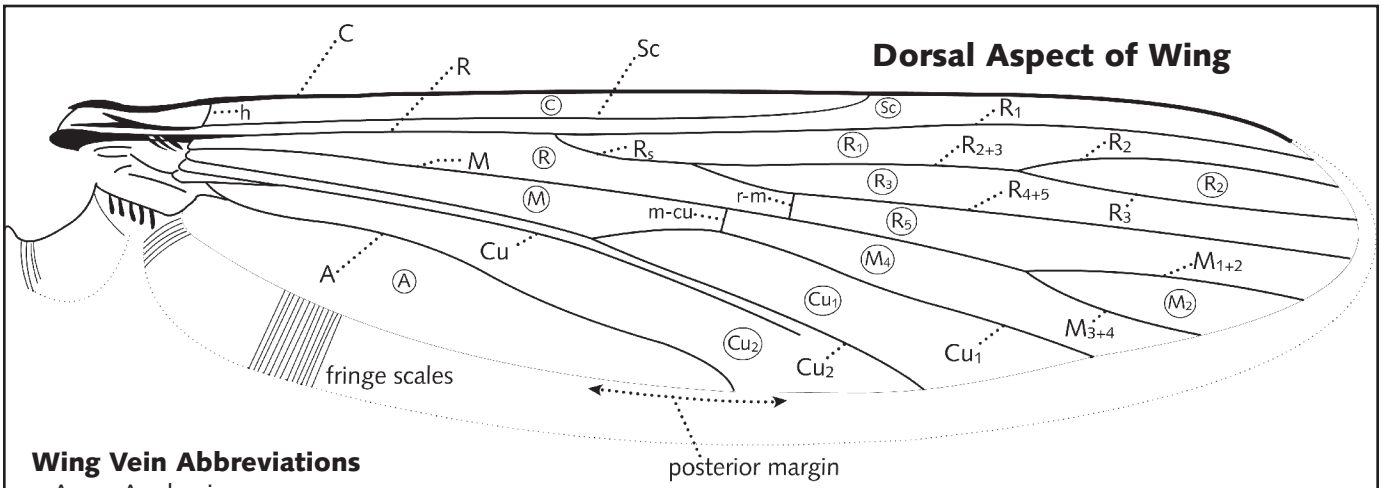
Lateral Aspect of Adult Female Head





Dorsal Aspect of Adult Female Head

Dorsal Aspect of Wing



Wing Vein Abbreviations

- A - Anal vein
- C - Costal vein
- Cu - Cubital vein
- Cu_1 - Anterior branch of cubital vein
- Cu_2 - Posterior branch of cubital vein
- h - Humeral crossvein
- M - Medial vein
- M_{1+2} - Anterior branch of medial vein
- M_{3+4} - Posterior branch of medial vein
- m-cu - mediocubital crossvein
- R - Radial vein
- R_1 - Anteriormost branch of radial vein
- Rs - Radial sector vein
- R_2 - Anterior branch of radial sector vein
- R_{2+3} - Connector vein of radial sector vein
- R_3 - Median branch of radial sector vein
- R_{4+5} - 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_1 - $Cubital_1$ cell
- Cu_2 - $Cubital_2$ cell
- M - Medial cell
- M_2 - $Medial_2$ cell
- M_4 - $Medial_4$ cell
- R - Radial cell
- R_1 - $Radial_1$ cell
- R_2 - $Radial_2$ cell
- R_3 - $Radial_3$ cell
- R_5 - $Radial_5$ 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

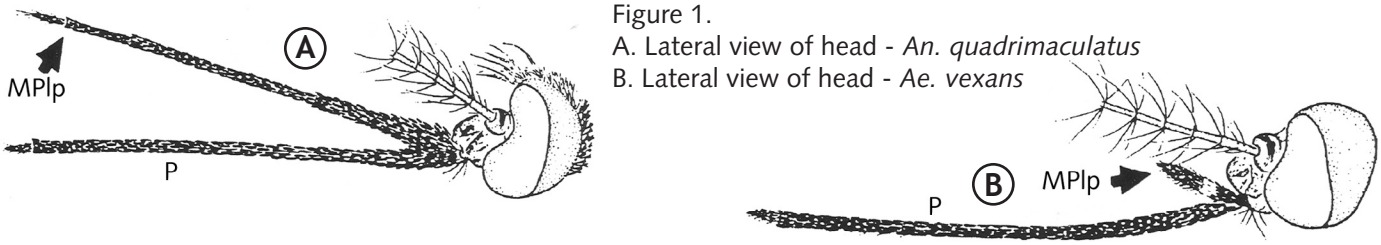


Figure 1.
A. Lateral view of head - *An. quadrimaculatus*
B. Lateral view of head - *Ae. vexans*

2(1). Proboscis stout basally, outer half tapered and curved downward (Fig. 2a); posterior edge of wing strongly emarginated at apex of vein Cu_2 (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_2 (Fig. 2d).....3

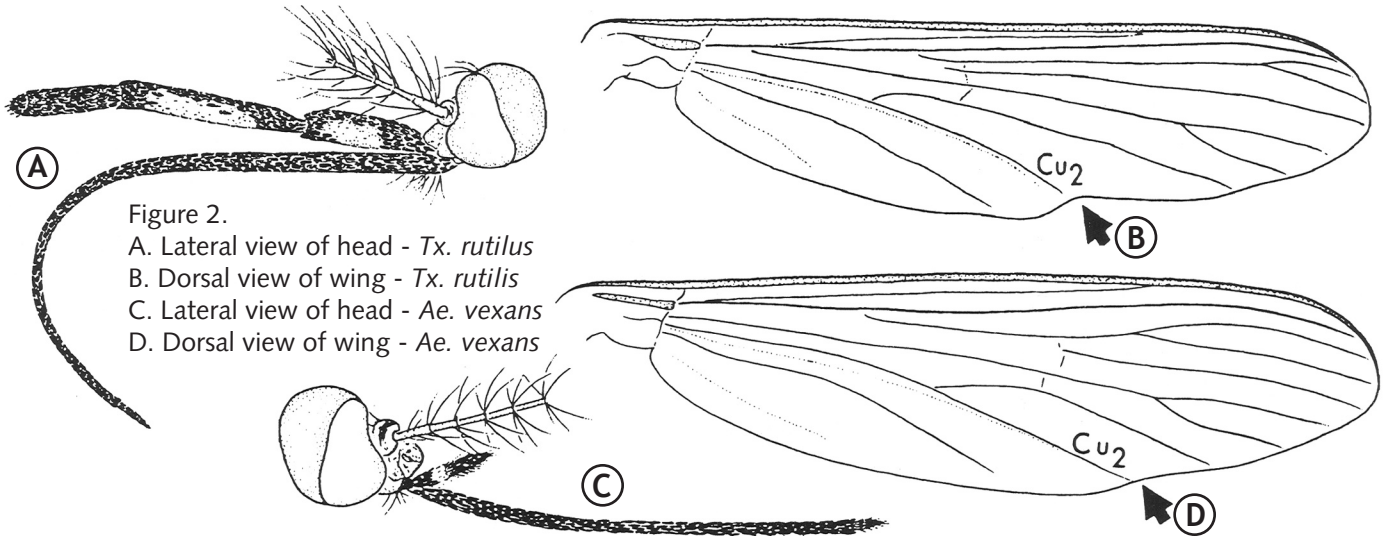
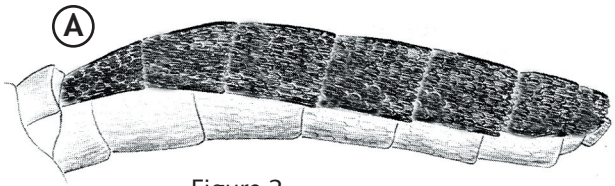


Figure 2.
A. Lateral view of head - *Tx. rutilus*
B. Dorsal view of wing - *Tx. rutilis*
C. Lateral view of head - *Ae. vexans*
D. Dorsal view of wing - *Ae. vexans*

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



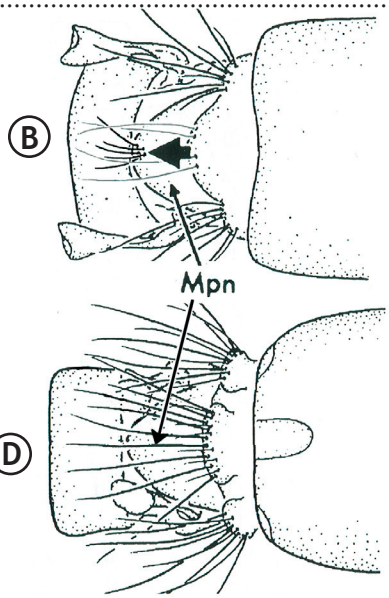
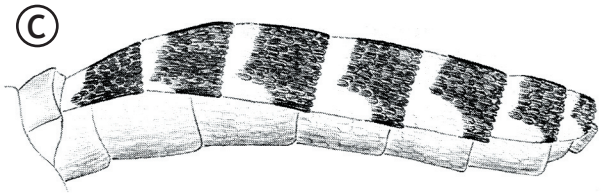


Figure 3.
A. Lateral view of abdomen - *Wyeomyia spp.*
B. Posterior dorsal view of thorax - *Wy. smithii*
C. Lateral view of abdomen - *Cx. quinquefasciatus*
D. Posterior dorsal view of thorax - *Ae. vexans*



4(3). Radial$_2$ cell of wing less than half as long as vein R_{2+3} (Fig. 4a);
thorax usually with patches of iridescent blue or white scales (Fig. 4b).....*Uranotaenia*

4'. Radial$_2$ cell of wing at least as long vein R_{2+3} (Fig. 4c);
blue scales absent on thorax (Fig. 4d).....5

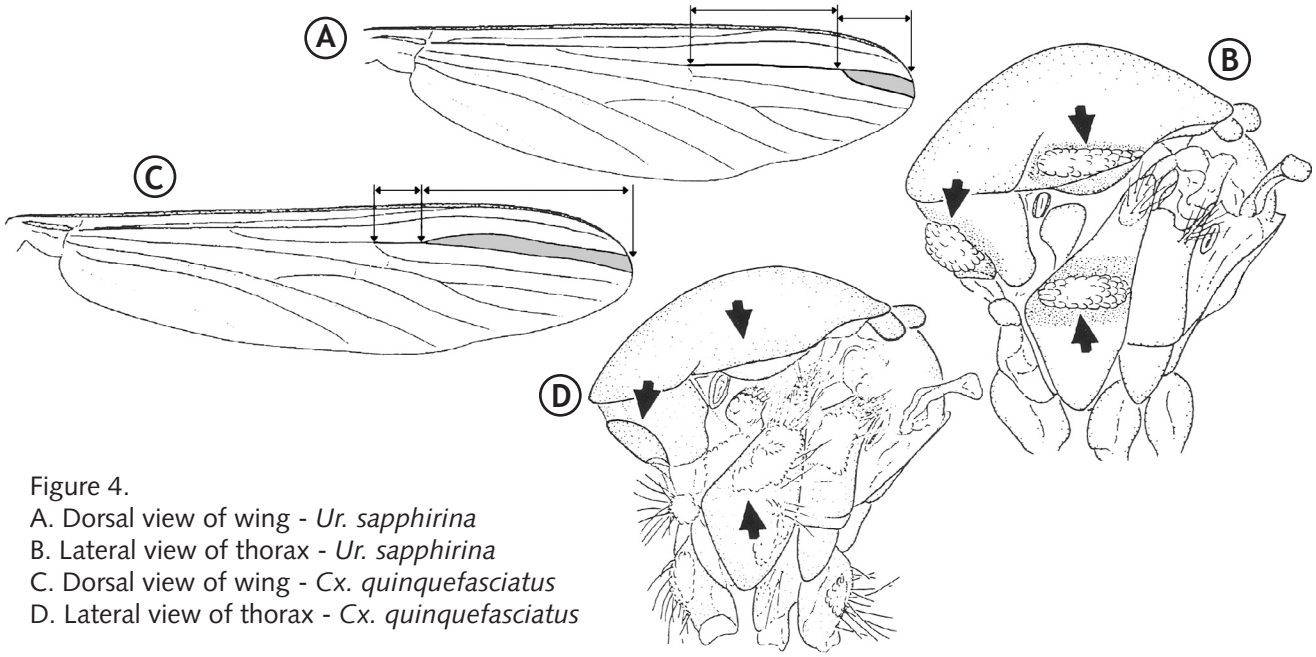


Figure 4.
A. Dorsal view of wing - *Ur. sapphirina*
B. Lateral view of thorax - *Ur. sapphirina*
C. Dorsal view of wing - *Cx. quinquefasciatus*
D. Lateral view of thorax - *Cx. quinquefasciatus*

5(4). Abdomen pointed at tip (Fig. 5a).....6

5'. Abdomen blunt at tip (Fig. 5b).....7

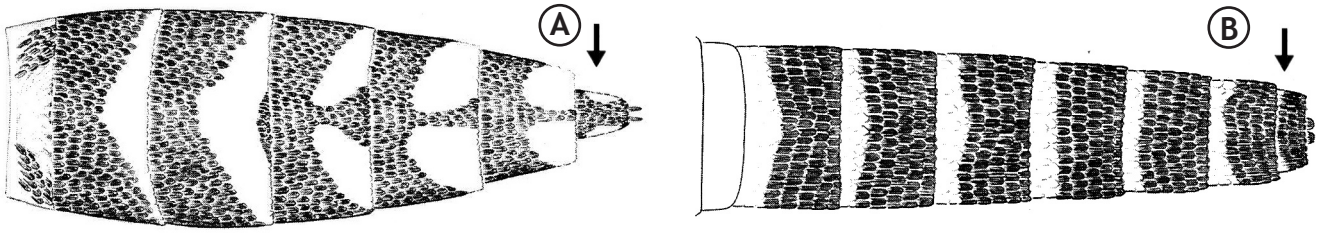


Figure 5.
A. Dorsal view of abdomen - *Ps. ferox*
B. Dorsal view of abdomen - *Cx. restuans*

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*

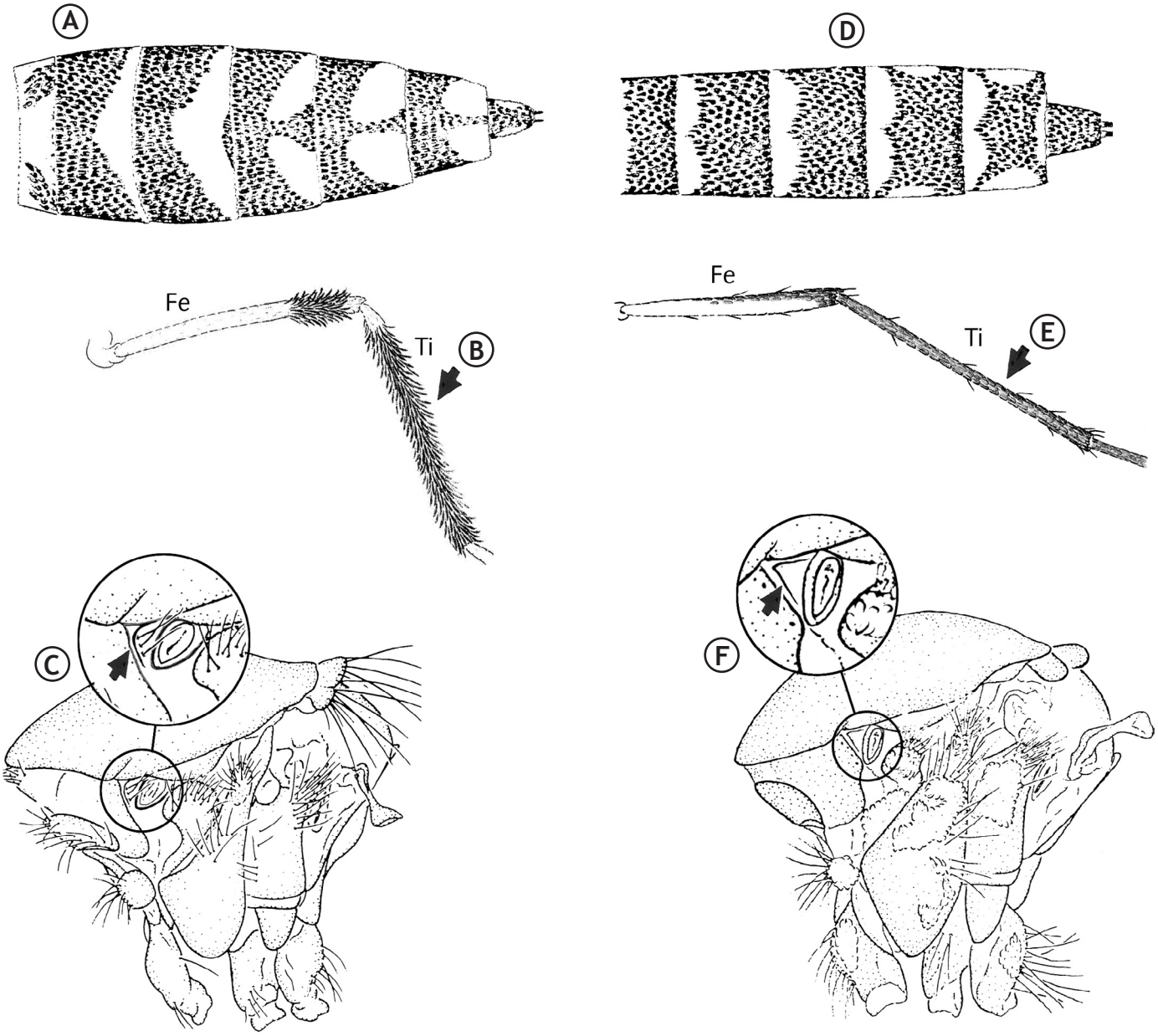


Figure 6.
A. Dorsal view of abdomen - *Ps. cyanescens*
B. Lateral view of hind tibia - *Ps. ciliata*
C. Lateral view of thorax - *Ps. ciliata*
D. Dorsal view of abdomen - *Ae. vexans*
E. Lateral view of hind tibia - *Ae. infirmatis*
F. Lateral view of thorax - *Ae. vexans*

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).....

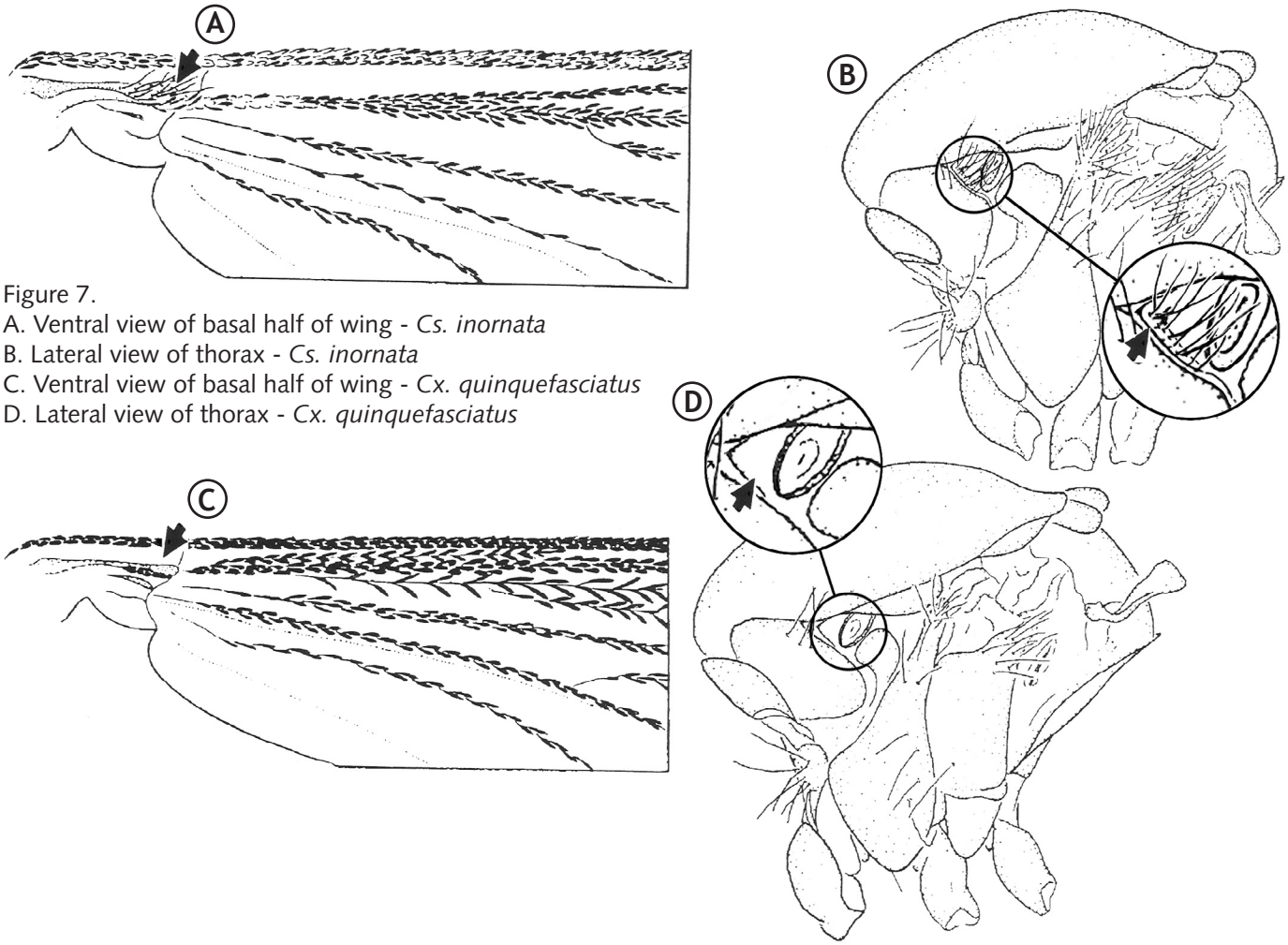


Figure 7.
A. Ventral view of basal half of wing - *Cs. inornata*
B. Lateral view of thorax - *Cs. inornata*
C. Ventral view of basal half of wing - *Cx. quinquefasciatus*
D. Lateral view of thorax - *Cx. quinquefasciatus*

8(7). Wing scales narrow (Fig. 8a)..

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

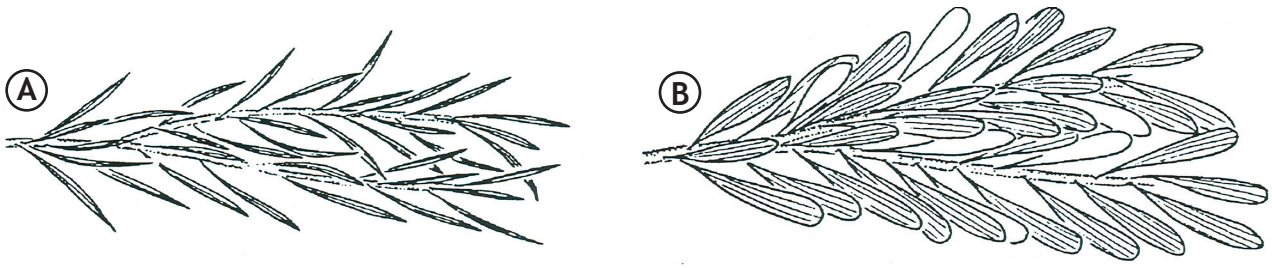


Figure 8.
A. Dorsal view of wing veins - *Cx. quinquefasciatus*
B. Dorsal view of wing veins - *Cq. perturbans*

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*

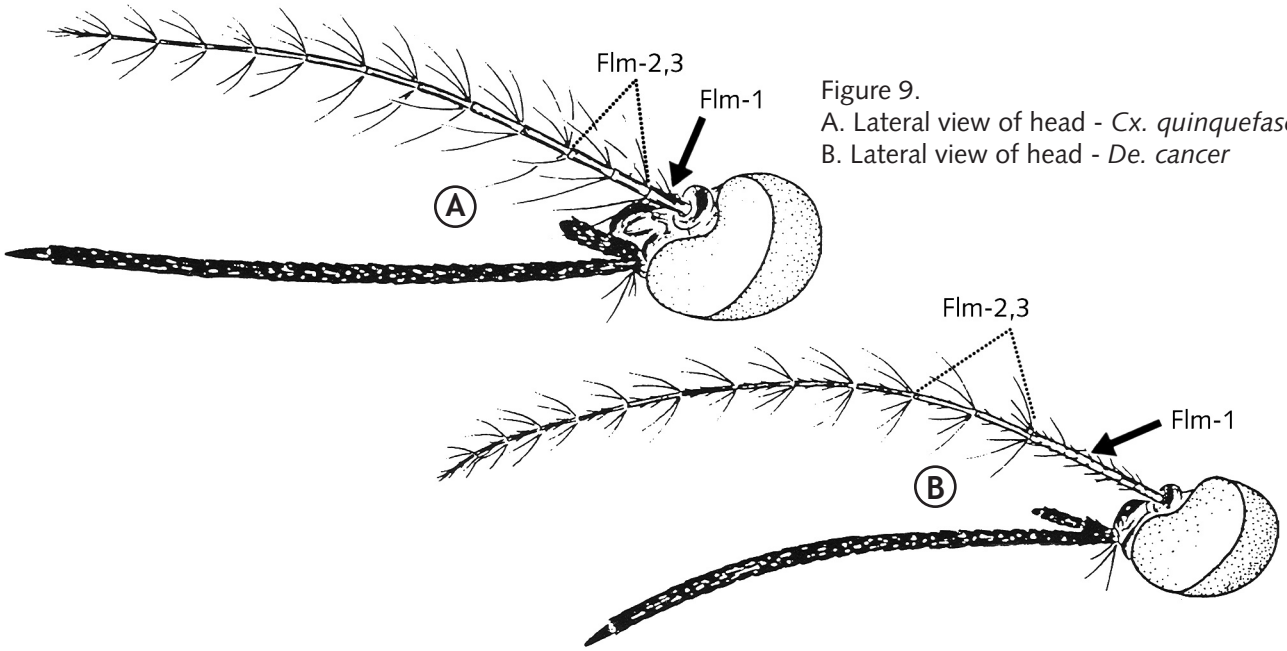


Figure 9.
A. Lateral view of head - *Cx. quinquefasciatus*
B. Lateral view of head - *De. cancer*

10(8'). Mesonotum with fine longitudinal lines of white scales (Fig. 10a).....*Orthopodomyia*

10'. Mesonotum without white lines of scales (Fig. 10b).....11

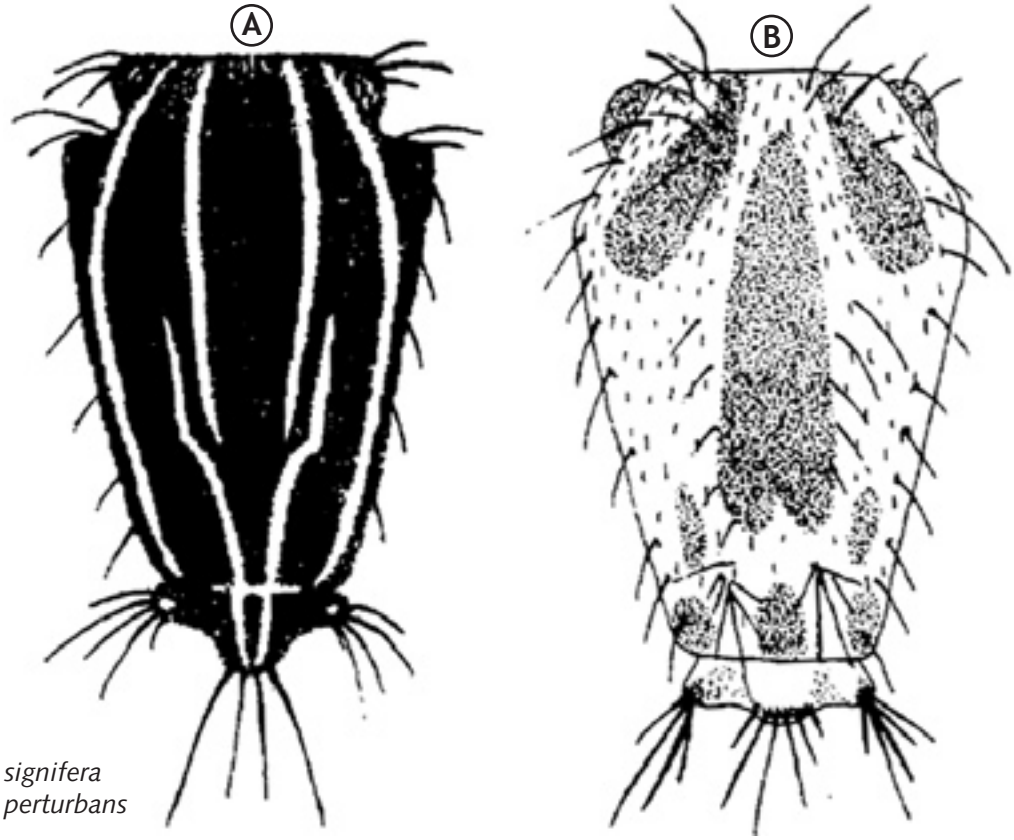


Figure 10.
A. Dorsal view of thorax - *Or. signifera*
B. Dorsal view of thorax - *Cq. perturbans*

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*

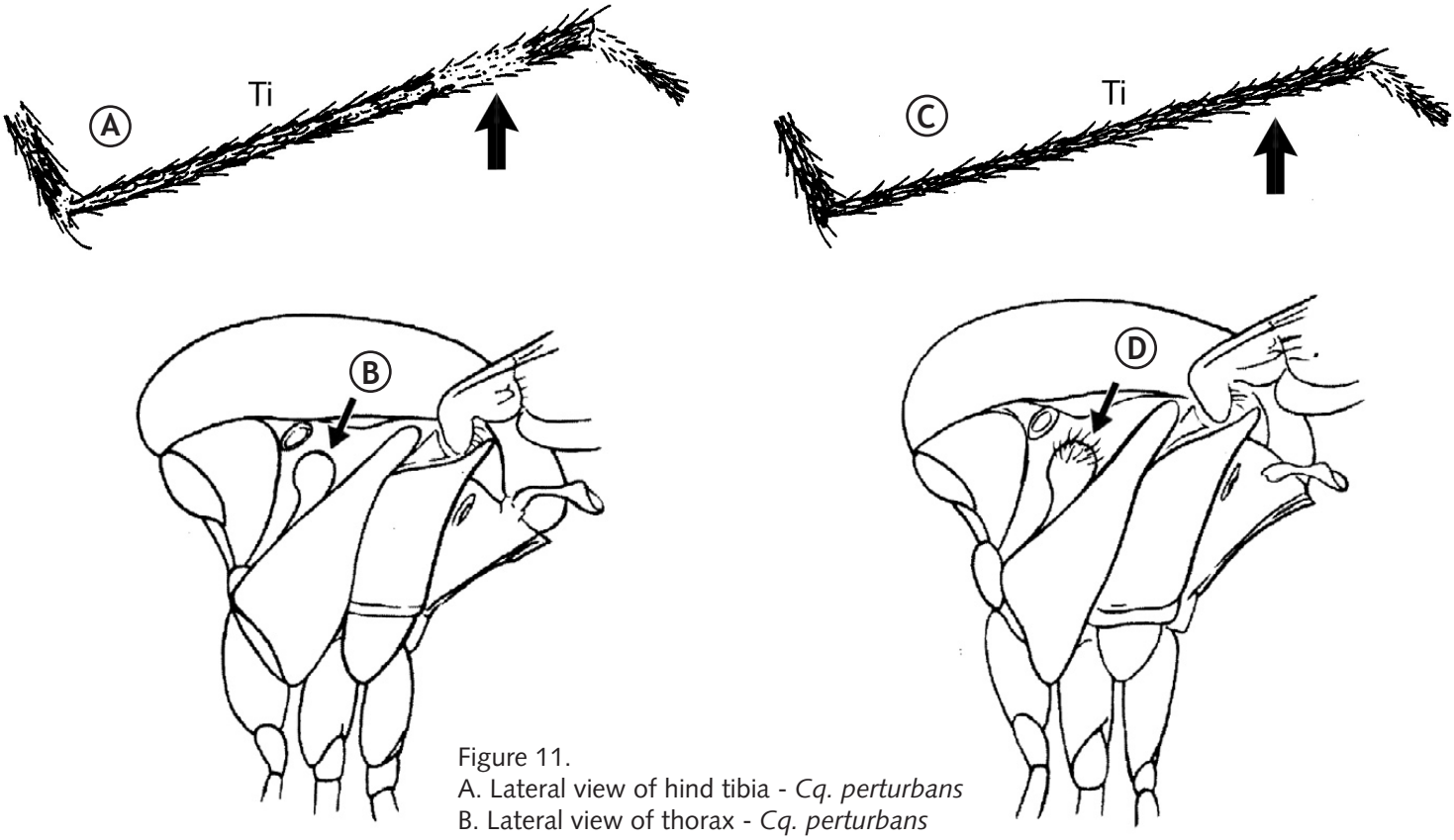


Figure 11.
A. Lateral view of hind tibia - *Cq. perturbans*
B. Lateral view of thorax - *Cq. perturbans*
C. Lateral view of hind tibia - *Ma. titillans*
D. Lateral view of thorax - *Ma. titillans*

Anopheles Adults

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

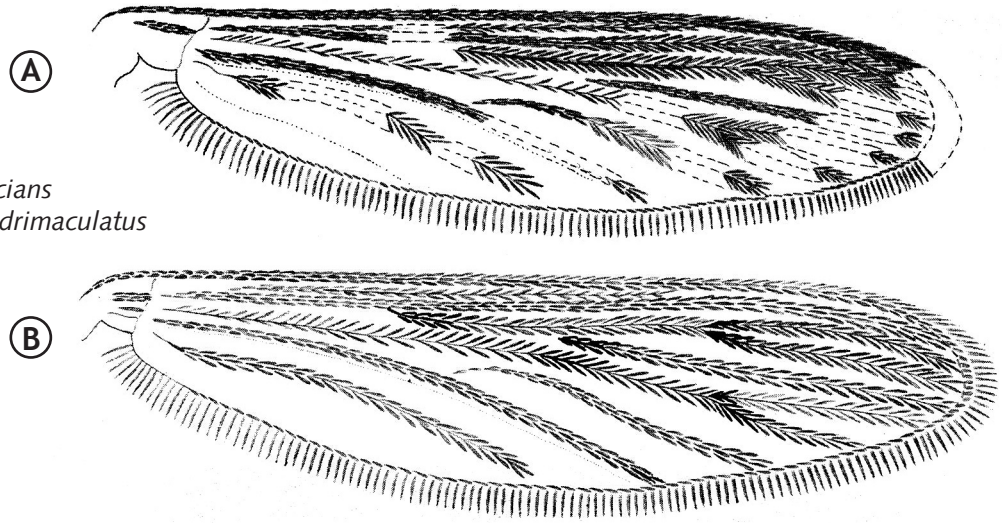


Figure 1.
A. Dorsal view of wing - *An. crucians*
B. Dorsal view of wing - *An. quadrimaculatus*

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

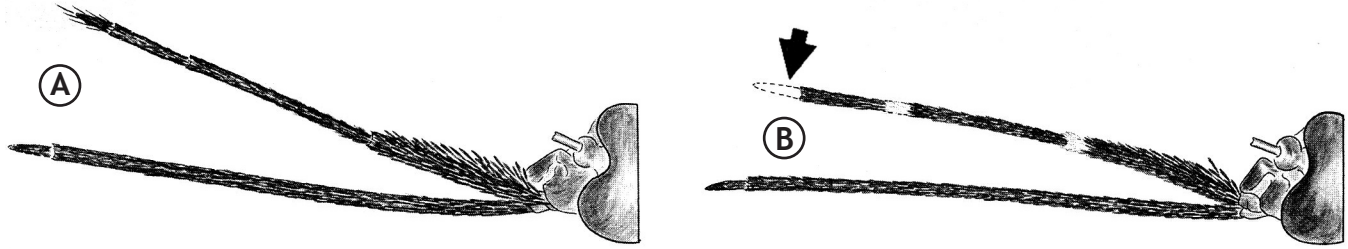


Figure 2.
A. Lateral view of head - *An. punctipennis*
B. Lateral view of head - *An. pseudopunctipennis*

3(2'). Front margin of wing with two pale areas, one at wing-tip, 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

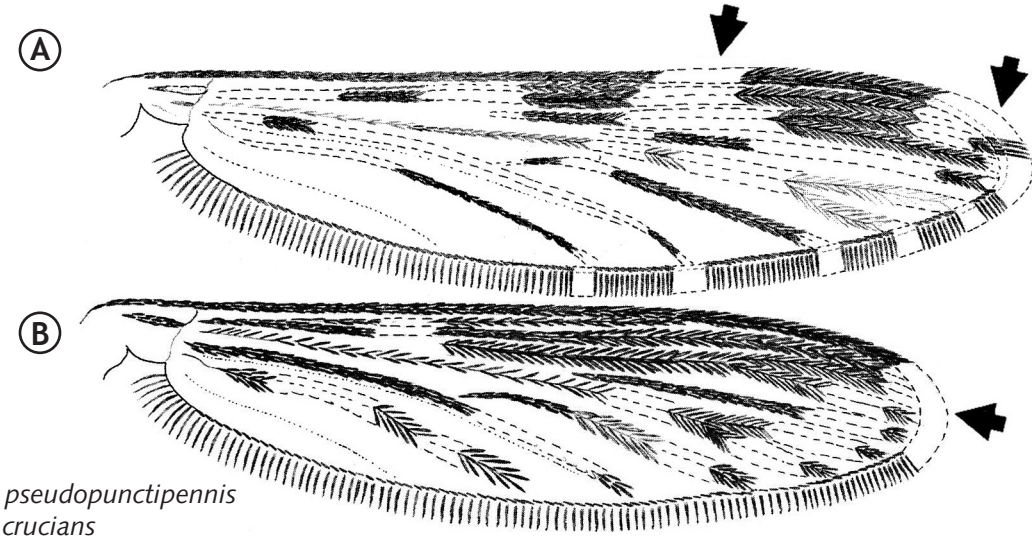


Figure 3.
A. Dorsal view of wing - *An. pseudopunctipennis*
B. Dorsal view of wing - *An. crucians*

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*

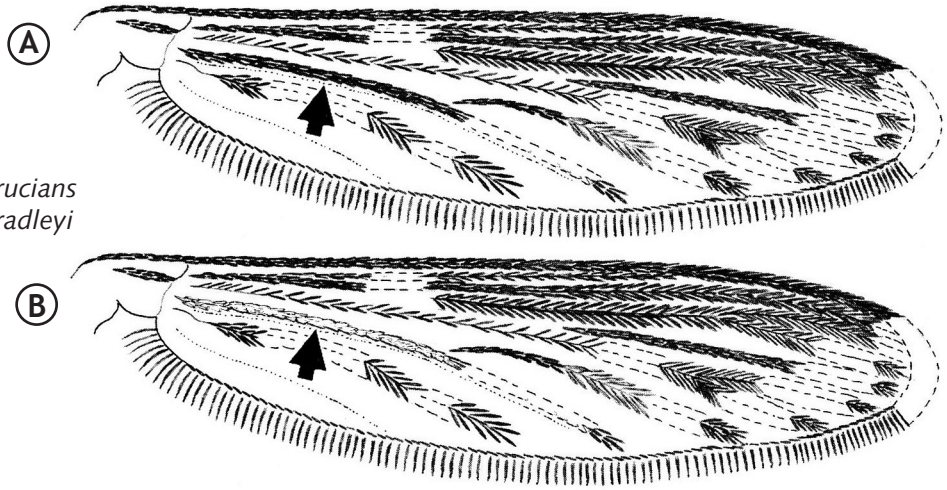


Figure 4.
A. Dorsal view of wing - *An. crucians*
B. Dorsal view of wing - *An. bradleyi*

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*

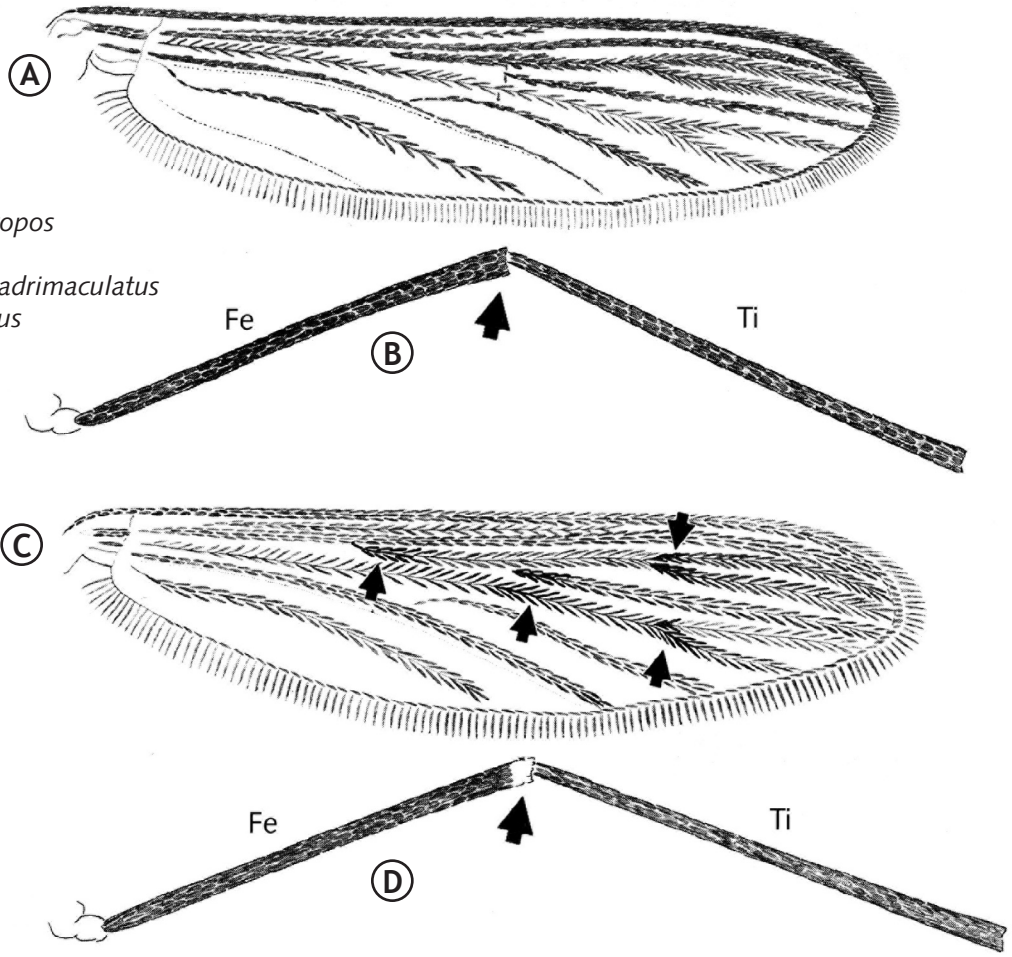


Figure 5.
A. Dorsal view of wing - *An. atropos*
B. Hindleg - *An. atropos*
C. Dorsal view of wing - *An. quadrimaculatus*
D. Hindleg - *An. quadrimaculatus*

* 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

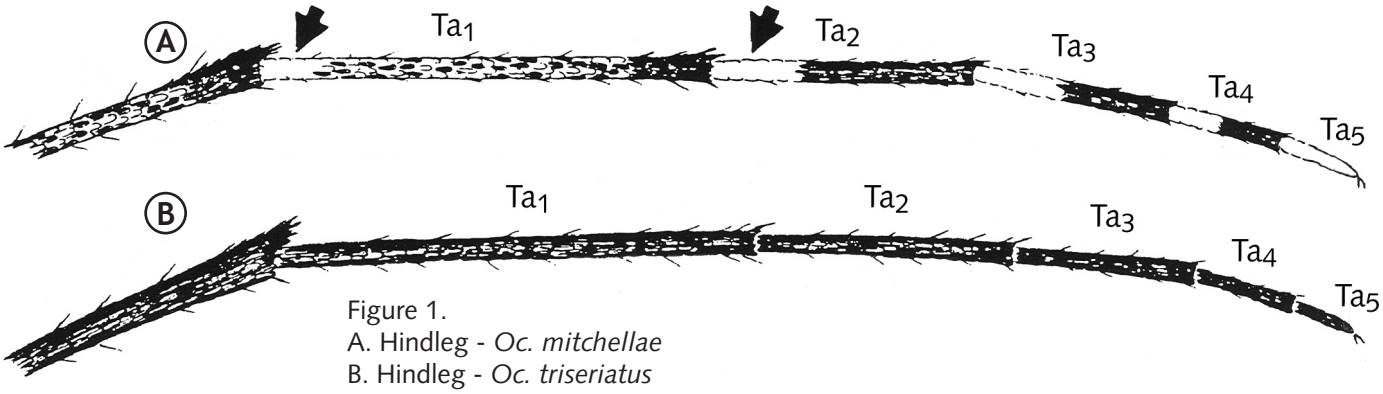


Figure 1.
A. Hindleg - *Oc. mitchellae*
B. Hindleg - *Oc. triseriatus*

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

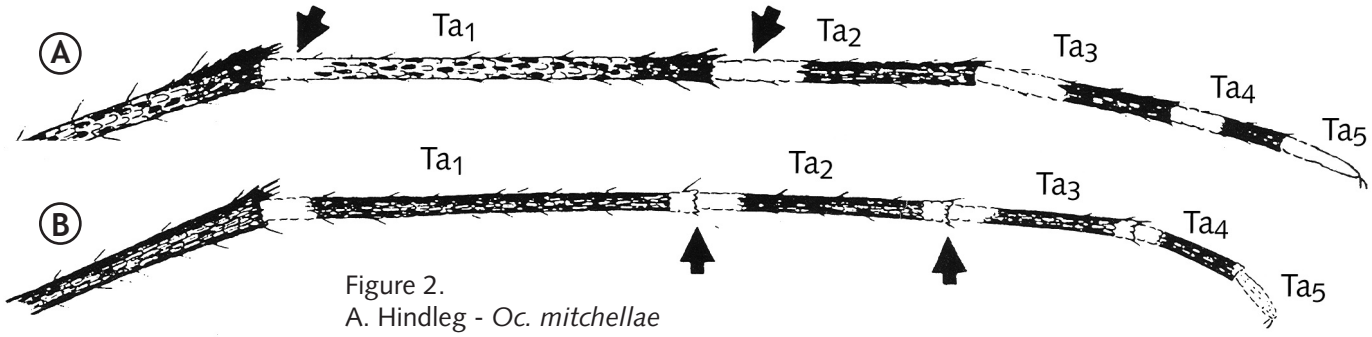


Figure 2.
A. Hindleg - *Oc. mitchellae*
B. Hindleg - *Oc. c. canadensis*

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

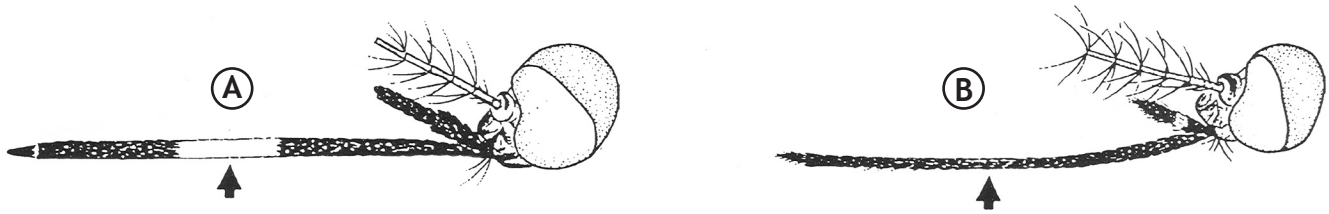


Figure 3.
A. Lateral view of head - *Oc. sollicitans*
B. Lateral view of head - *Ae. vexans*

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

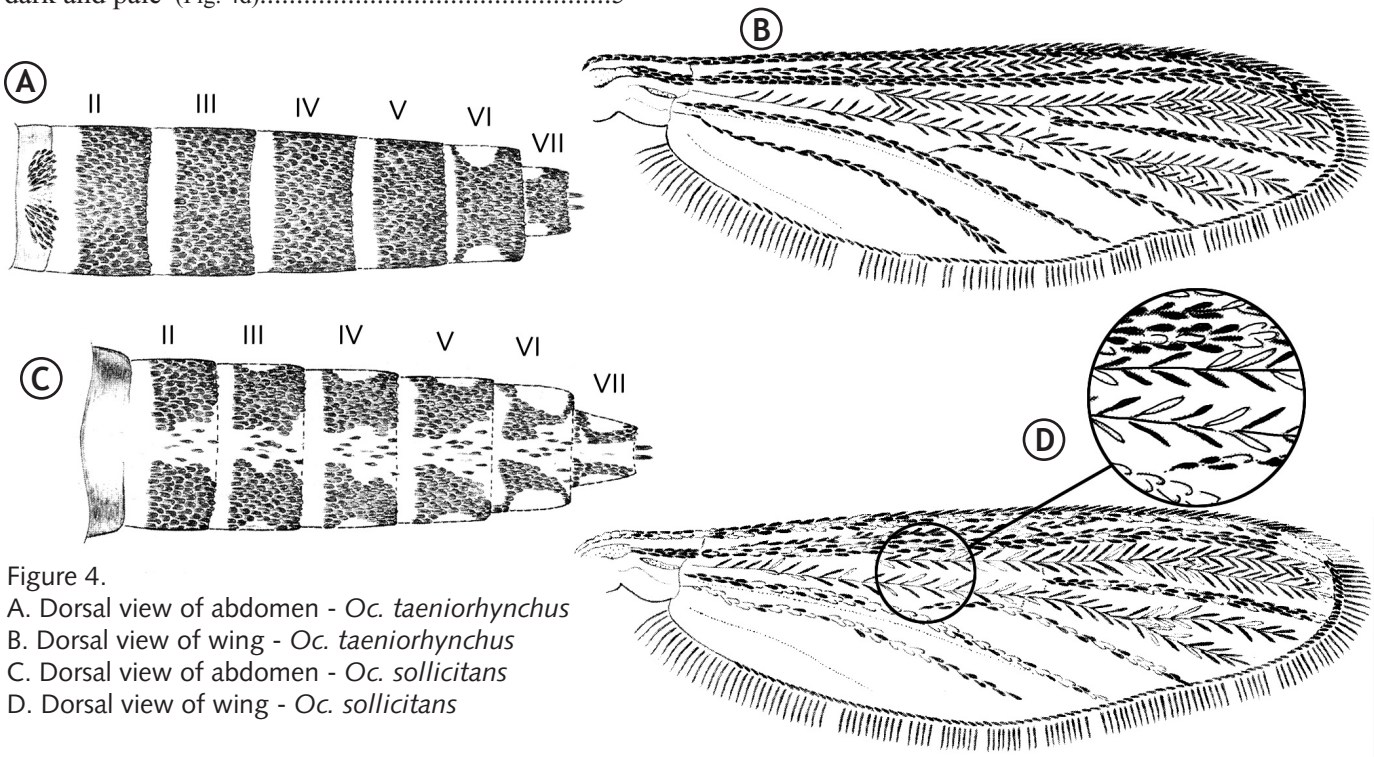


Figure 4.
A. Dorsal view of abdomen - *Oc. taeniorhynchus*
B. Dorsal view of wing - *Oc. taeniorhynchus*
C. Dorsal view of abdomen - *Oc. sollicitans*
D. Dorsal view of wing - *Oc. sollicitans*

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*

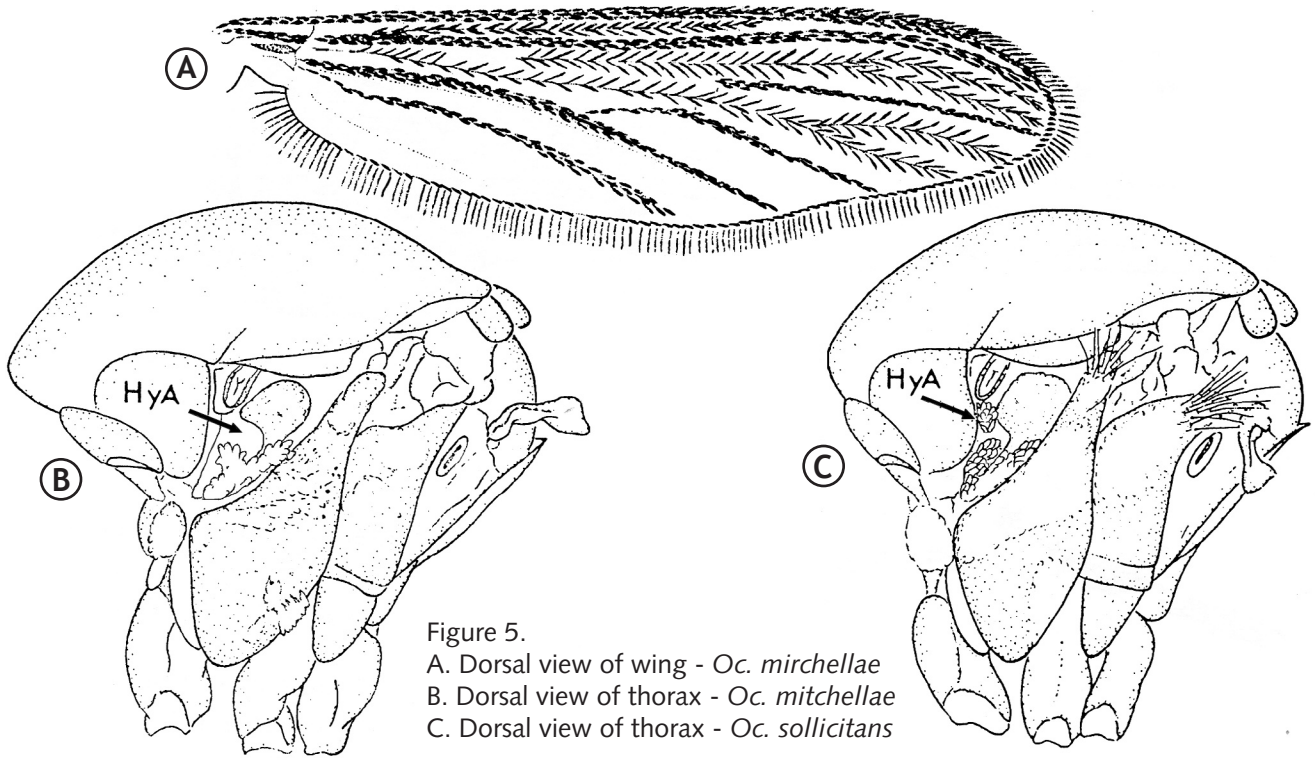


Figure 5.
A. Dorsal view of wing - *Oc. mirchellae*
B. Dorsal view of thorax - *Oc. mitchellae*
C. Dorsal view of thorax - *Oc. sollicitans*

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

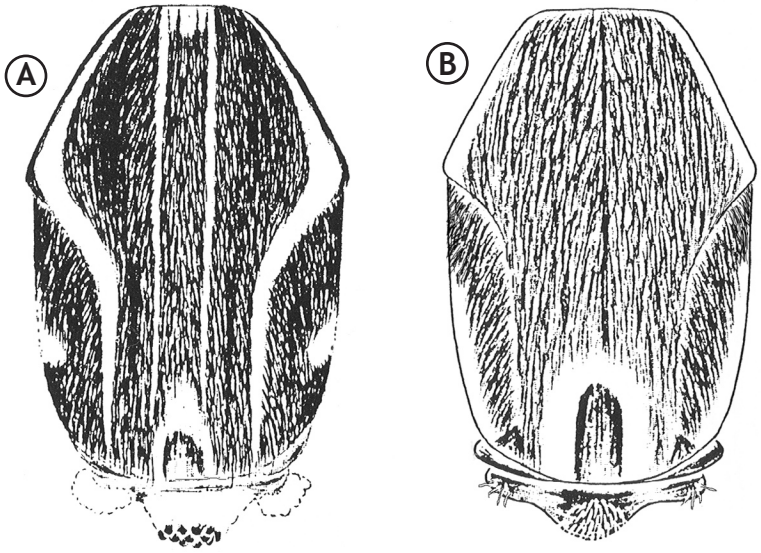


Figure 6.
A. Dorsal view of thorax - *Ae. aegypti*
B. Dorsal view of thorax - *Oc. c. canadensis*

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*

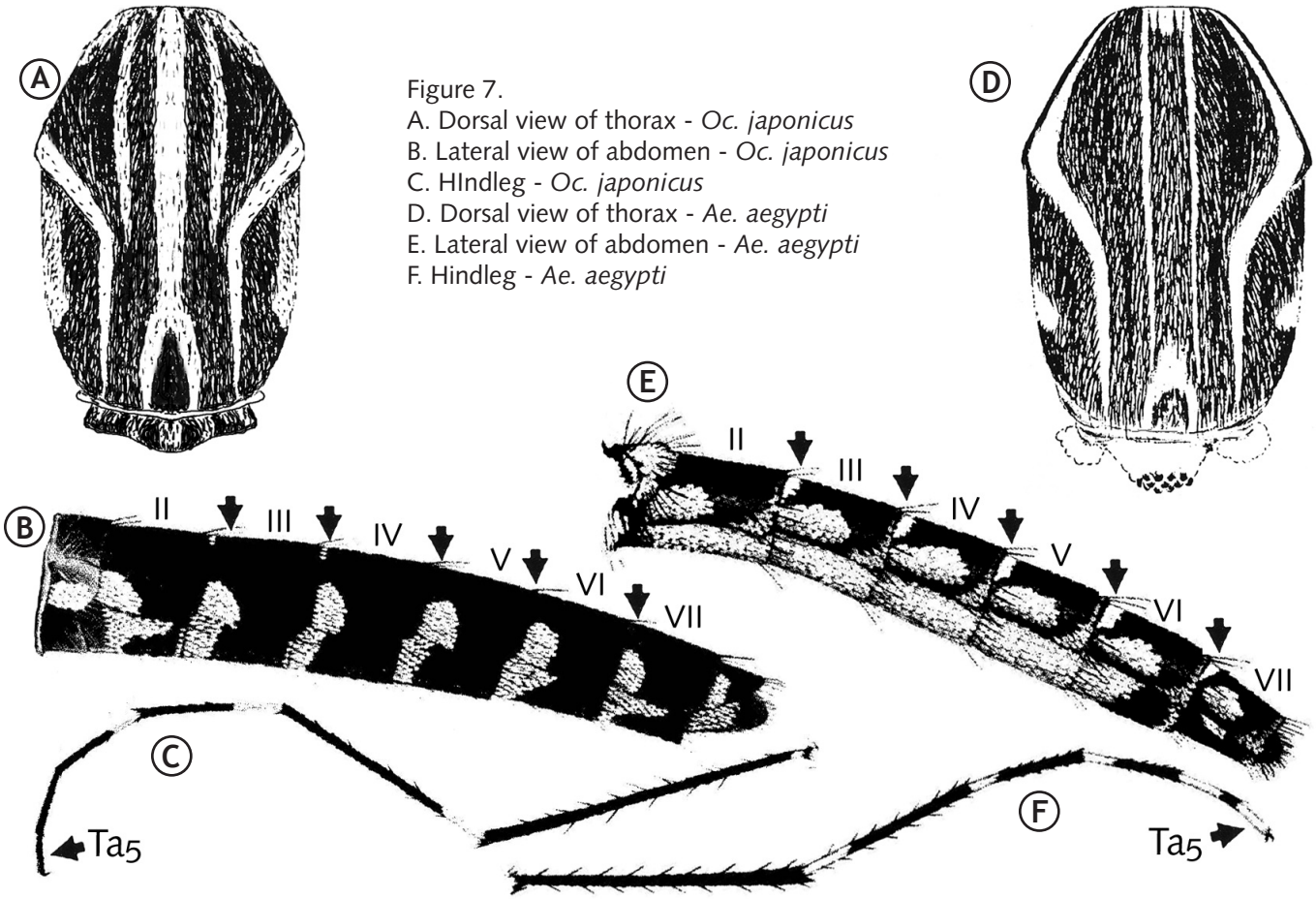


Figure 7.
A. Dorsal view of thorax - *Oc. japonicus*
B. Lateral view of abdomen - *Oc. japonicus*
C. HIndleg - *Oc. japonicus*
D. Dorsal view of thorax - *Ae. aegypti*
E. Lateral view of abdomen - *Ae. aegypti*
F. Hindleg - *Ae. aegypti*

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*

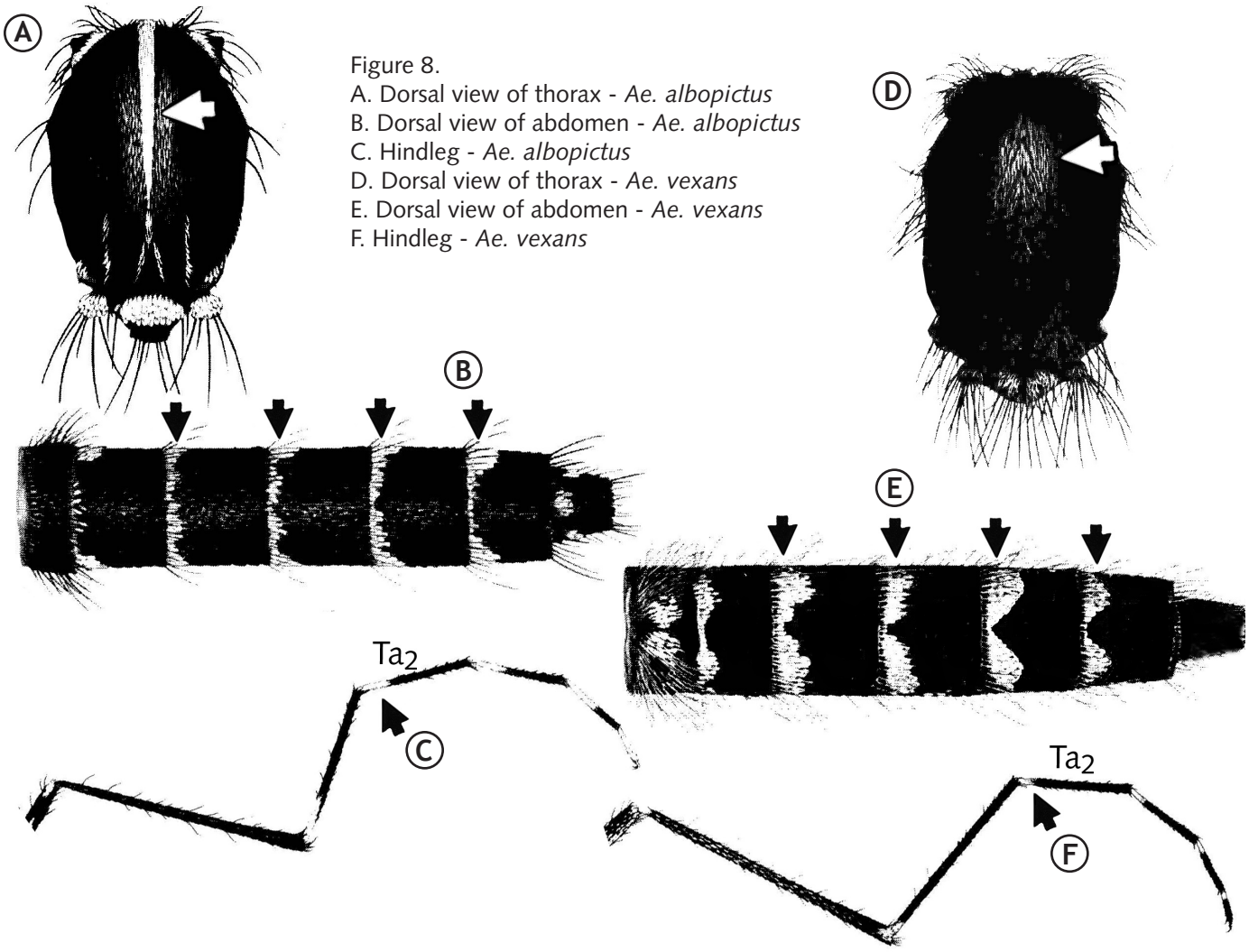


Figure 8.
A. Dorsal view of thorax - *Ae. albopictus*
B. Dorsal view of abdomen - *Ae. albopictus*
C. Hindleg - *Ae. albopictus*
D. Dorsal view of thorax - *Ae. vexans*
E. Dorsal view of abdomen - *Ae. vexans*
F. Hindleg - *Ae. vexans*

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*

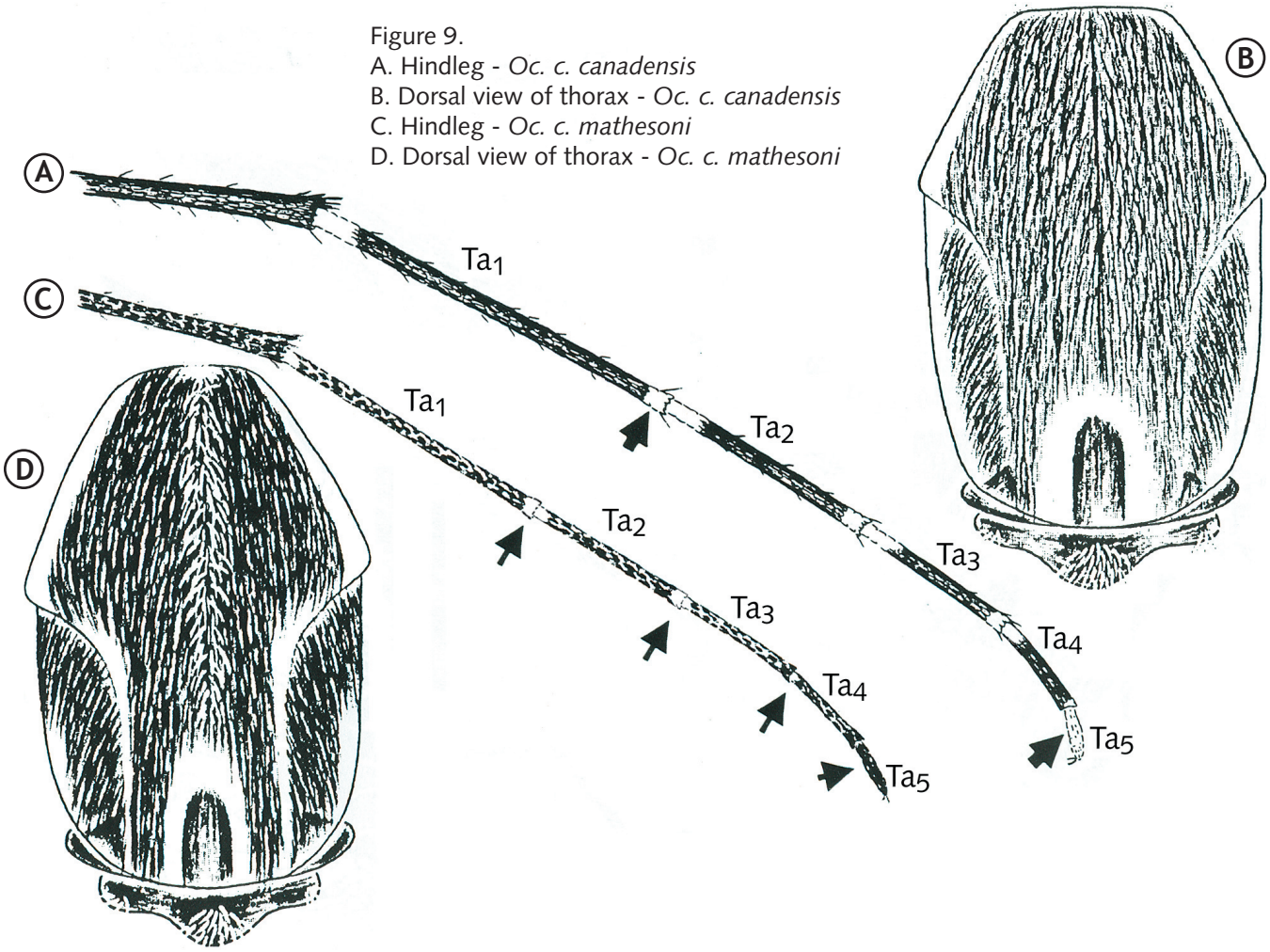


Figure 9.
A. Hindleg - *Oc. c. canadensis*
B. Dorsal view of thorax - *Oc. c. canadensis*
C. Hindleg - *Oc. c. mathesoni*
D. Dorsal view of thorax - *Oc. c. mathesoni*

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

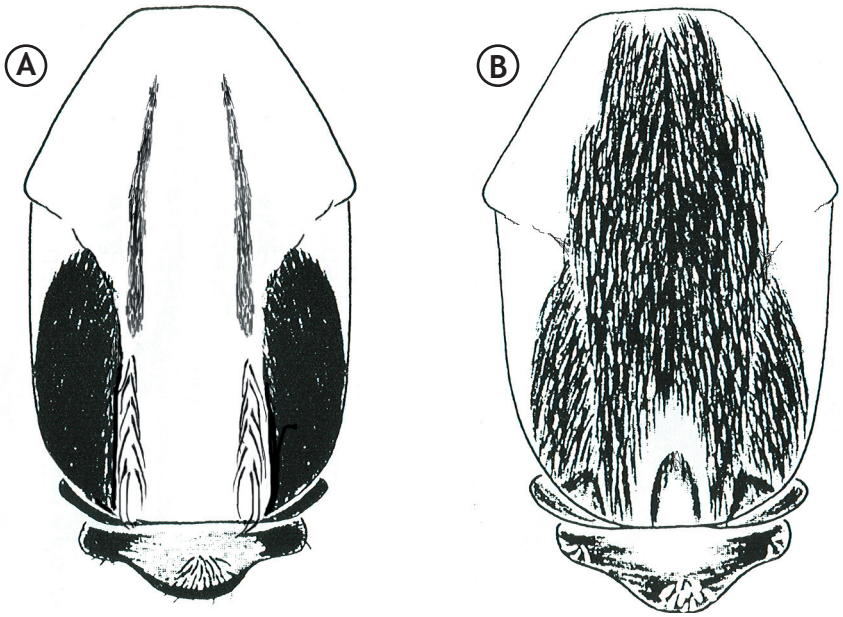


Figure 10.
A. Dorsal view of thorax - *Oc. fulvus pallens*
B. Dorsal view of thorax - *Oc. triseriatus*

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

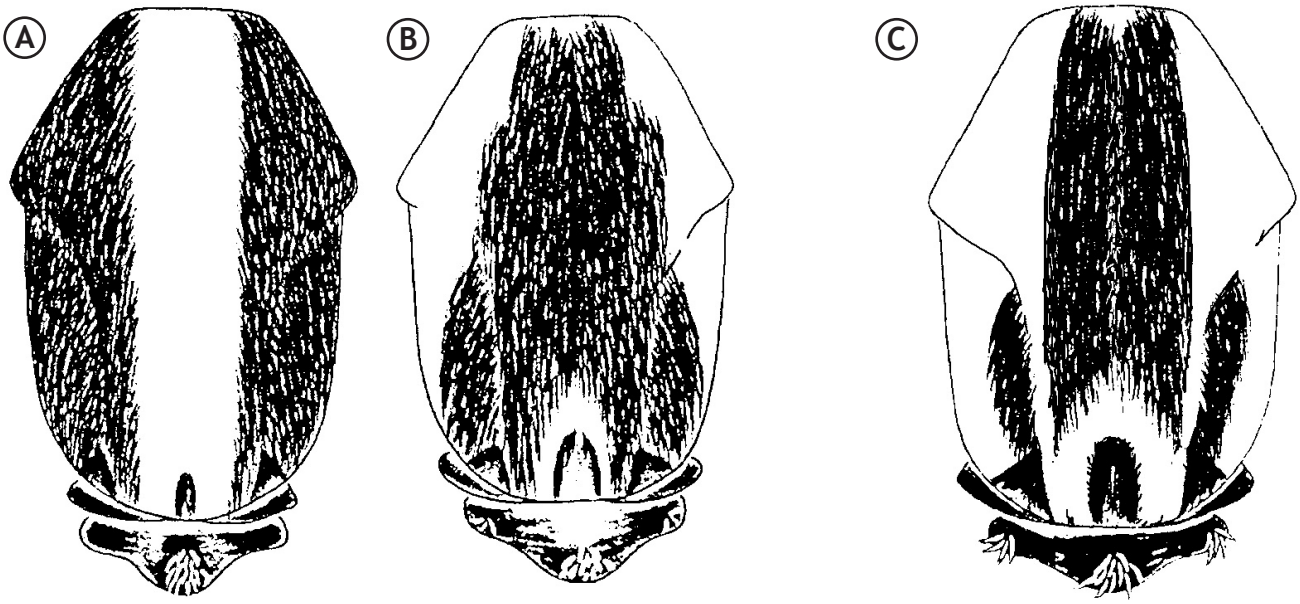


Figure 11.
A. Dorsal view of thorax - *Oc. atlanticus*
B. Dorsal view of thorax - *Oc. triseriatus*
C. Dorsal view of thorax - *Oc. sticticus*

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).....

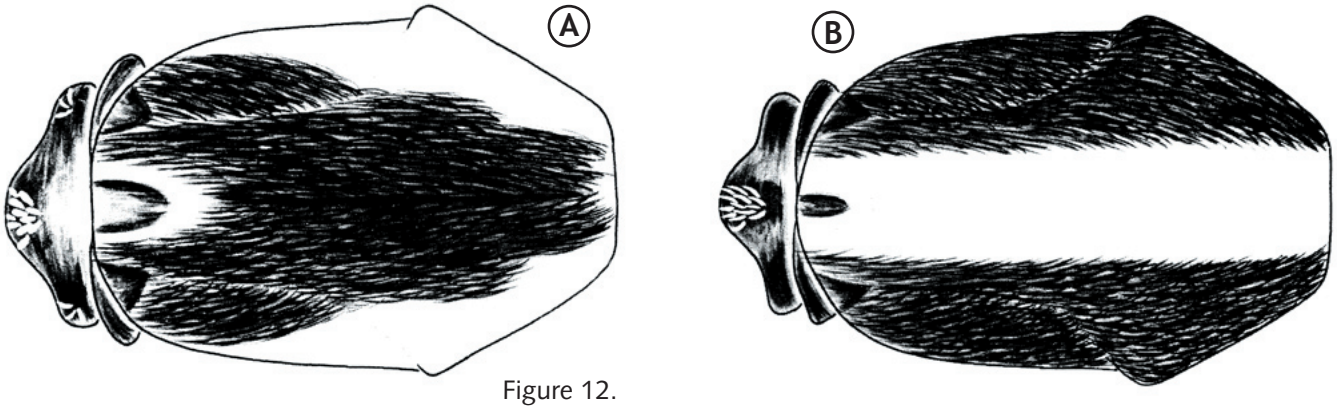


Figure 12.
A. Dorsal view of thorax - *Oc. triseriatus*
B. Dorsal view of thorax - *Oc. atlanticus*

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*

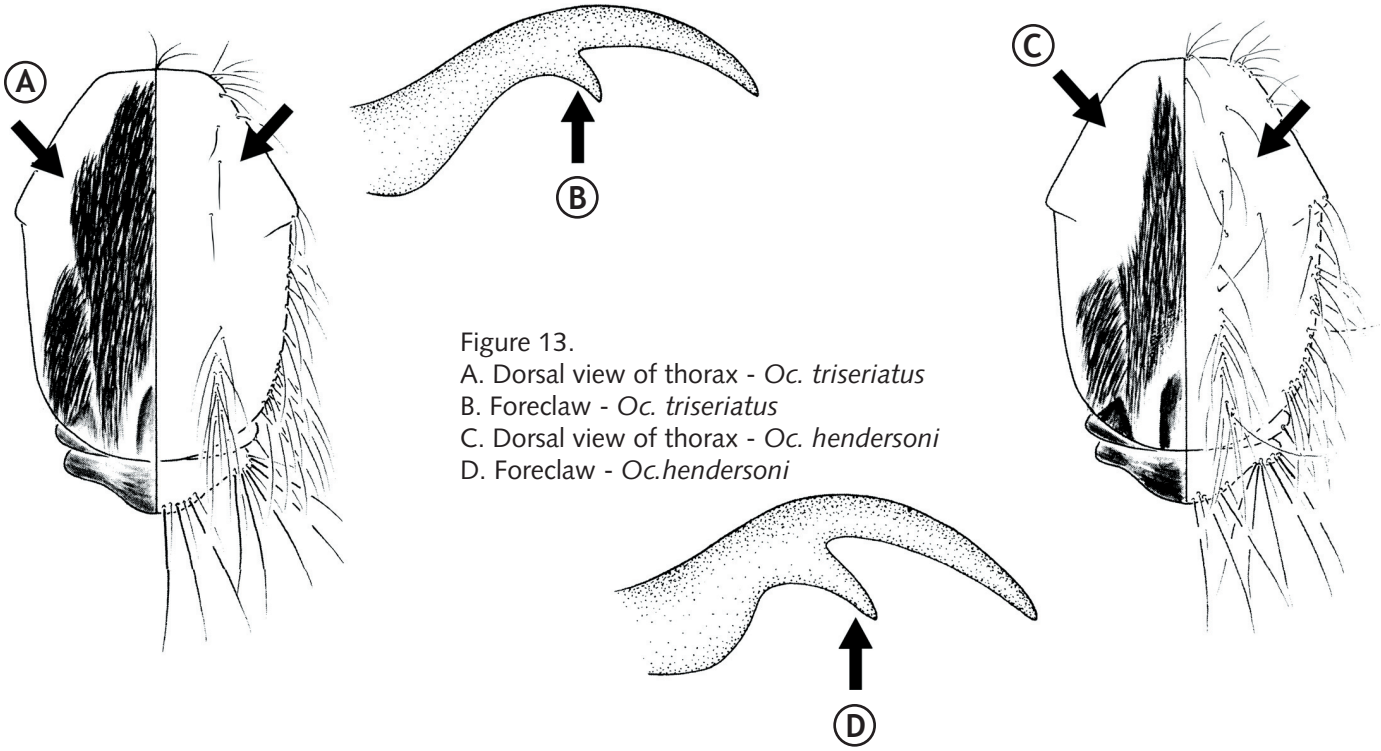


Figure 13.
A. Dorsal view of thorax - *Oc. triseriatus*
B. Foreclaw - *Oc. triseriatus*
C. Dorsal view of thorax - *Oc. hendersoni*
D. Foreclaw - *Oc.hendersoni*

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

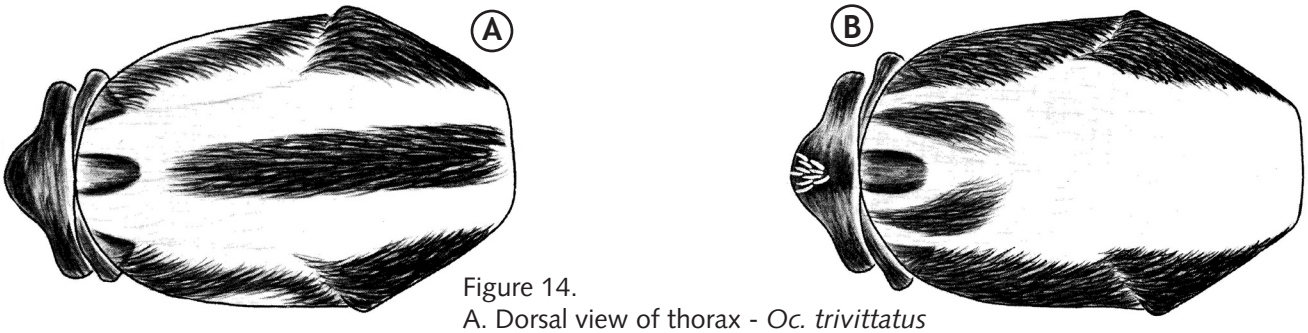


Figure 14.
A. Dorsal view of thorax - *Oc. trivittatus*
B. Dorsal view of thorax - *Oc. infirmatus*

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

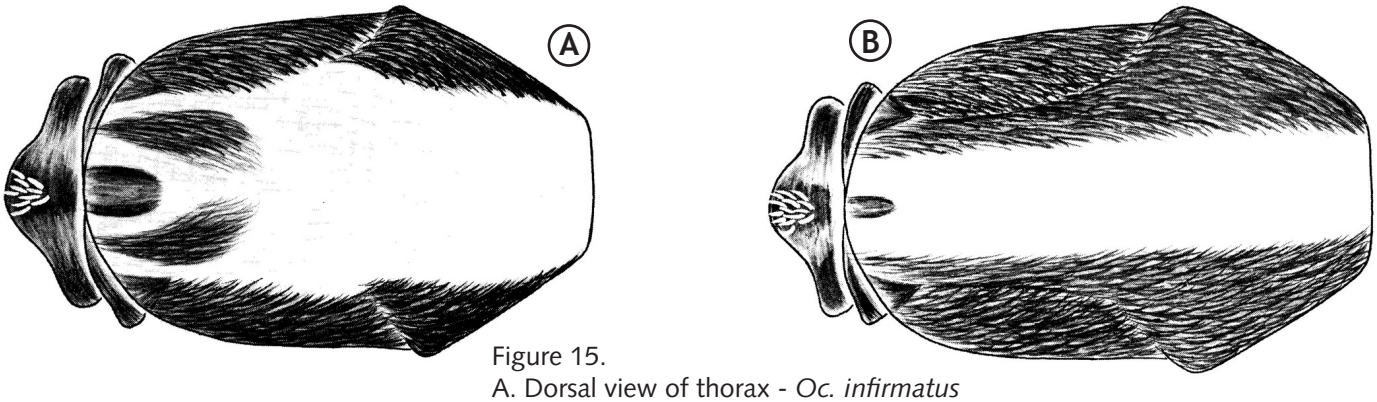


Figure 15.
A. Dorsal view of thorax - *Oc. infirmatus*
B. Dorsal view of thorax - *Oc. atlanticus*

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*

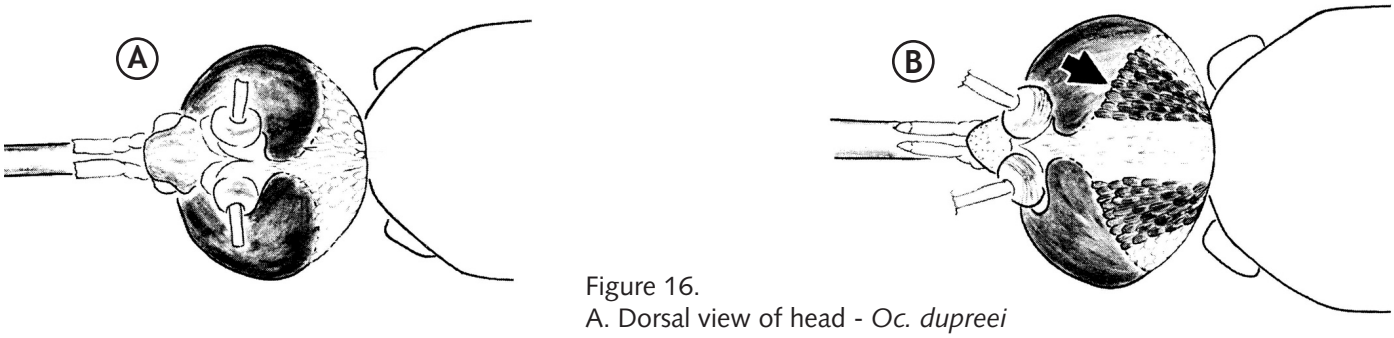


Figure 16.
A. Dorsal view of head - *Oc. dupreei*
B. Dorsal view of thorax - *Oc. atlanticus*

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

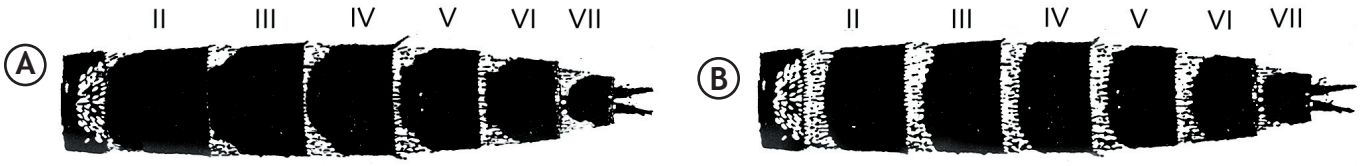


Figure 17.
A. Dorsal view of abdomen - *Oc. thibaulti*
B. Dorsal view of abdomen - *Oc. sticticus*

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*

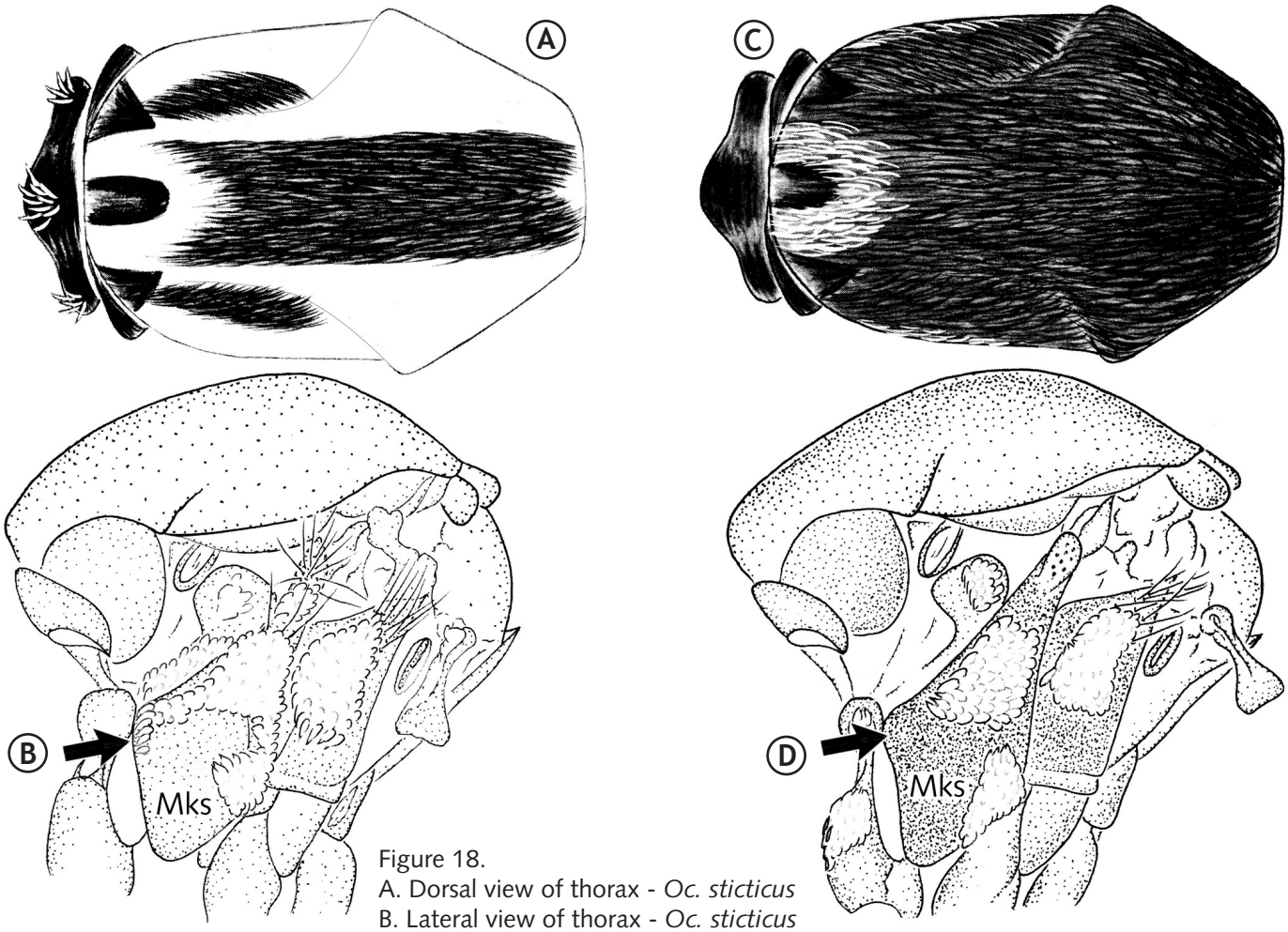


Figure 18.
A. Dorsal view of thorax - *Oc. sticticus*
B. Lateral view of thorax - *Oc. sticticus*
C. Lateral view of thorax - *Ae. cinereus*
D. Dorsal view of thorax - *Ae. cinereus*

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).....

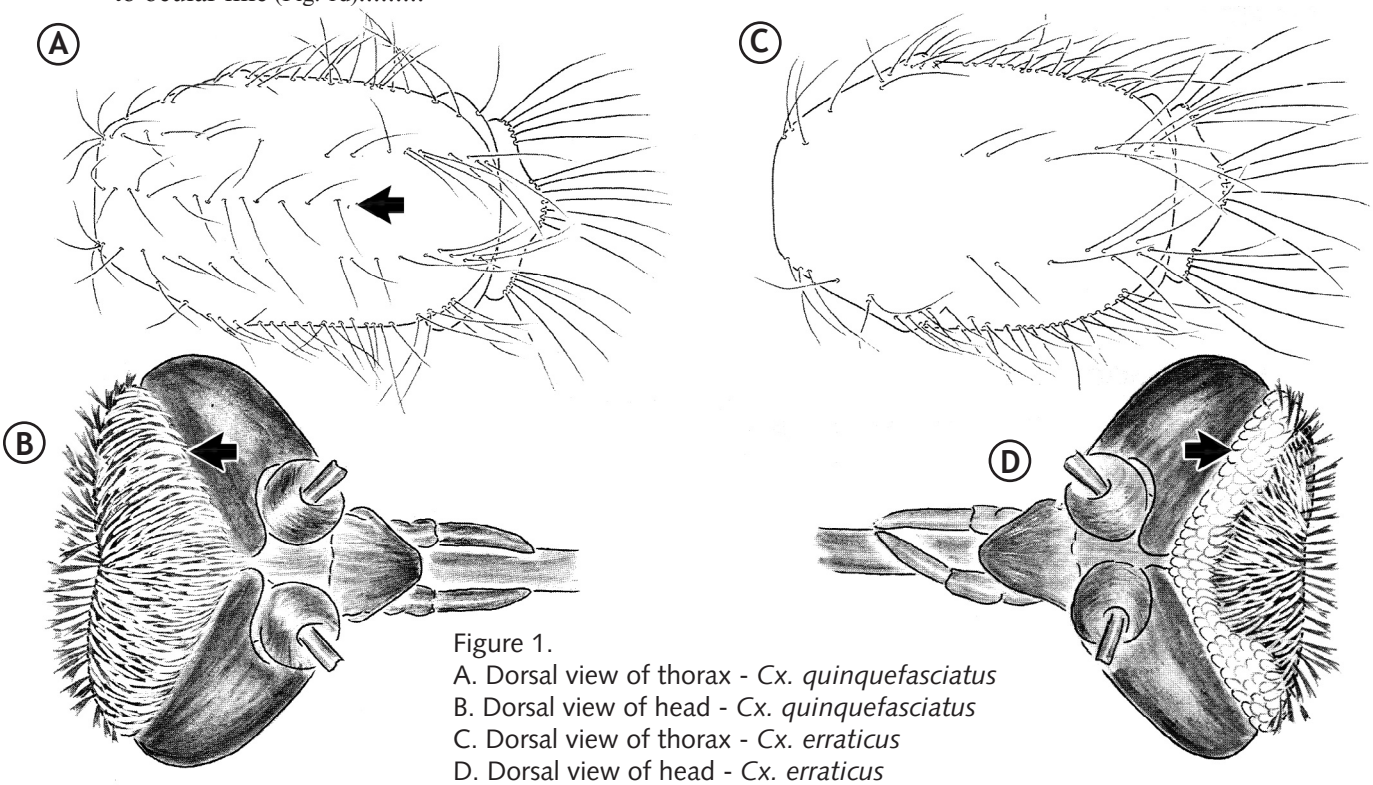


Figure 1.
A. Dorsal view of thorax - *Cx. quinquefasciatus*
B. Dorsal view of head - *Cx. quinquefasciatus*
C. Dorsal view of thorax - *Cx. erraticus*
D. Dorsal view of head - *Cx. erraticus*

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

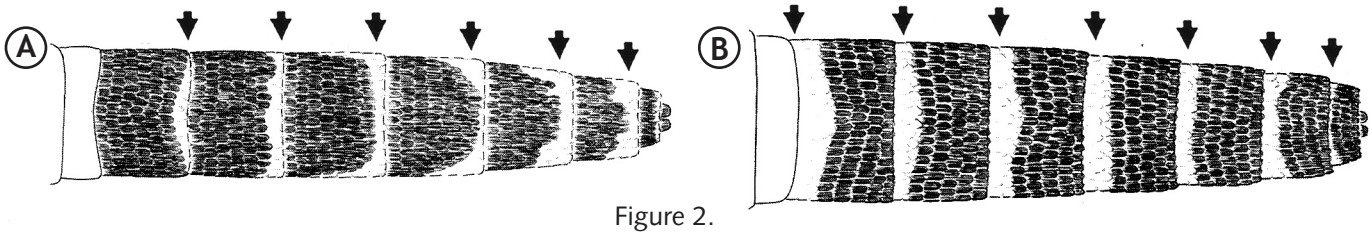


Figure 2.
A. Dorsal view of abdomen - *Cx. territans*
B. Dorsal view of abdomen - *Cx. restuans*

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

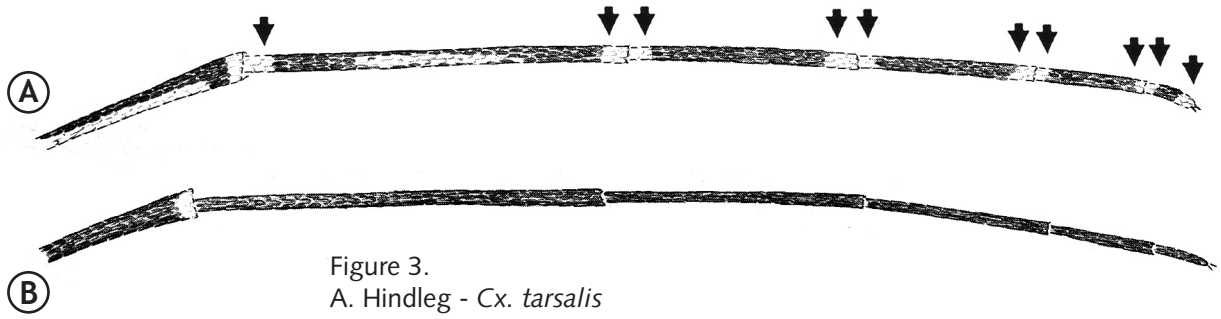


Figure 3.
A. Hindleg - *Cx. tarsalis*
B. Hindleg - *Cx. restuans*

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*

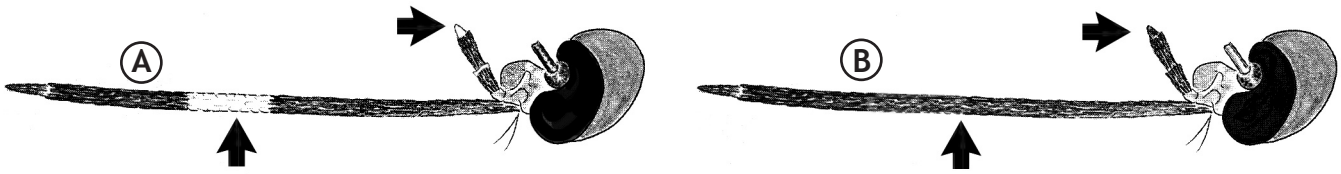


Figure 4.
A. Lateral view of head and proboscis - *Cx. tarsalis*
B. Lateral view of head and proboscis - *Cx. coronator*

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

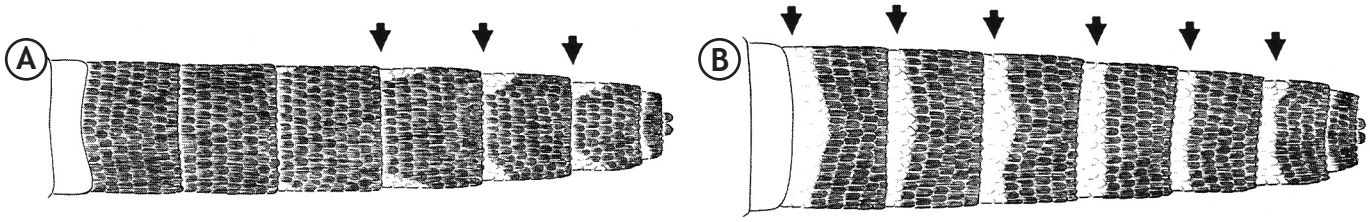


Figure 5.
A. Dorsal view of abdomen - *Cx. nigripalpus*
B. Dorsal view of abdomen - *Cx. restuans*

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*

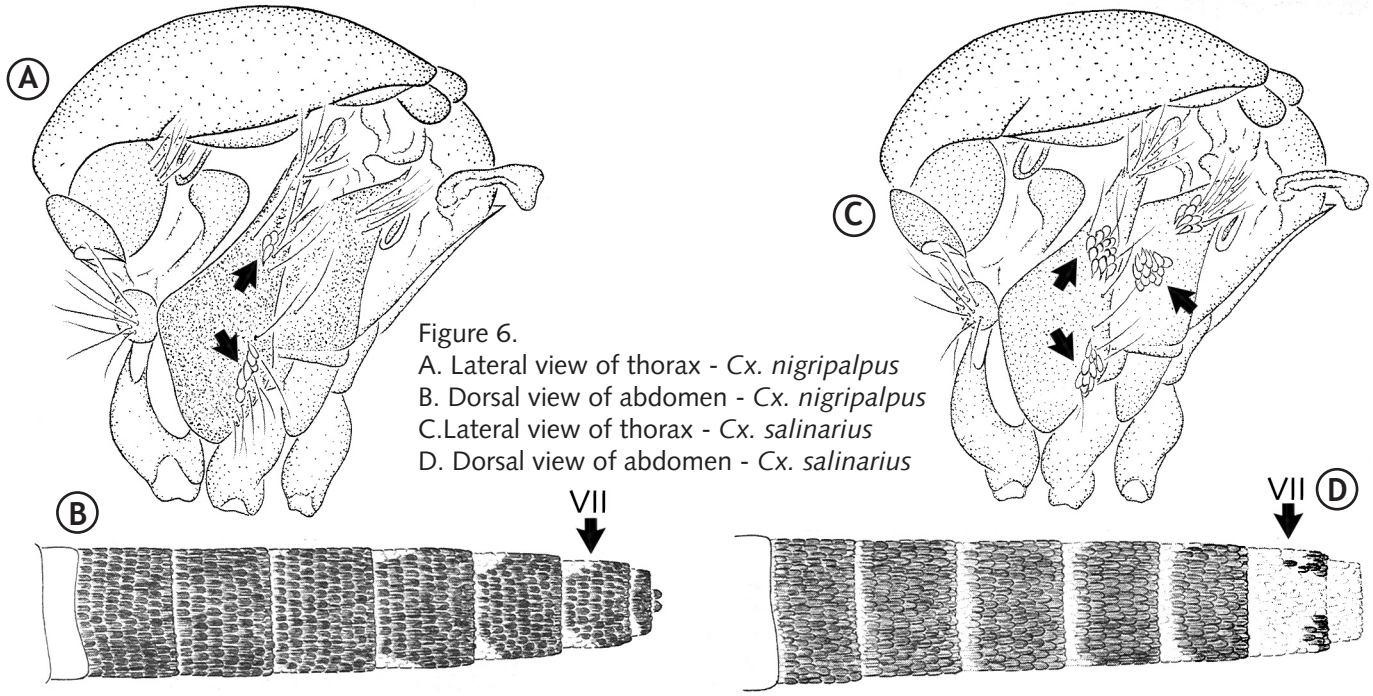


Figure 6.
A. Lateral view of thorax - *Cx. nigripalpus*
B. Dorsal view of abdomen - *Cx. nigripalpus*
C.Lateral view of thorax - *Cx. salinarius*
D. Dorsal view of abdomen - *Cx. salinarius*

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*

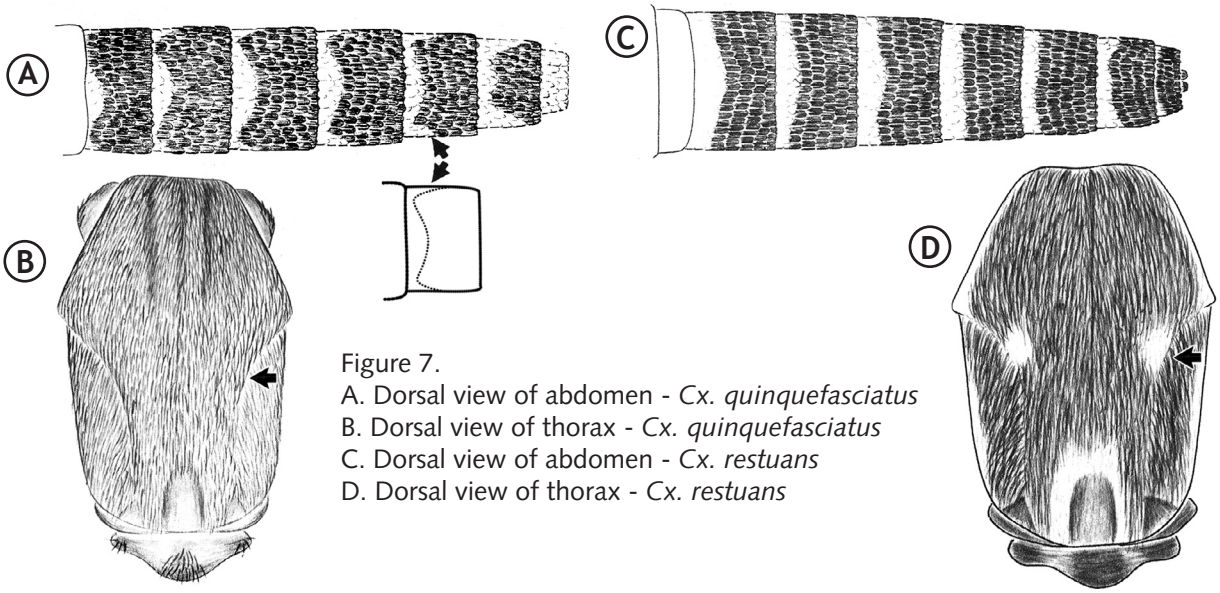


Figure 7.
A. Dorsal view of abdomen - *Cx. quinquefasciatus*
B. Dorsal view of thorax - *Cx. quinquefasciatus*
C. Dorsal view of abdomen - *Cx. restuans*
D. Dorsal view of thorax - *Cx. restuans*

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

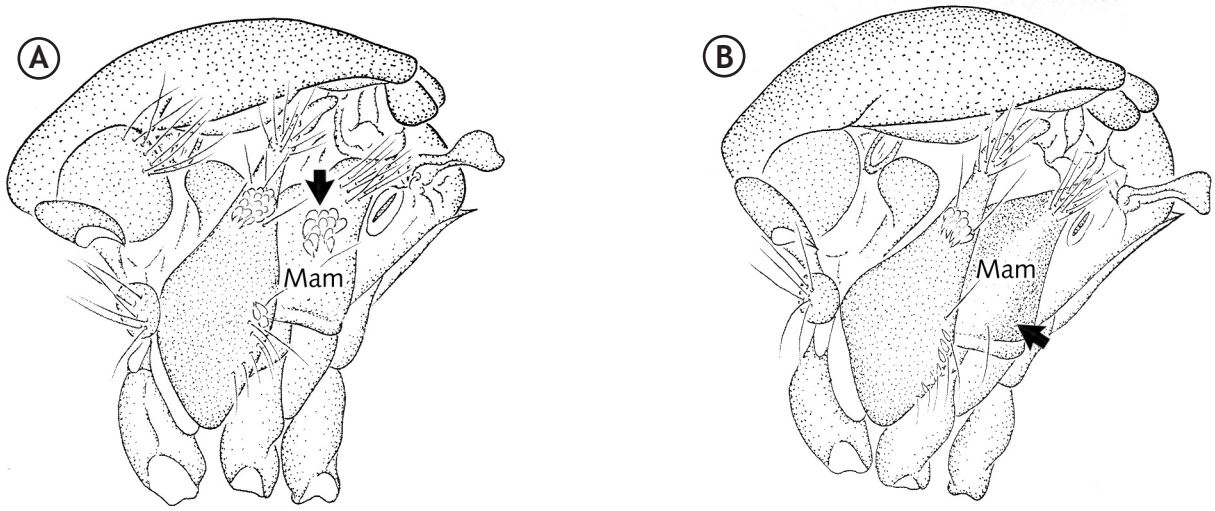


Figure 8.
A. Lateral view of thorax - *Cx. erraticus*
B. Lateral view of thorax - *Cx. peccator*

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*

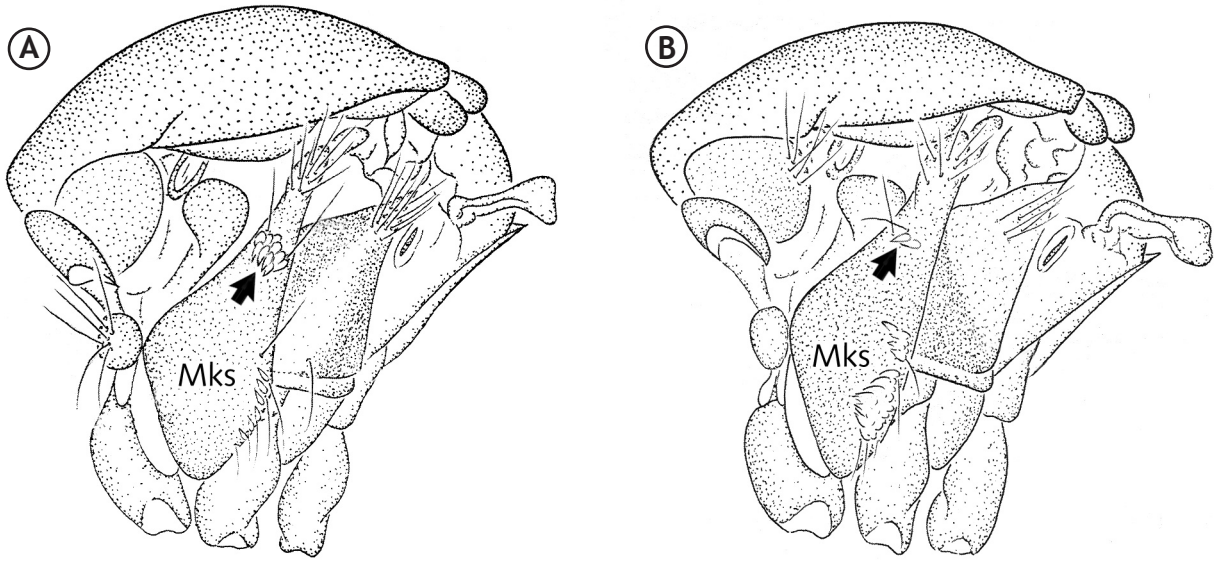


Figure 9.
A. Lateral view of thorax - *Cx. peccator*
B. Lateral view of thorax - *Cx. pilosus*

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).....

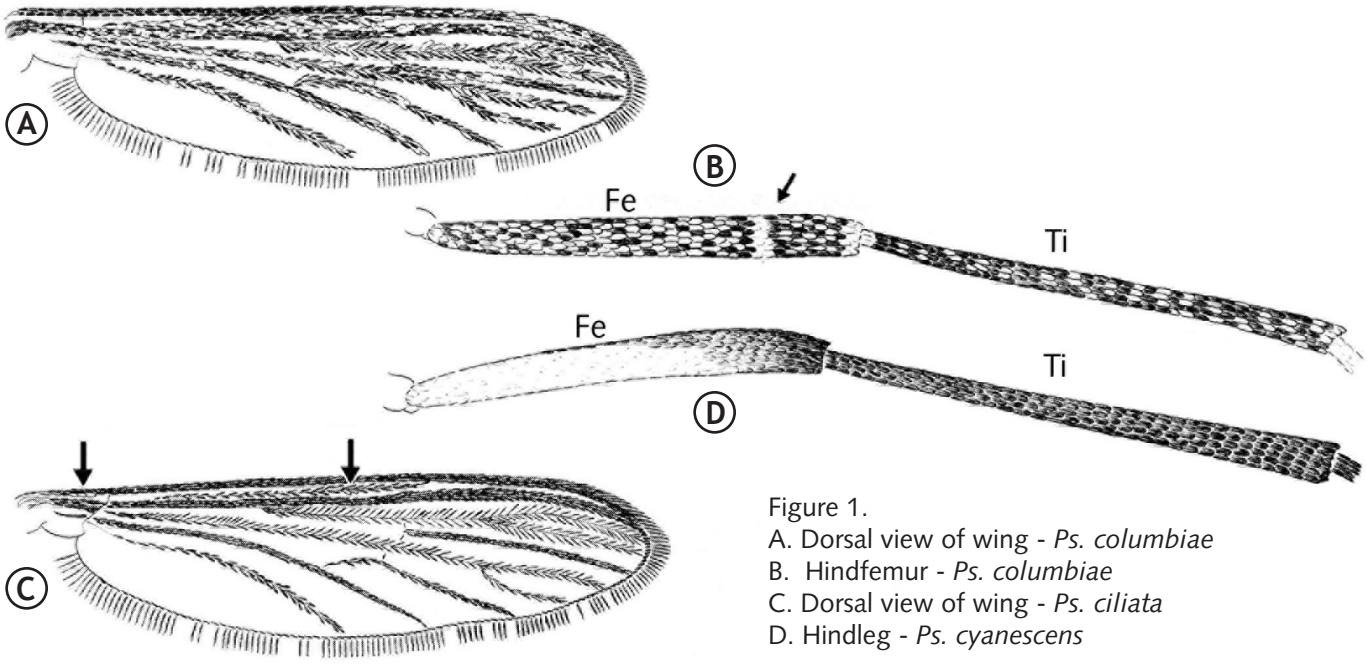


Figure 1.
A. Dorsal view of wing - *Ps. columbiae*
B. Hindfemur - *Ps. columbiae*
C. Dorsal view of wing - *Ps. ciliata*
D. Hindleg - *Ps. cyanescens*

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*

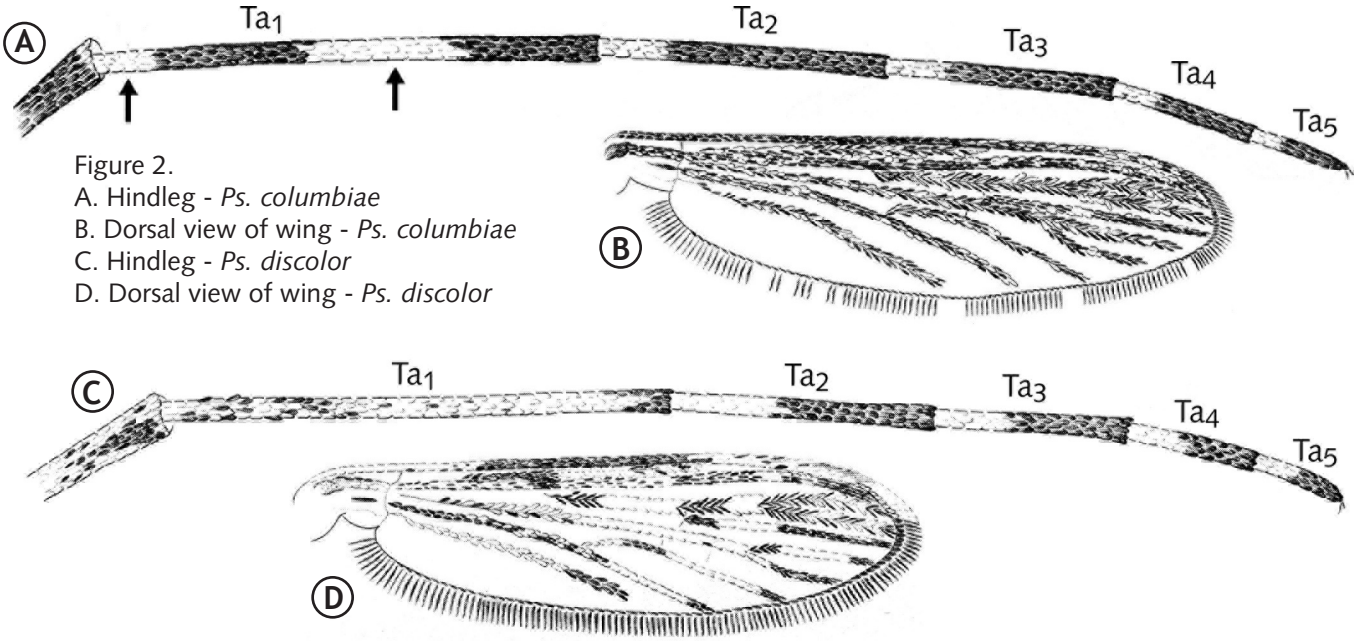


Figure 2.
A. Hindleg - *Ps. columbiae*
B. Dorsal view of wing - *Ps. columbiae*
C. Hindleg - *Ps. discolor*
D. Dorsal view of wing - *Ps. discolor*

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

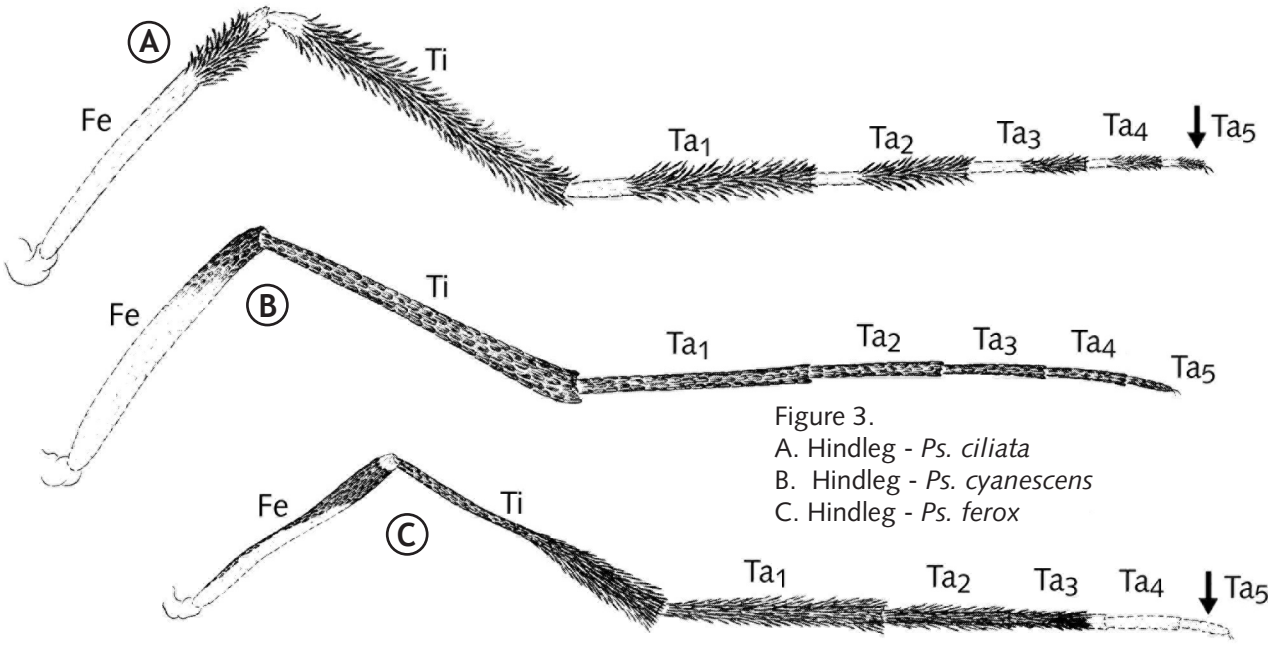


Figure 3.
A. Hindleg - *Ps. ciliata*
B. Hindleg - *Ps. cyanescens*
C. Hindleg - *Ps. ferox*

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*

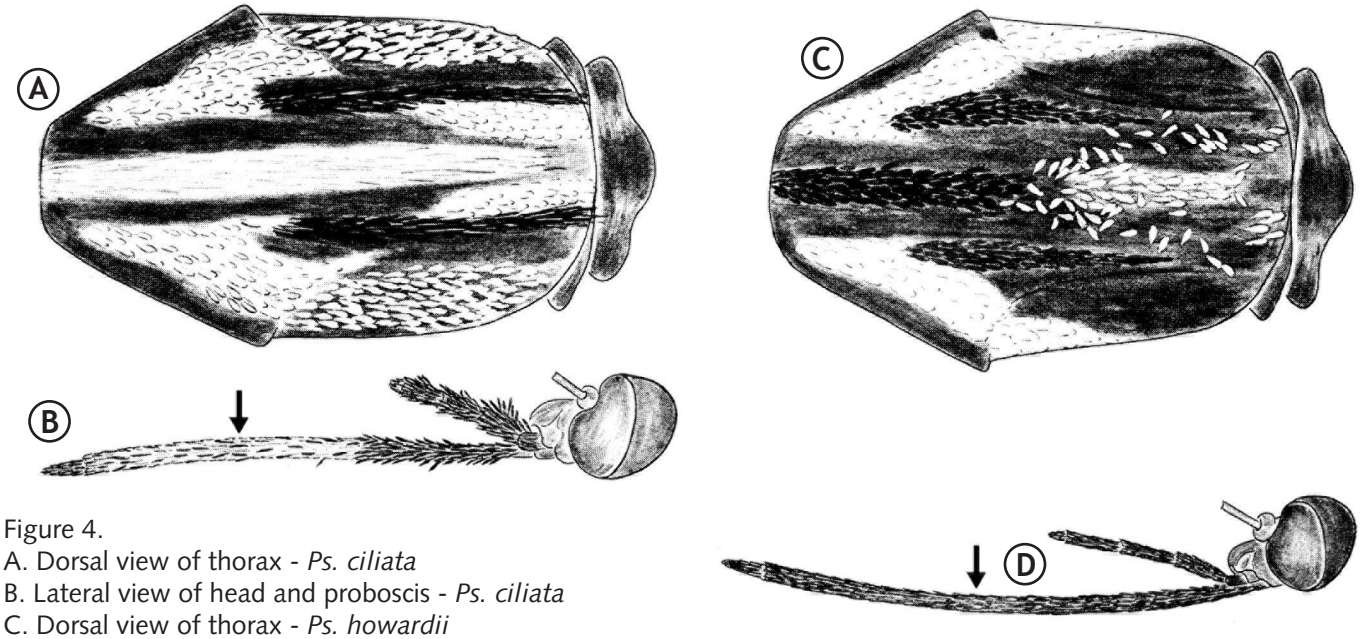


Figure 4.
A. Dorsal view of thorax - *Ps. ciliata*
B. Lateral view of head and proboscis - *Ps. ciliata*
C. Dorsal view of thorax - *Ps. howardii*
D. Lateral view of head and proboscis - *Ps. howardii*

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

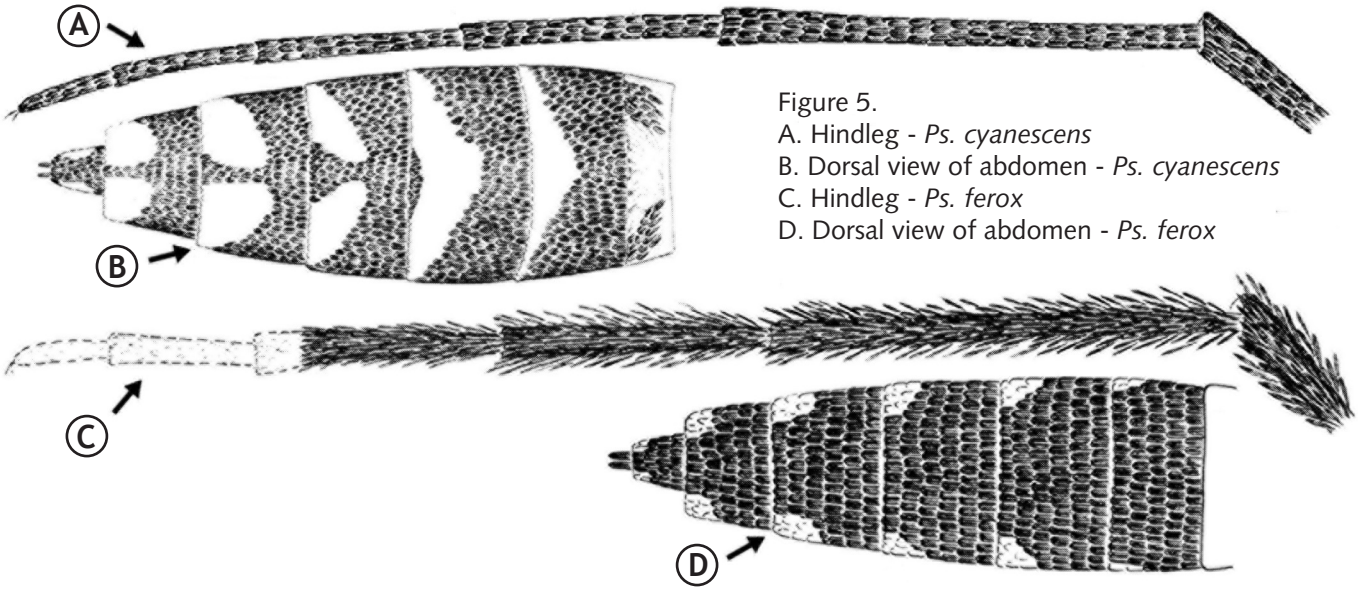


Figure 5.
A. Hindleg - *Ps. cyanescens*
B. Dorsal view of abdomen - *Ps. cyanescens*
C. Hindleg - *Ps. ferox*
D. Dorsal view of abdomen - *Ps. ferox*

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).....

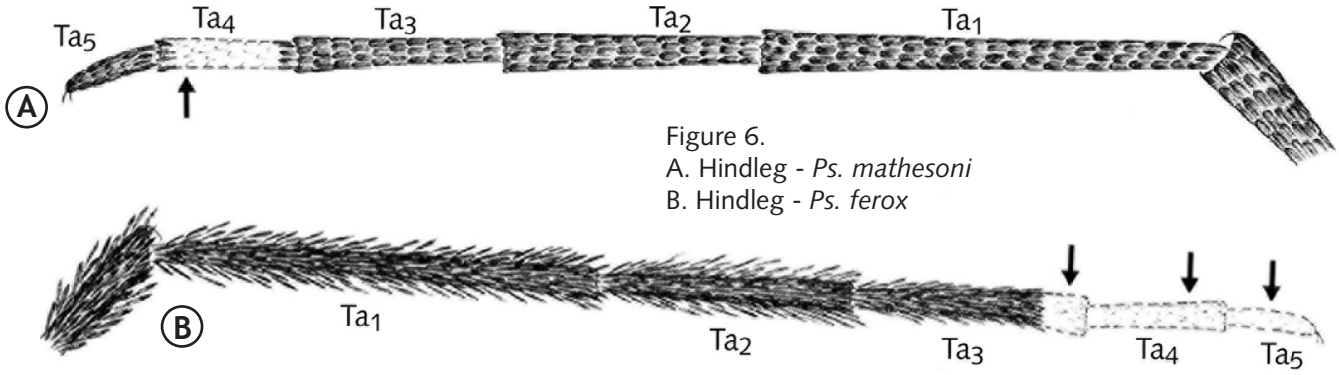


Figure 6.
A. Hindleg - *Ps. mathesoni*
B. Hindleg - *Ps. ferox*

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*

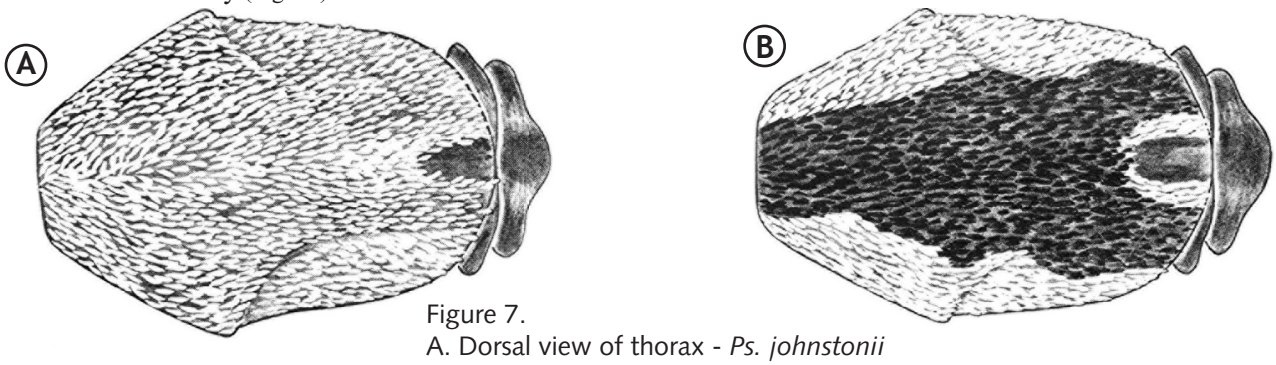


Figure 7.
A. Dorsal view of thorax - *Ps. johnstonii*
B. Dorsal view of thorax - *Ps. mathesoni*

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

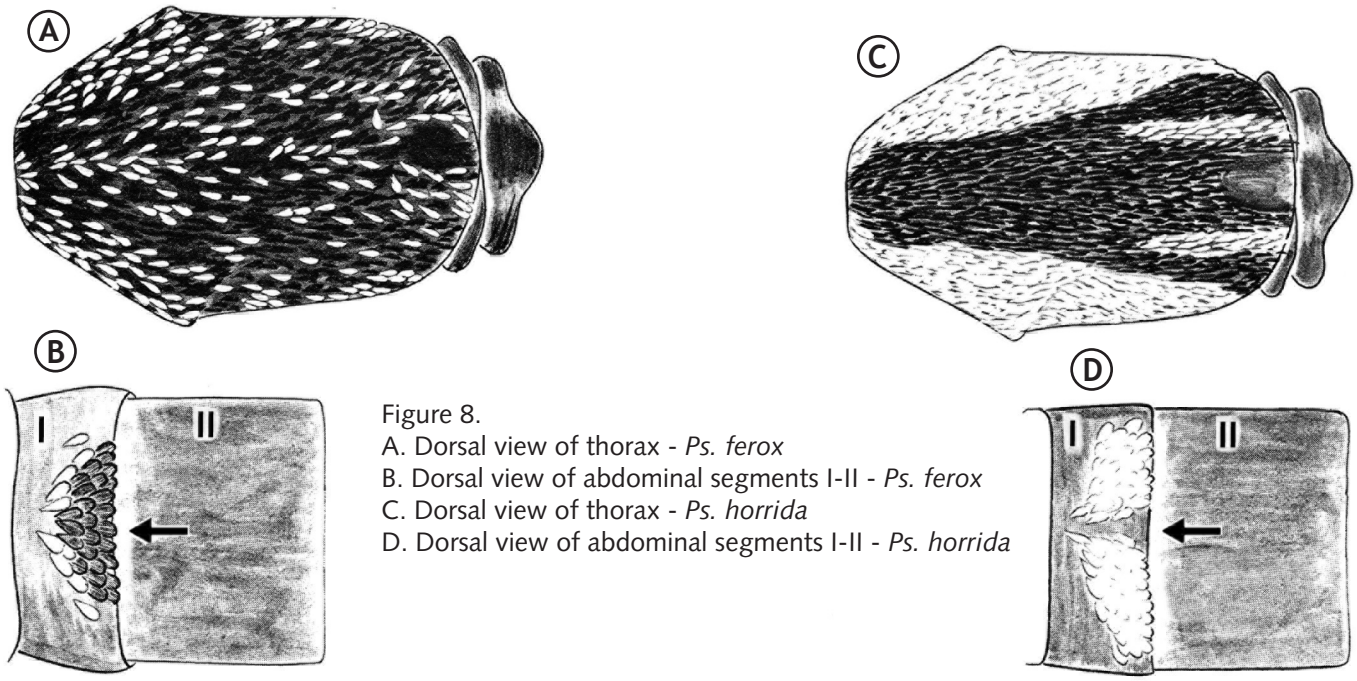
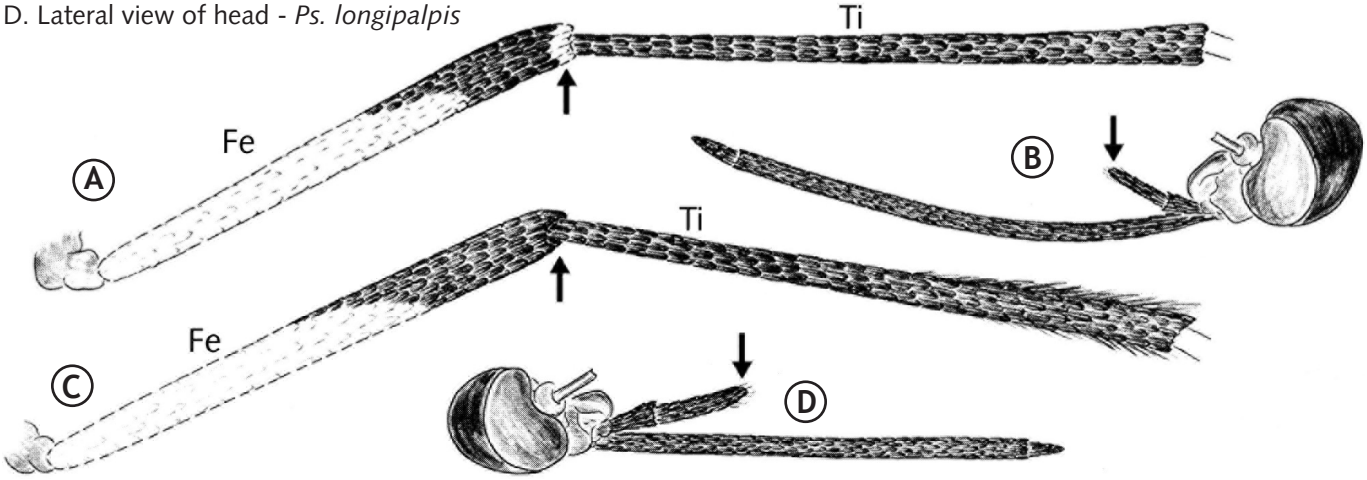


Figure 8.
A. Dorsal view of thorax - *Ps. ferox*
B. Dorsal view of abdominal segments I-II - *Ps. ferox*
C. Dorsal view of thorax - *Ps. horrida*
D. Dorsal view of abdominal segments I-II - *Ps. horrida*

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*

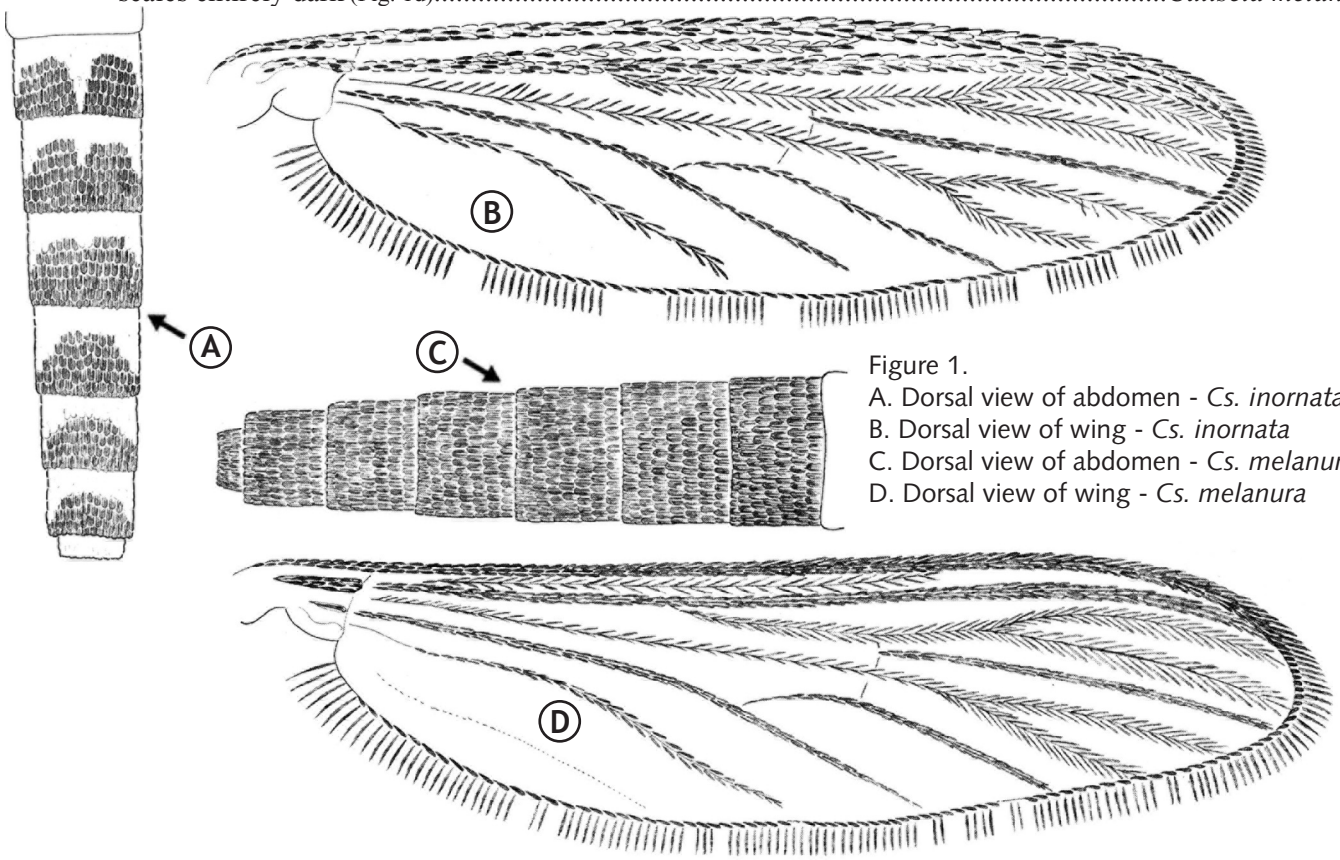


Figure 1.
A. Dorsal view of abdomen - *Cs. inornata*
B. Dorsal view of wing - *Cs. inornata*
C. Dorsal view of abdomen - *Cs. melanura*
D. Dorsal view of wing - *Cs. melanura*

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*

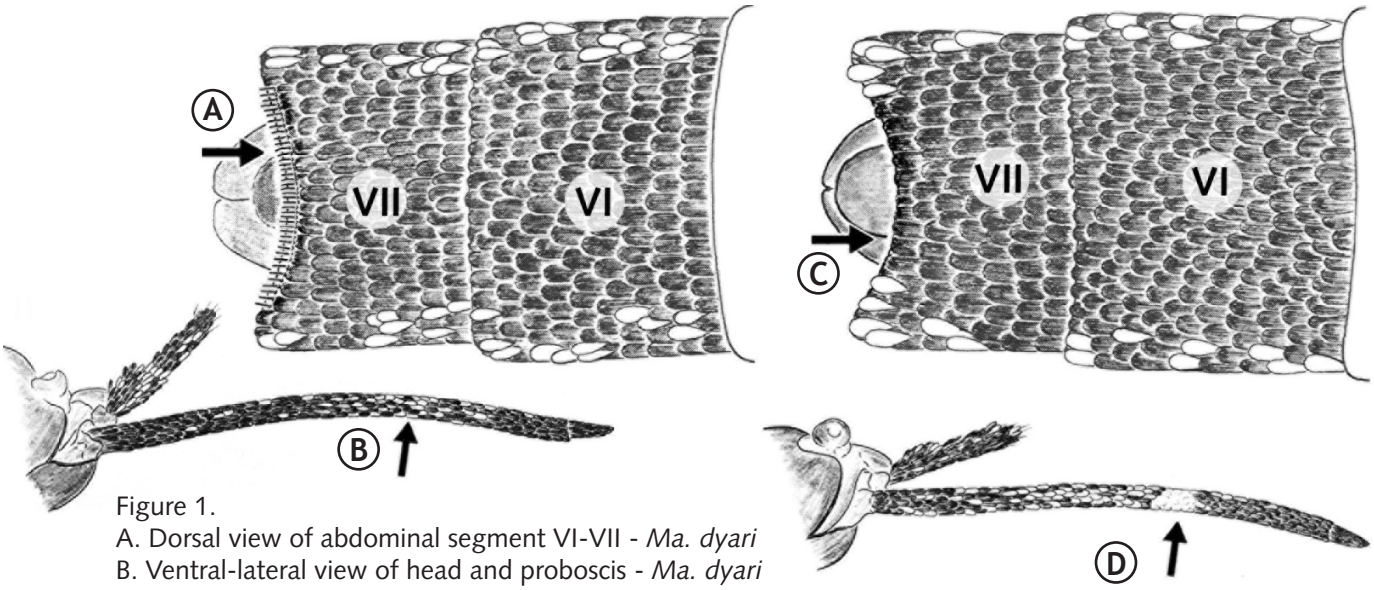


Figure 1.
A. Dorsal view of abdominal segment VI-VII - *Ma. dyari*
B. Ventral-lateral view of head and proboscis - *Ma. dyari*
C. Dorsal view of abdominal segment VI-VII - *Ma. titillans*
D. Ventral-lateral view of head and proboscis - *Ma. titillans*

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*

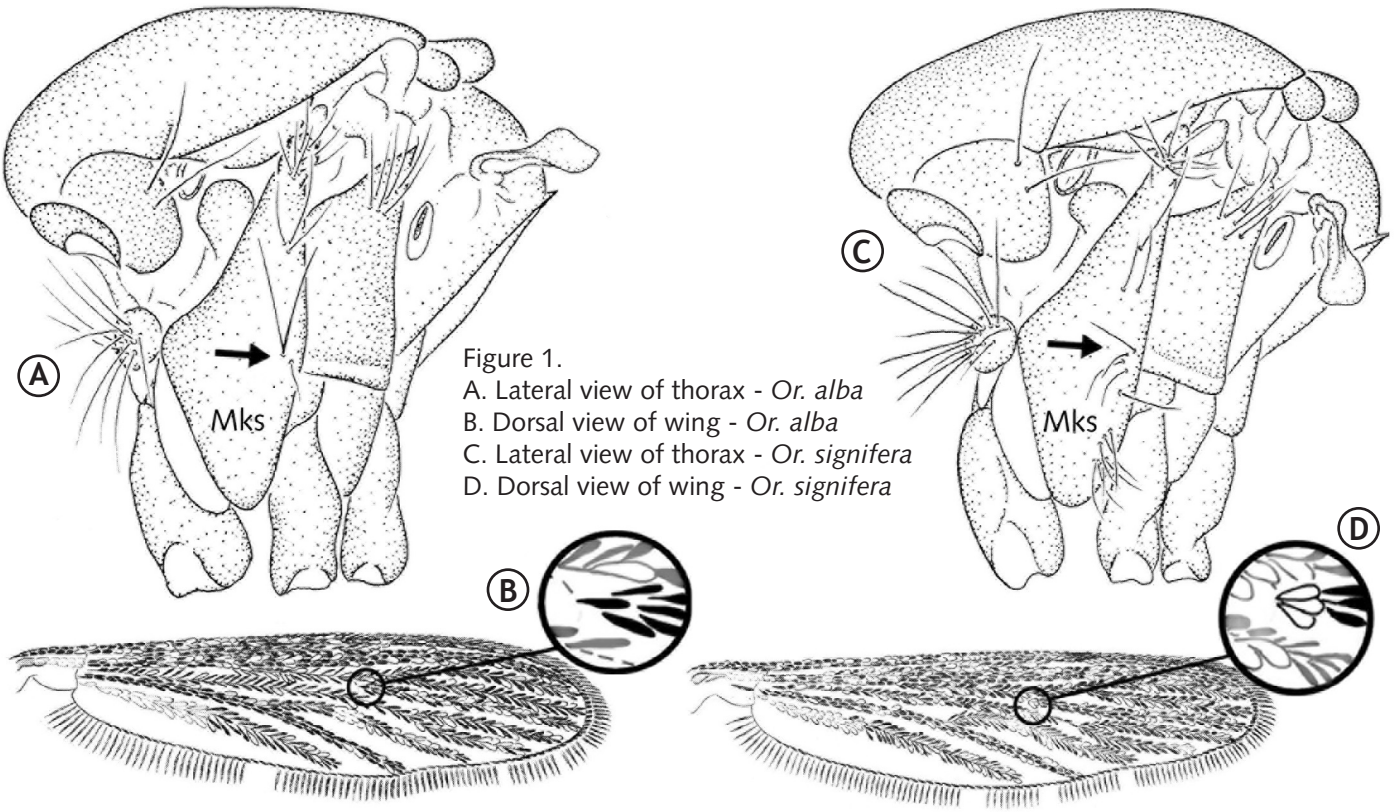


Figure 1.
A. Lateral view of thorax - *Or. alba*
B. Dorsal view of wing - *Or. alba*
C. Lateral view of thorax - *Or. signifera*
D. Dorsal view of wing - *Or. signifera*

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*

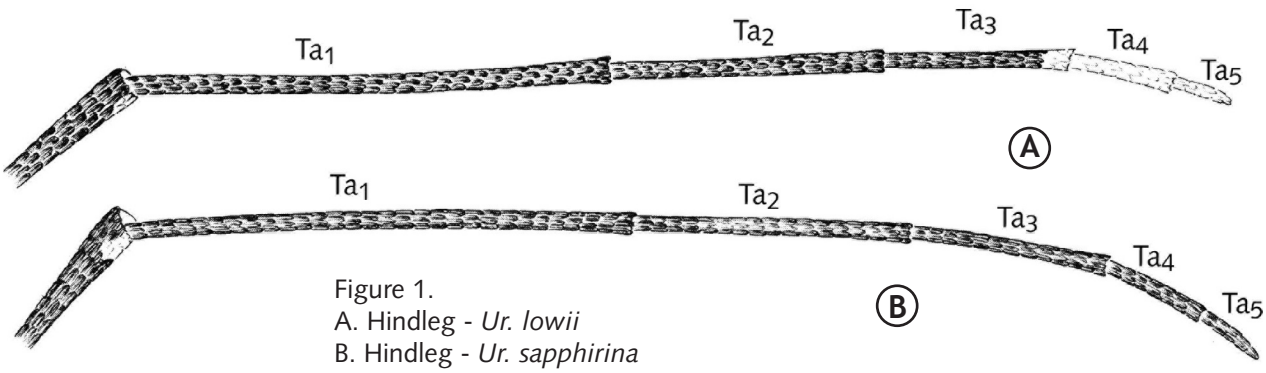
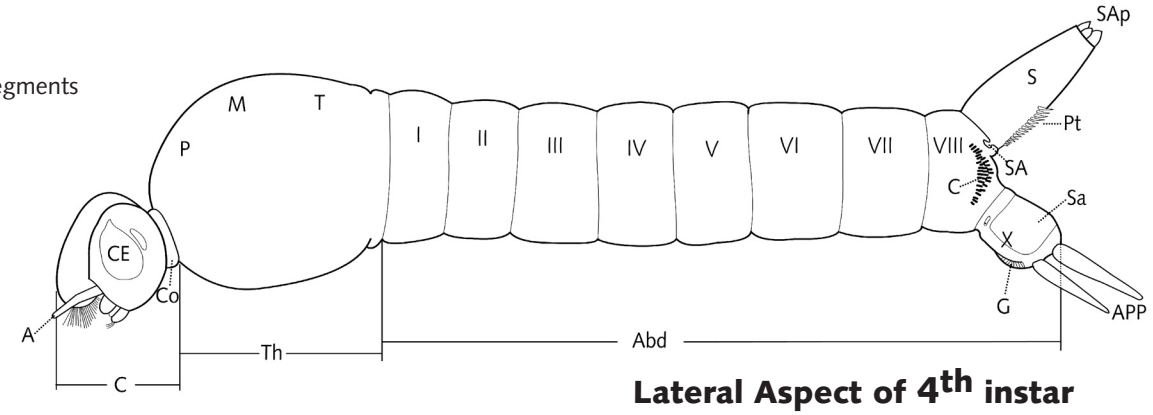
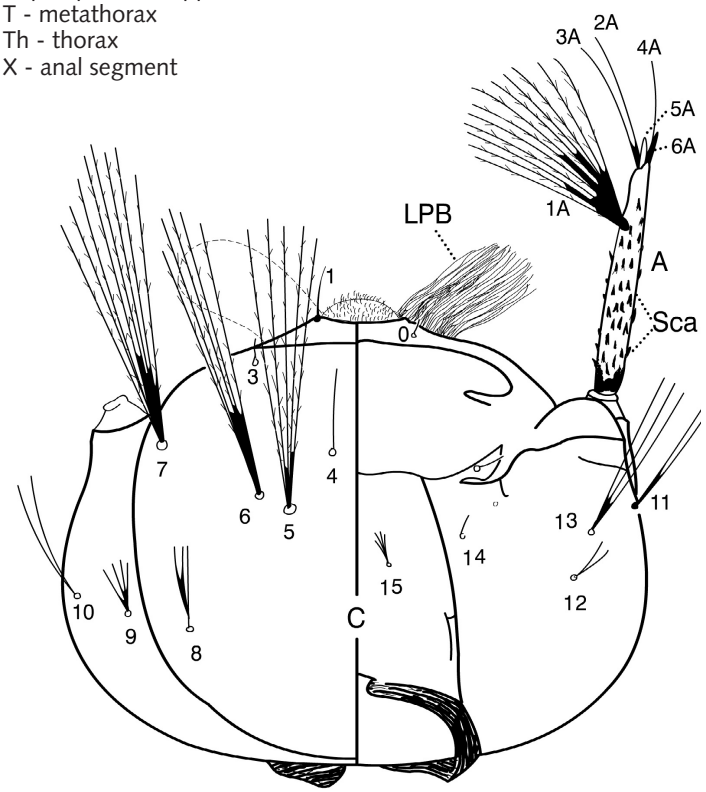


Figure 1.
A. Hindleg - *Ur. lowii*
B. Hindleg - *Ur. sapphirina*

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 4th instar Culicine larva



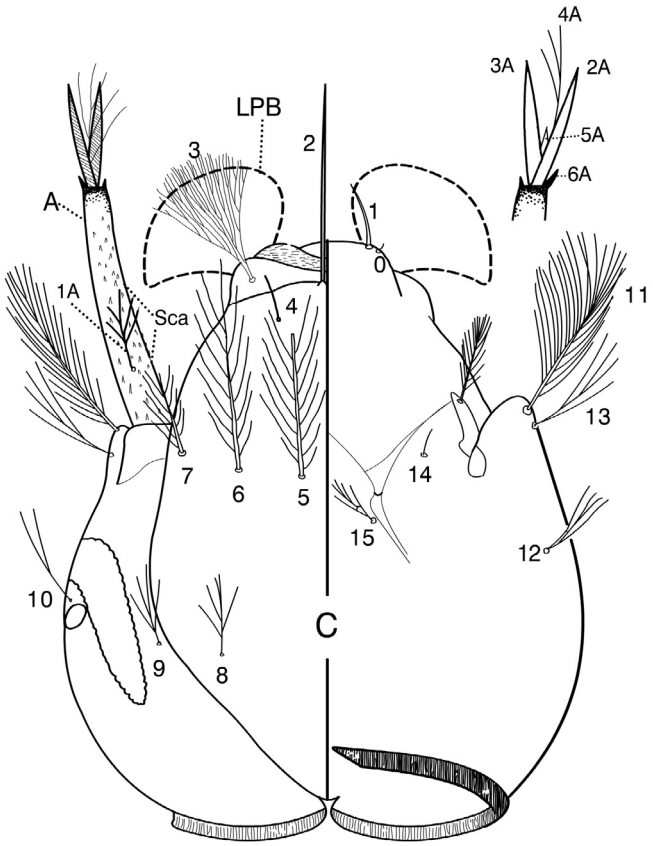
Culicine

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

Anatomy of 4th instar larval head

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



Anopheline

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

Anatomy of 4th instar larval thorax

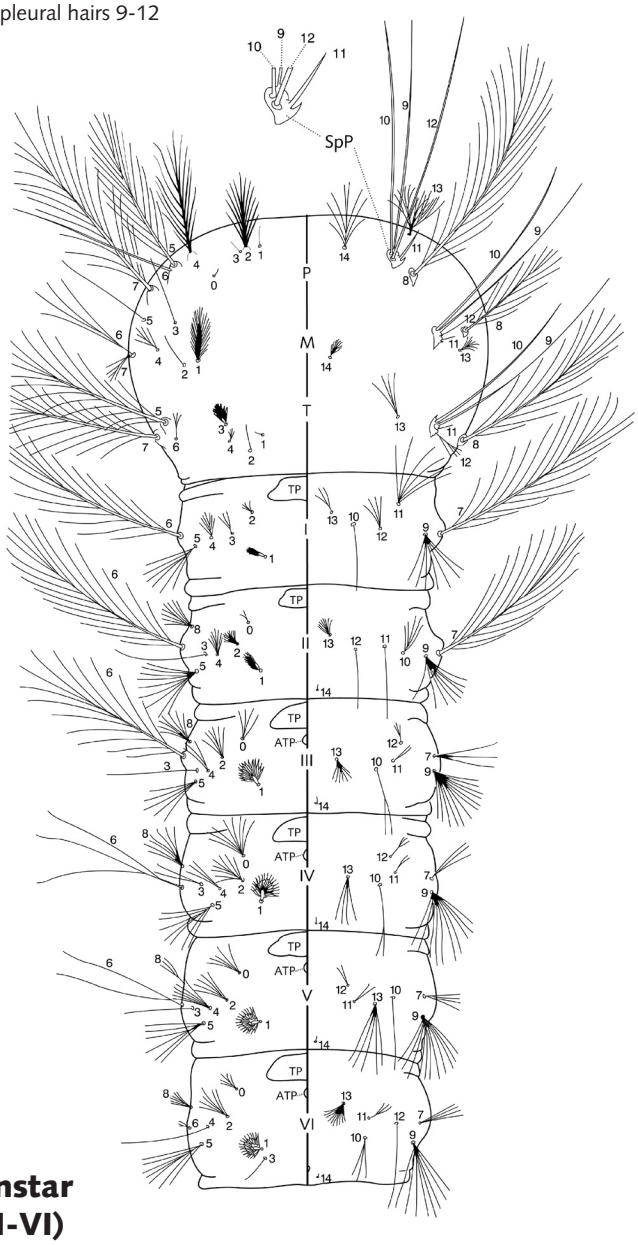
P - prothorax
- 0-P - accessory dorsal hair
- 1- to 3-P - shoulder hairs
- 4- to 7-P - dorsal hairs
- 8-P - dorsolateral hair
- 9- to 12-P - prothoracic pleural hairs
- 13-P - ventrolateral hair
- 14-P - median ventral hair

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

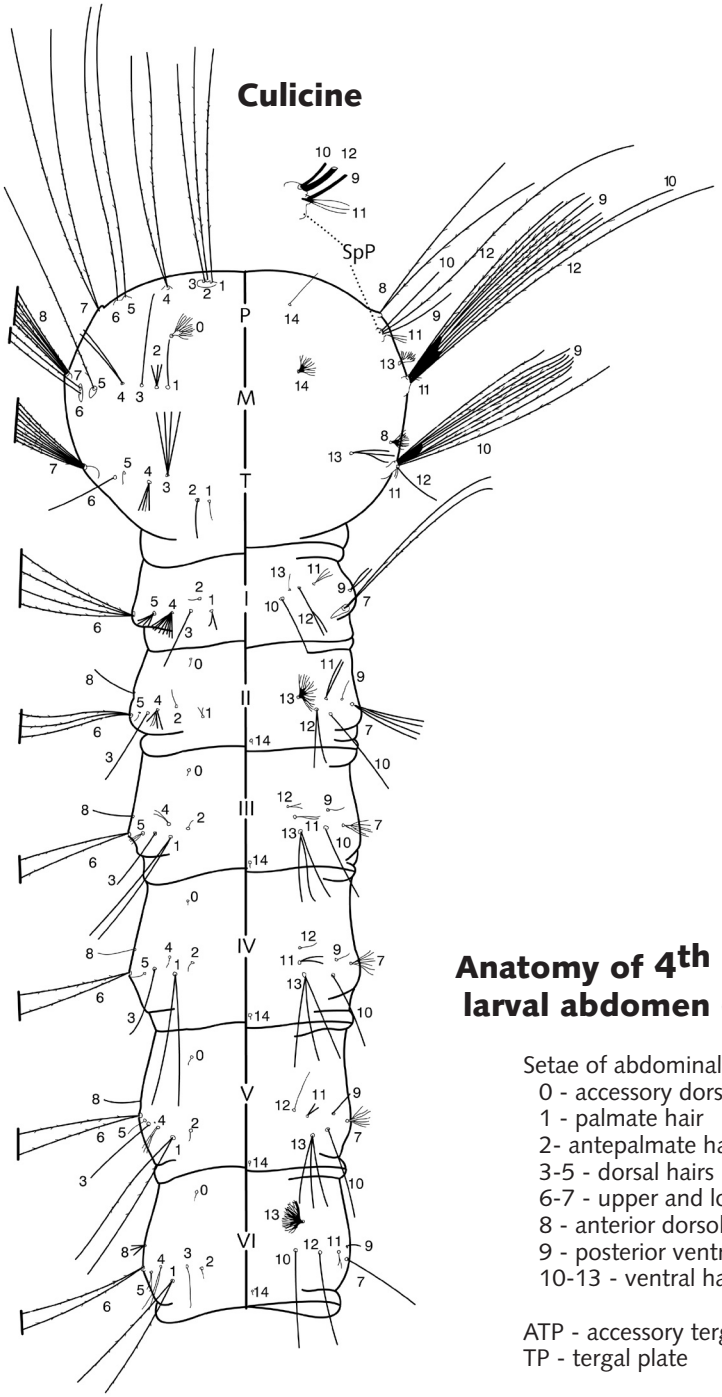
T - metathorax
- 1- to 7-T - dorsal hairs
- 8-T - dorsolateral hair
- 9- to 12-T - metathoracic pleural hairs
- 13-T - ventrolateral hair
- 14-T - median ventral hair

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

Anopheline



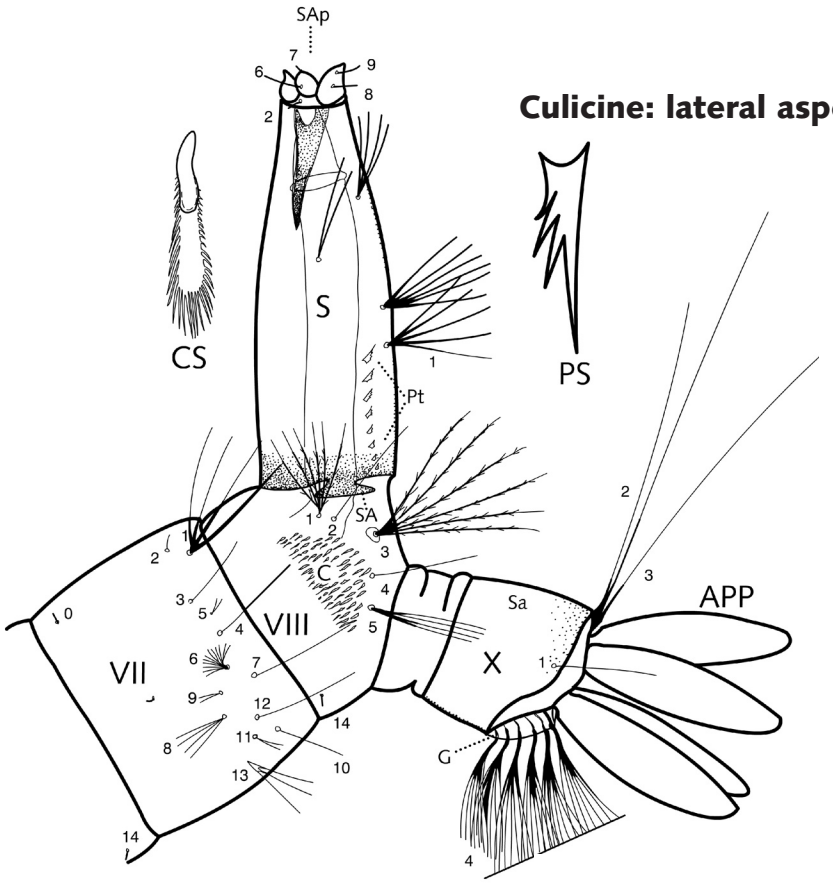
Culicine

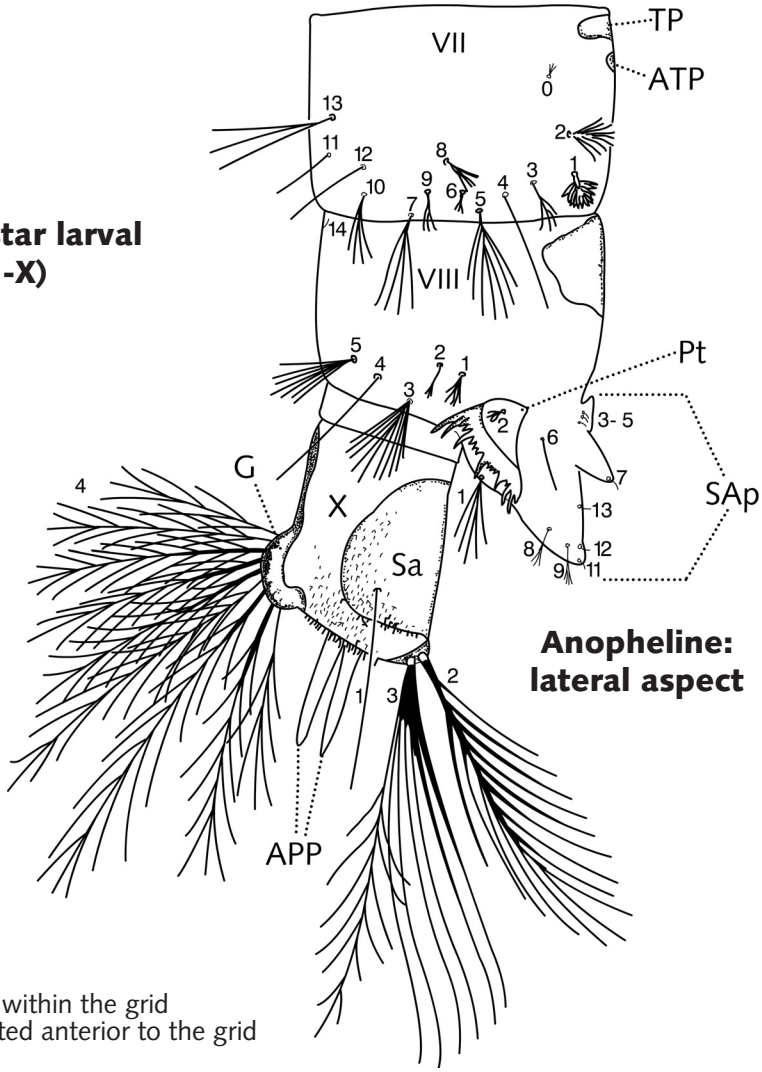


Anatomy of 4th instar larval abdomen (I-VI)

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





Anatomy of 4th instar larval abdomen (VII-X)

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

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

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

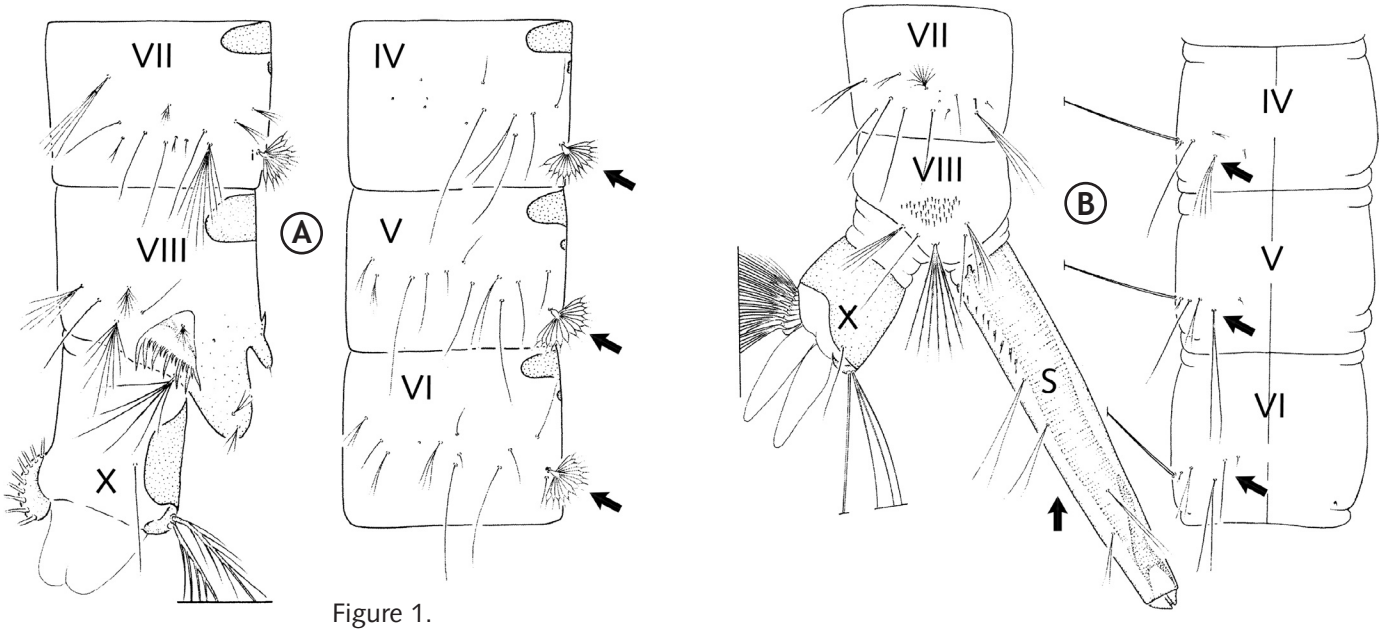


Figure 1.
A. Lateral view of abdominal segments IV-X - *An. quadrimaculatus*
B. Lateral view of abdominal segments IV-X - *Cx. pipiens*

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

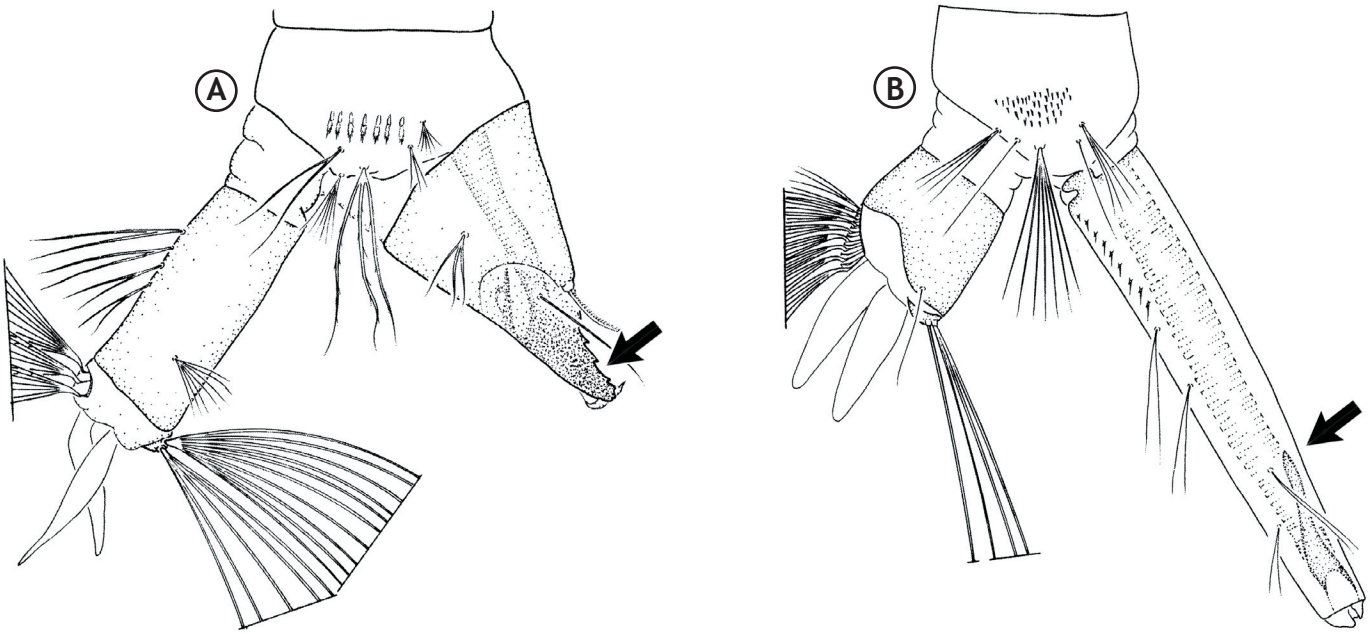


Figure 2.
A. Lateral view of abdominal segments VIII-X - *Ma. dyari*
B. Lateral view of abdominal segments VIII-X - *Cx. pipiens*

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*

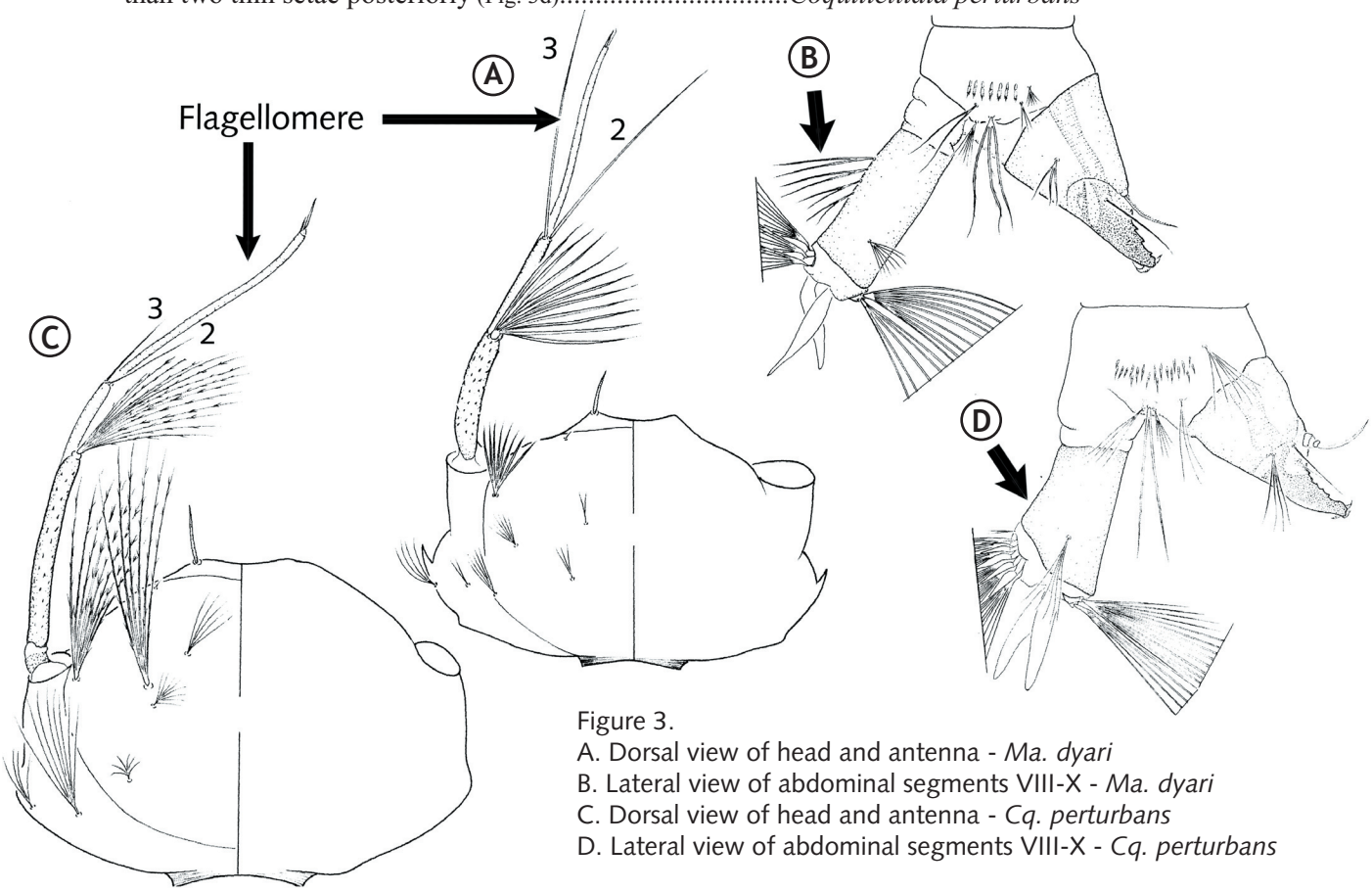
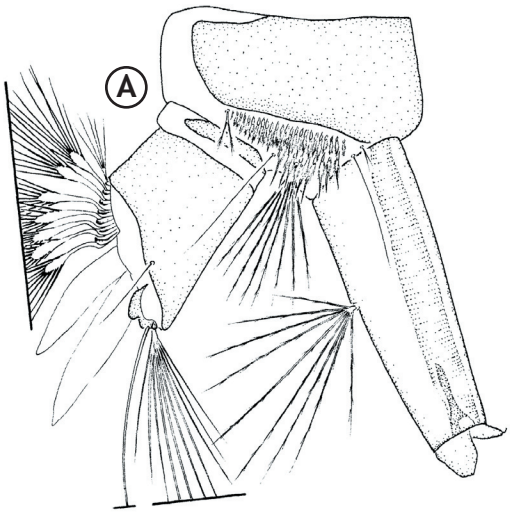


Figure 3.
A. Dorsal view of head and antenna - *Ma. dyari*
B. Lateral view of abdominal segments VIII-X - *Ma. dyari*
C. Dorsal view of head and antenna - *Cq. perturbans*
D. Lateral view of abdominal segments VIII-X - *Cq. perturbans*

4(2'). Siphon without pecten spines (Fig. 4a).....5

4'. Siphon with pecten spines (Fig. 4b).....7



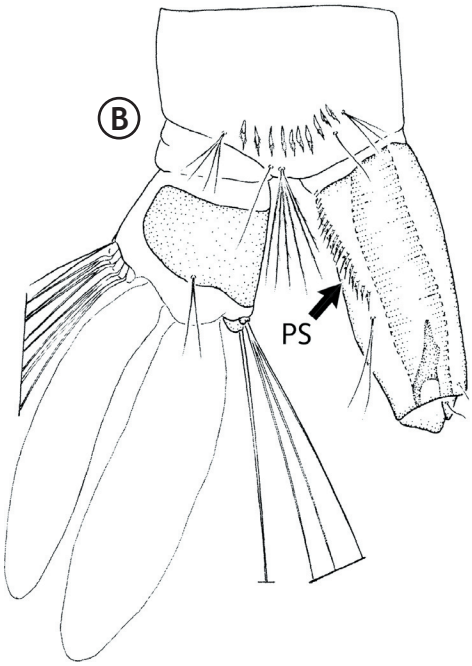


Figure 4.
A. Lateral view of abdominal segments VIII-X - *Or. signifera*
B. Lateral view of abdominal segments VIII-X - *Ae. aegypti*

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, sometimes pectinate, filaments (Fig. 5c); with comb scales (Fig. 5d).....6

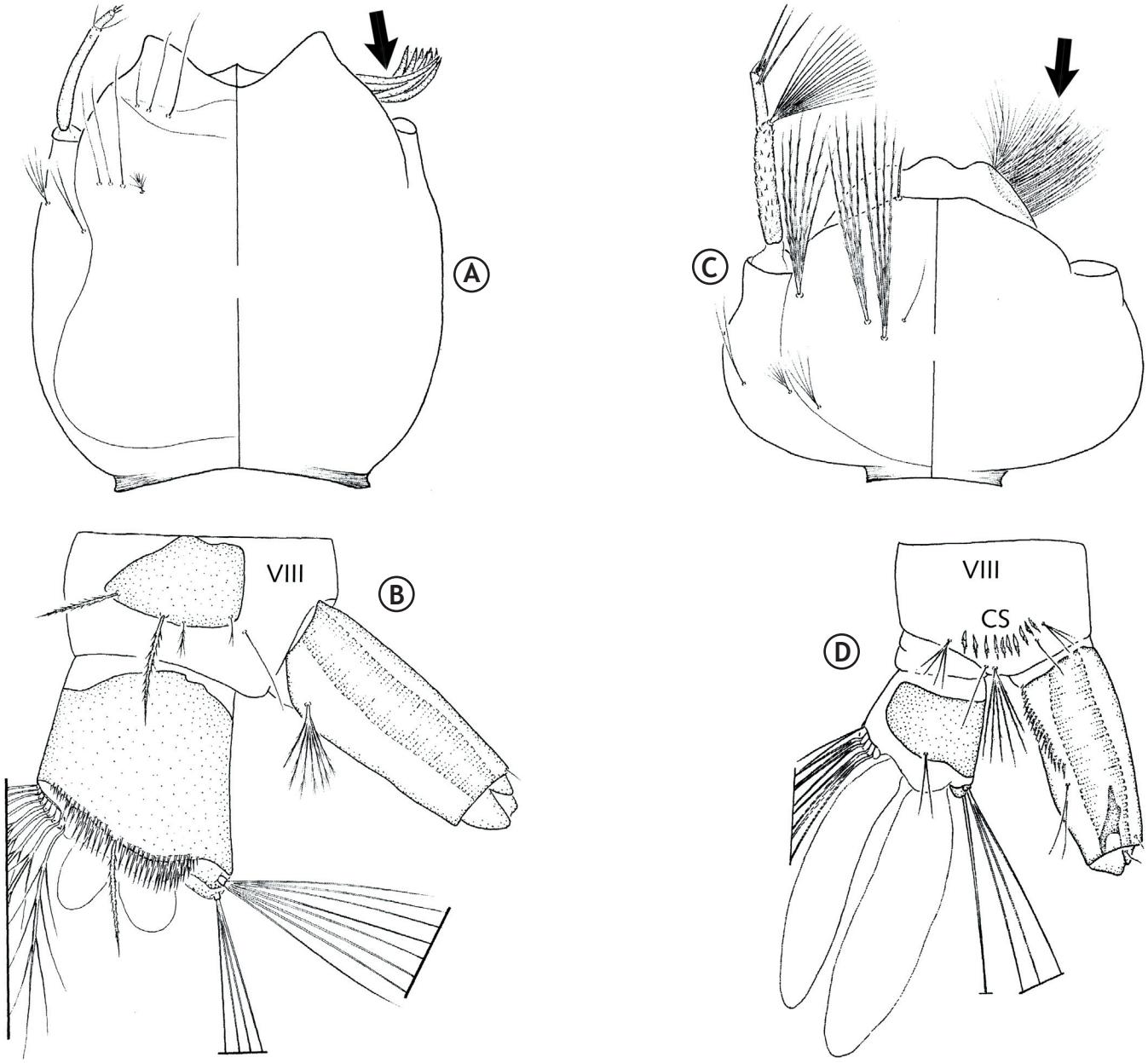


Figure 5.
A. Dorsal view of head - *Tx. rutilus*
B. Lateral view of abdominal segments VIII-X - *Tx. rutilus*
C. Dorsal view of head - *Cx. quinquefasciatus*
D. Lateral view of abdominal segments VIII-X - *Ae. aegypti*

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*

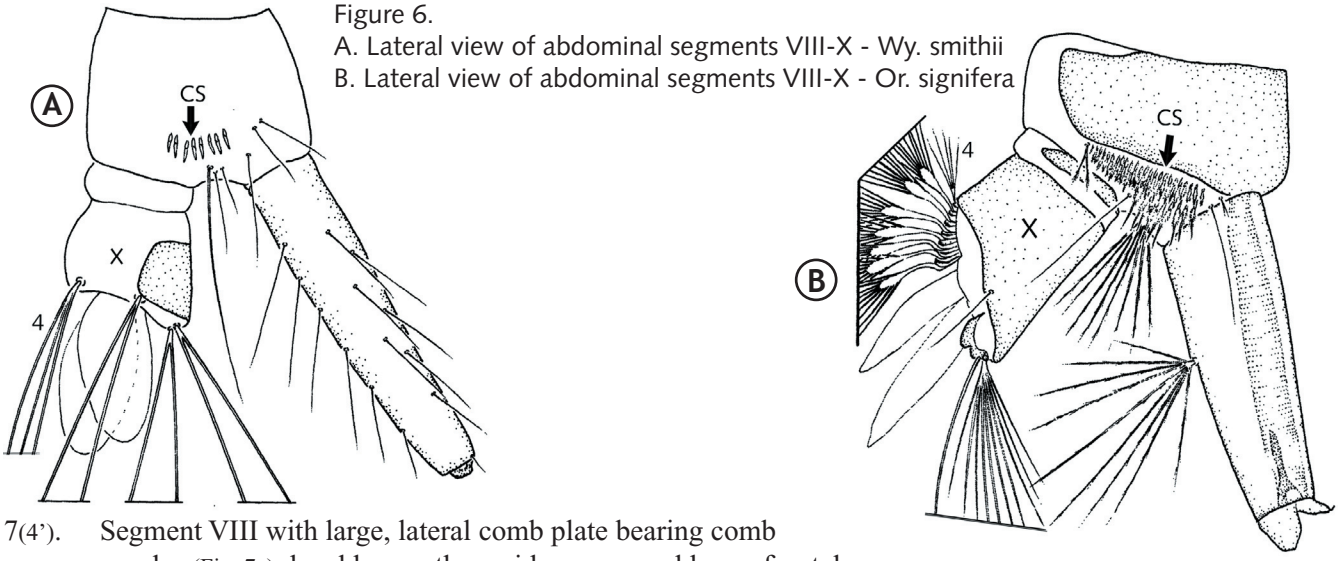


Figure 6.
A. Lateral view of abdominal segments VIII-X - Wy. smithii
B. Lateral view of abdominal segments VIII-X - Or. signifera

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

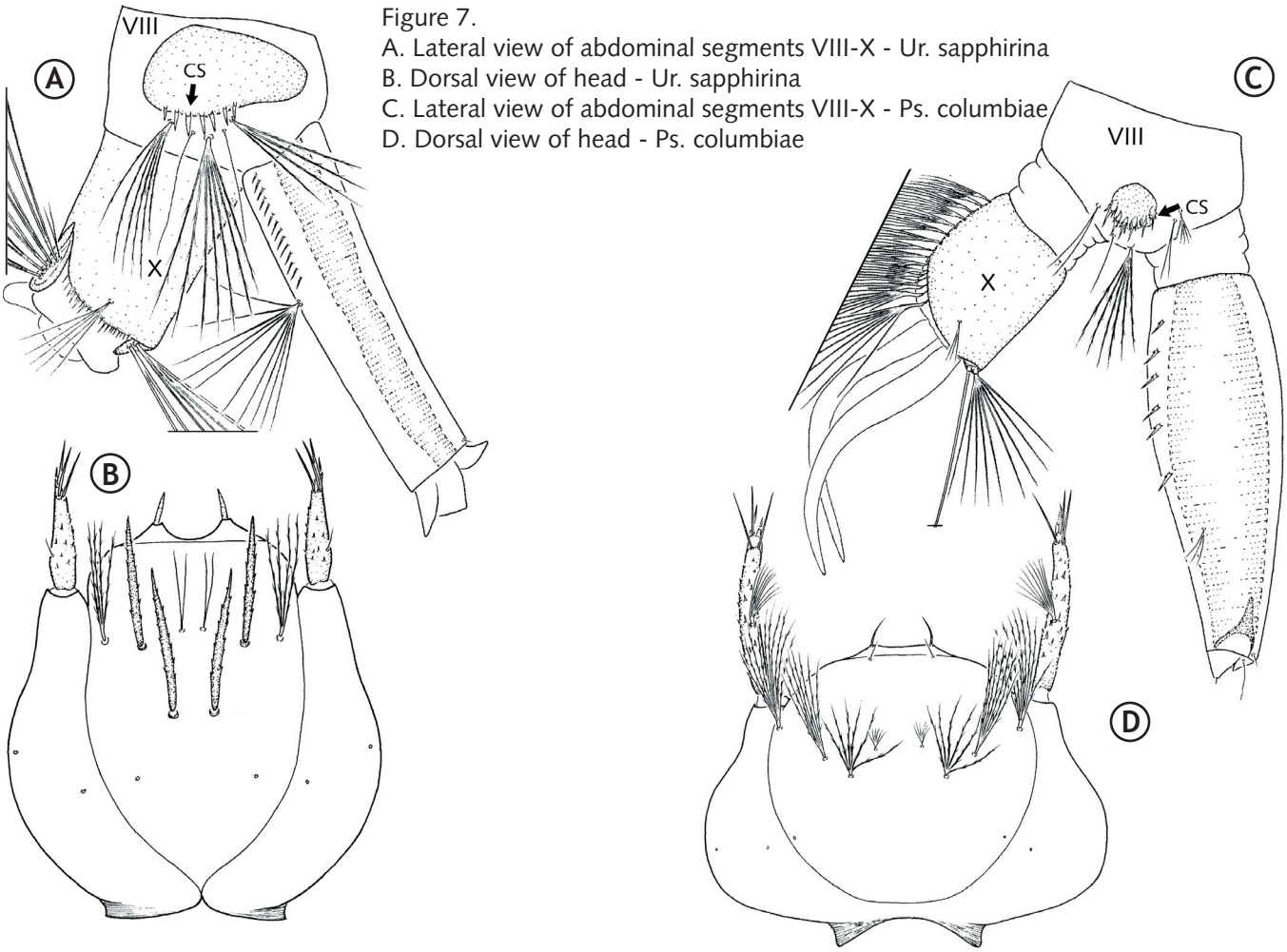


Figure 7.
A. Lateral view of abdominal segments VIII-X - Ur. sapphirina
B. Dorsal view of head - Ur. sapphirina
C. Lateral view of abdominal segments VIII-X - Ps. columbiae
D. Dorsal view of head - Ps. columbiae

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

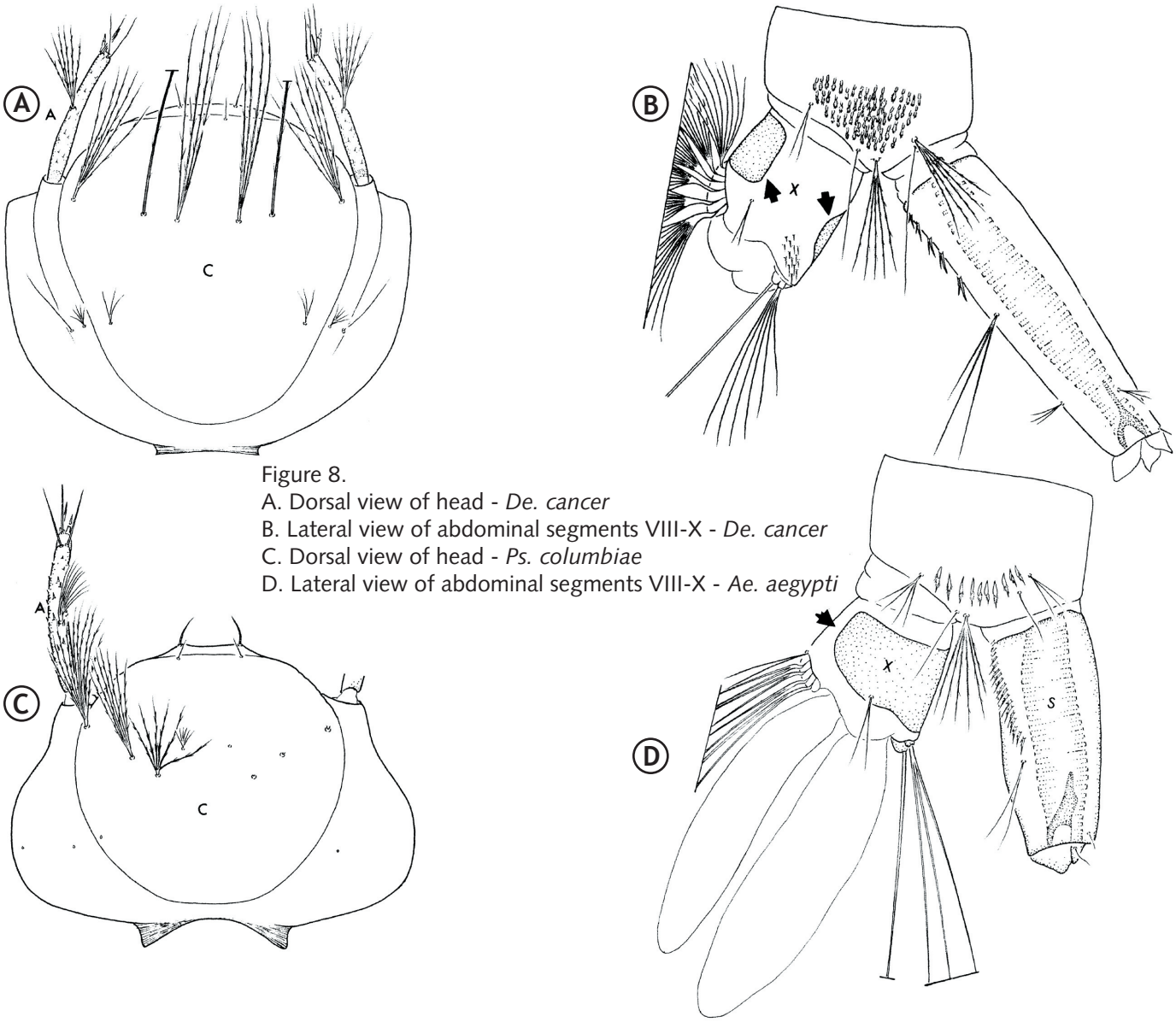
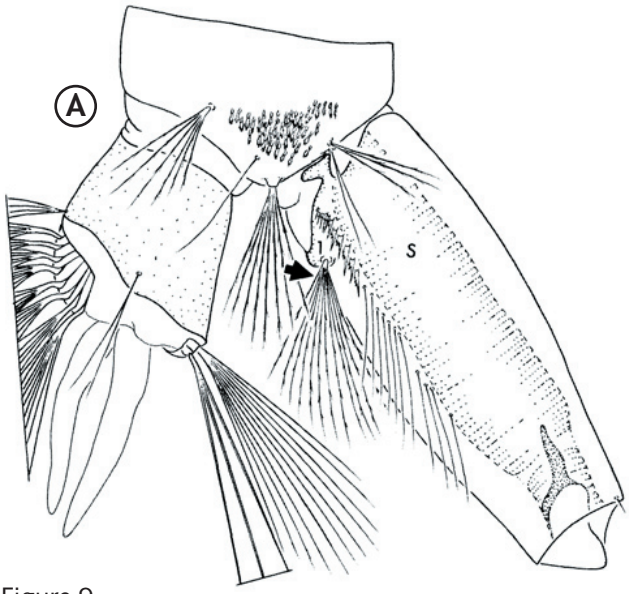


Figure 8.
A. Dorsal view of head - *De. cancer*
B. Lateral view of abdominal segments VIII-X - *De. cancer*
C. Dorsal view of head - *Ps. columbiae*
D. Lateral view of abdominal segments VIII-X - *Ae. aegypti*

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



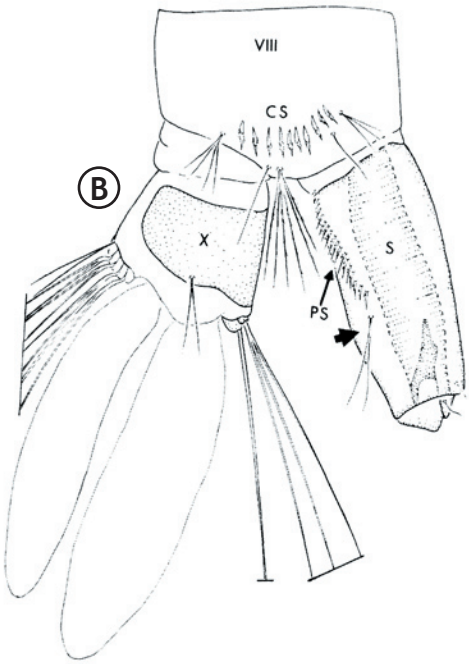
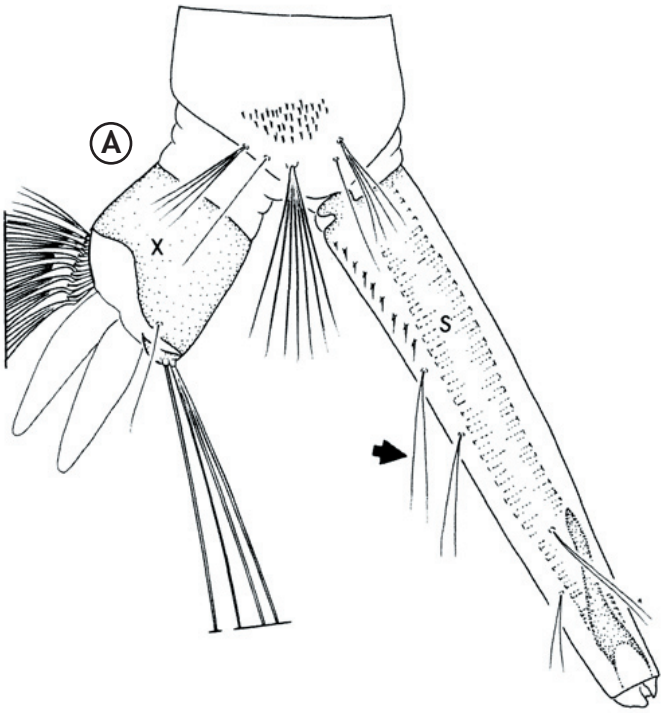


Figure 9.
A. Lateral view of abdominal segments VIII-X - *Cs. inornata*
B. Lateral view of abdominal segments VIII-X - *Ae. aegypti*

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



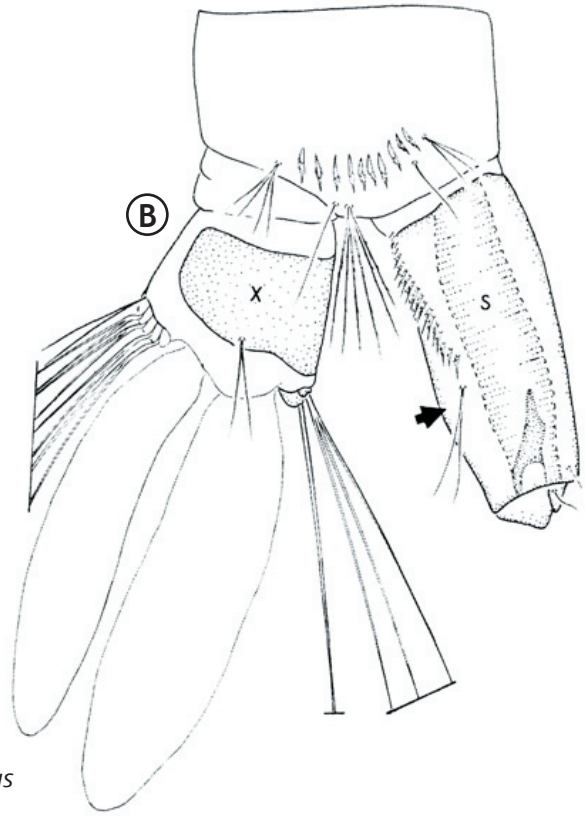


Figure 10.
A. Lateral view of abdominal segments VIII-X - *Cx. quinquefasciatus*
B. Lateral view of abdominal segments VIII-X - *Ae. aegypti*

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*

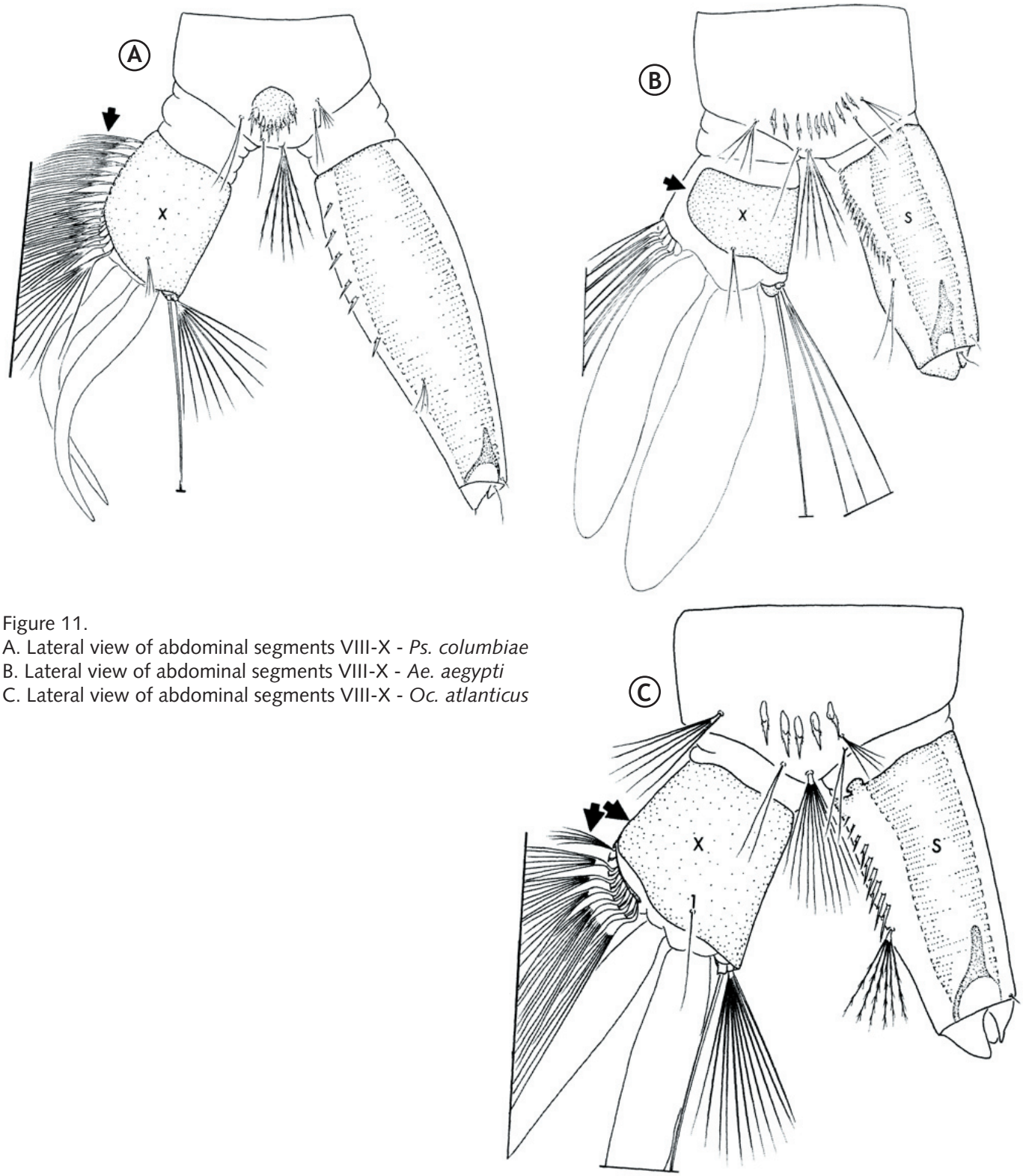


Figure 11.
A. Lateral view of abdominal segments VIII-X - *Ps. columbiae*
B. Lateral view of abdominal segments VIII-X - *Ae. aegypti*
C. Lateral view of abdominal segments VIII-X - *Oc. atlanticus*

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

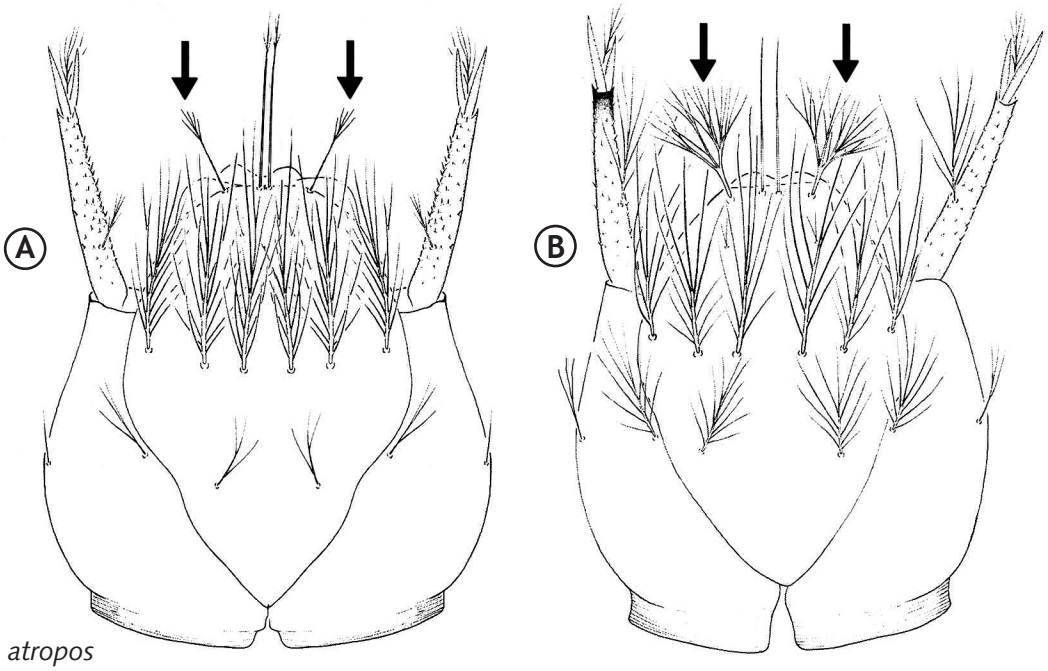


Figure 1.
A. Dorsal view of head - *An. atropos*
B. Dorsal view of head - *An. quadrimaculatus*

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

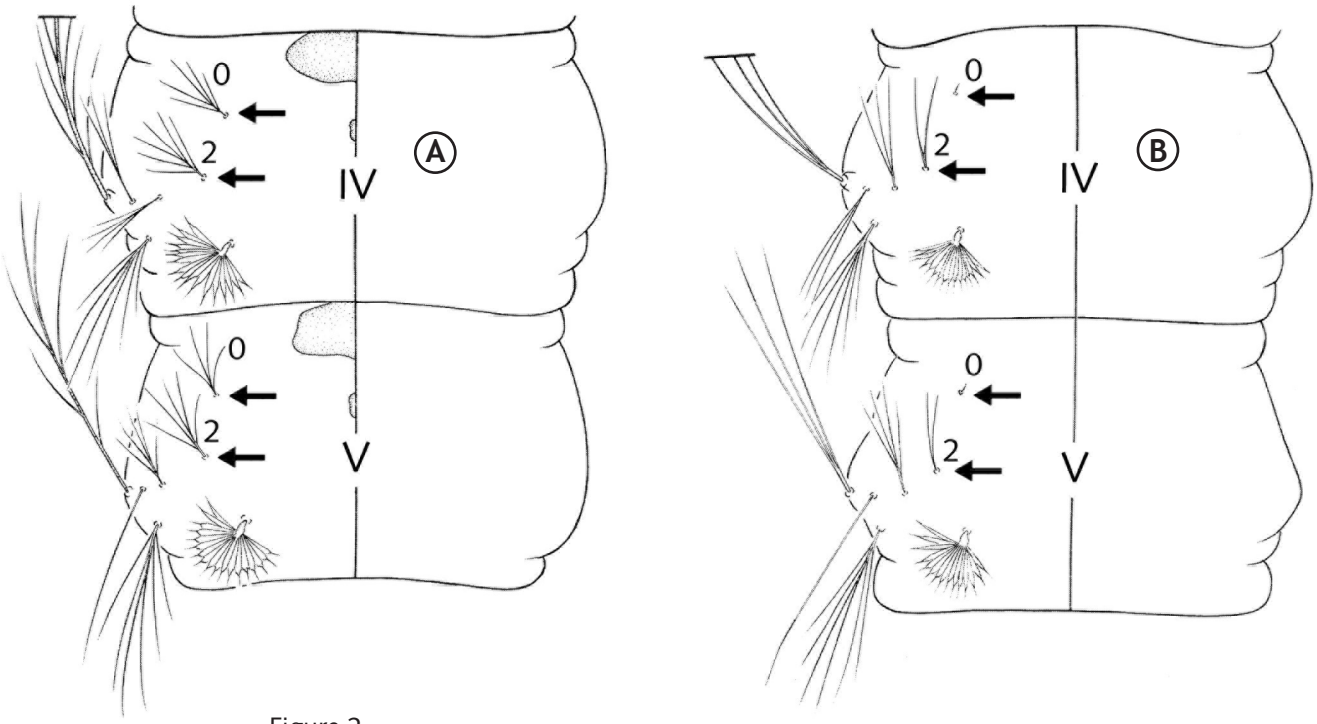


Figure 2.
A. Dorsal view of abdominal segments IV-V - *An. crucians*
B. Dorsal view of abdominal segments IV-V - *An. punctipennis*

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

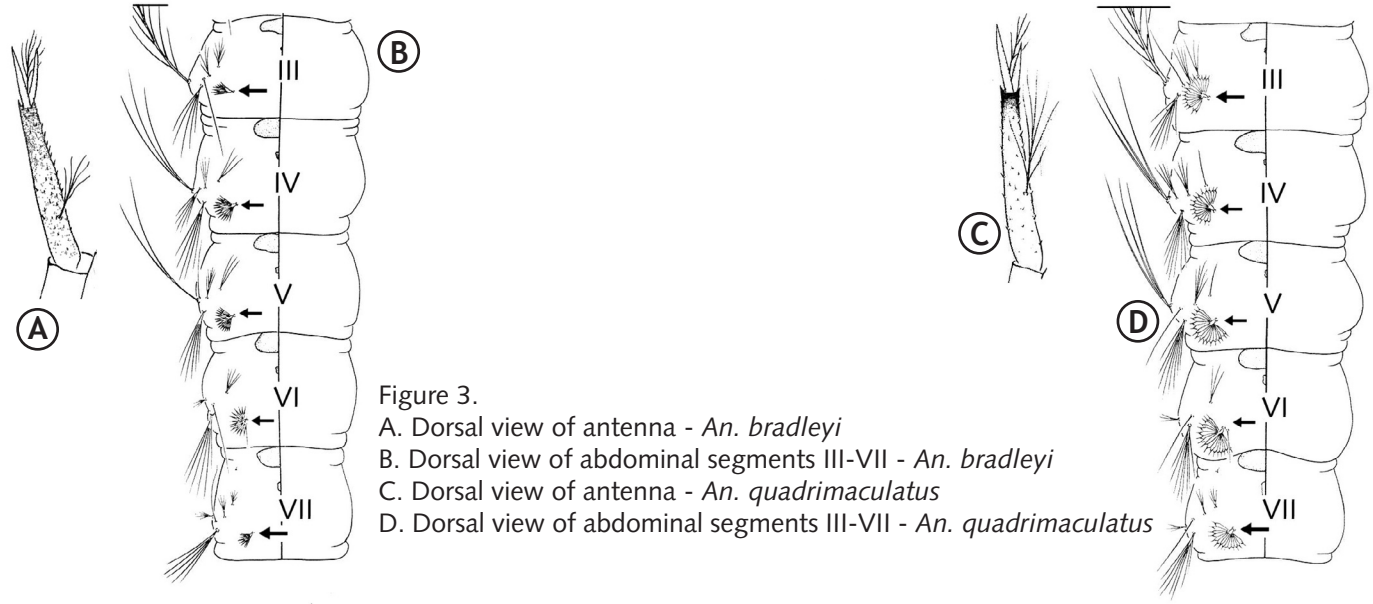


Figure 3.
A. Dorsal view of antenna - *An. bradleyi*
B. Dorsal view of abdominal segments III-VII - *An. bradleyi*
C. Dorsal view of antenna - *An. quadrimaculatus*
D. Dorsal view of abdominal segments III-VII - *An. quadrimaculatus*

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

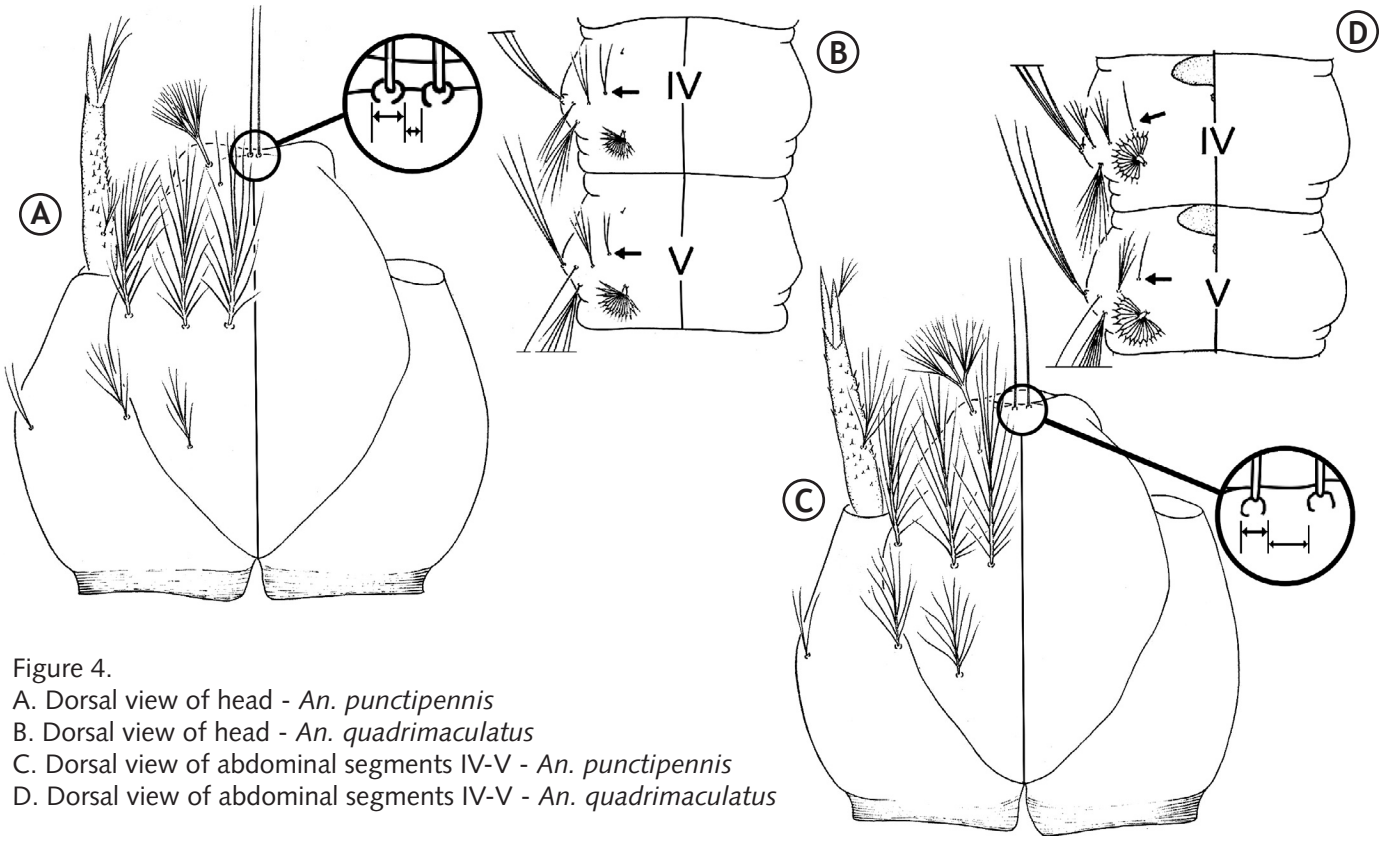


Figure 4.
A. Dorsal view of head - *An. punctipennis*
B. Dorsal view of head - *An. quadrimaculatus*
C. Dorsal view of abdominal segments IV-V - *An. punctipennis*
D. Dorsal view of abdominal segments IV-V - *An. quadrimaculatus*

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*

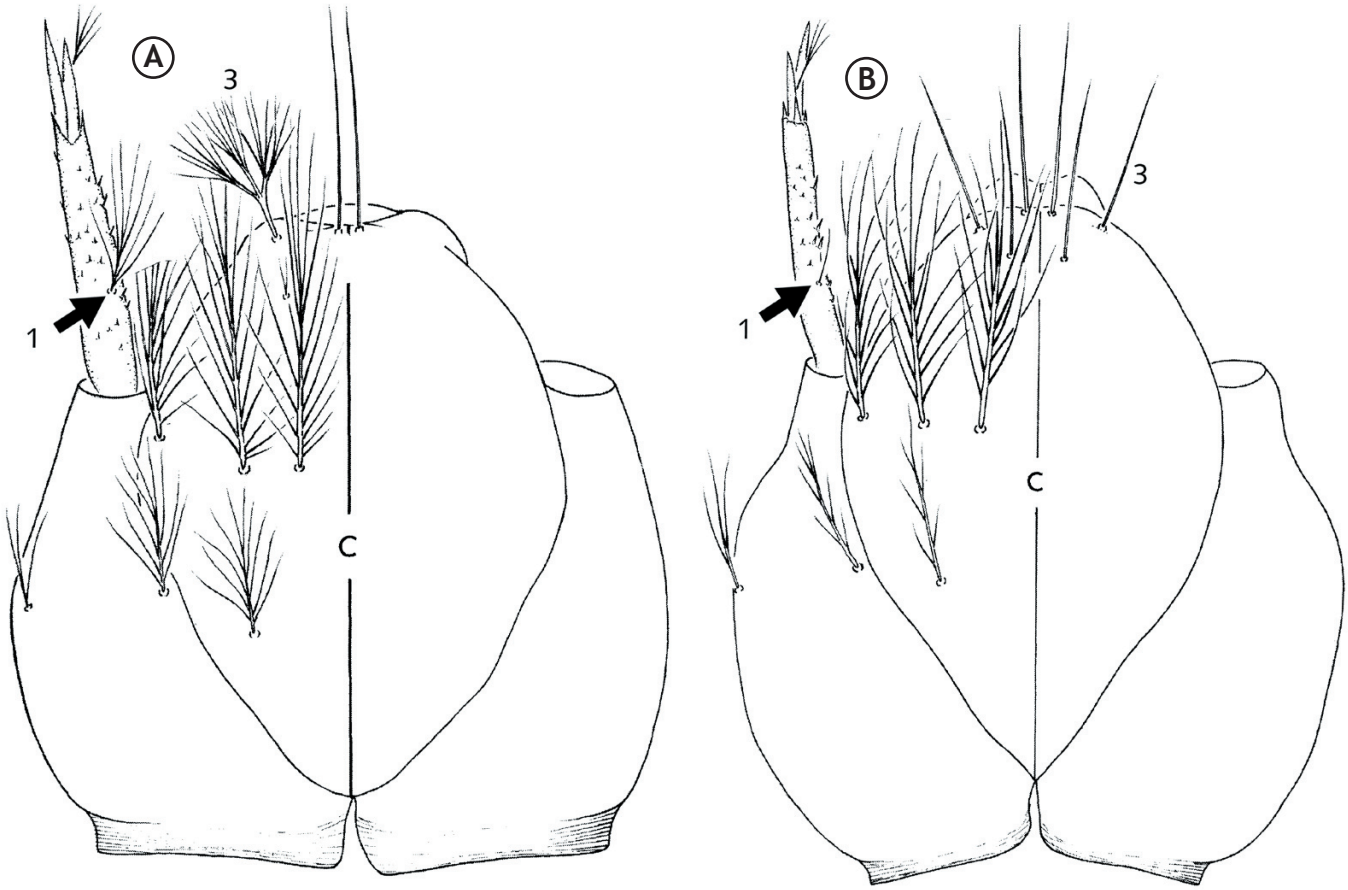
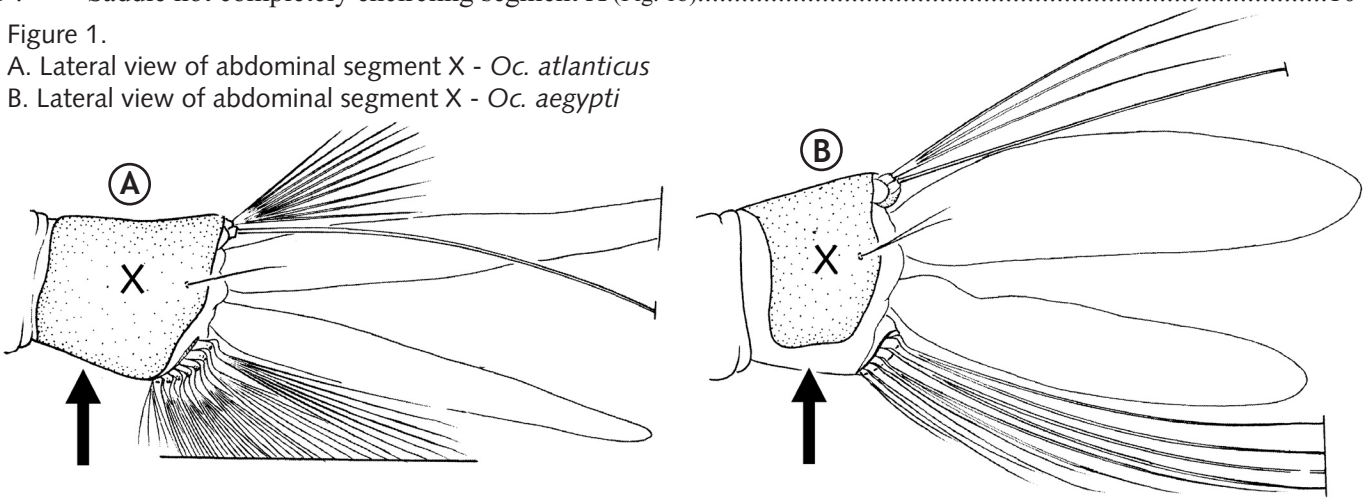


Figure 5.
A. Dorsal view of head - *An. quadrimaculatus*
B. Dorsal view of head - *An. pseudopunctipennis*

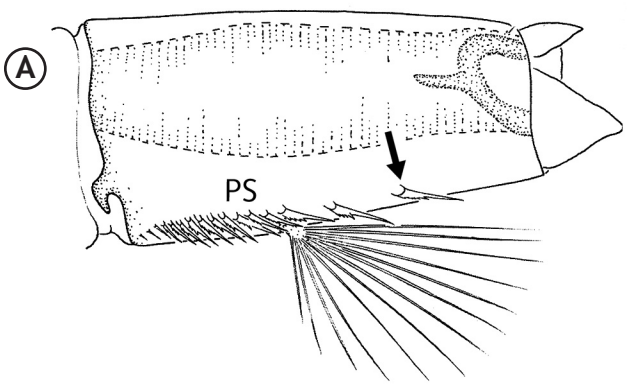
Aedes Larvae

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



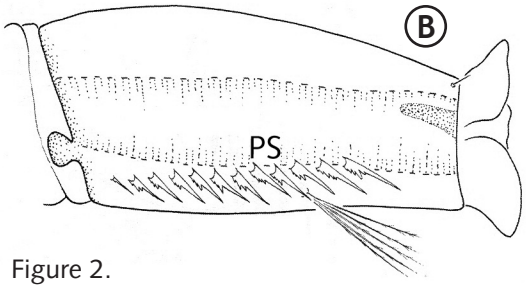
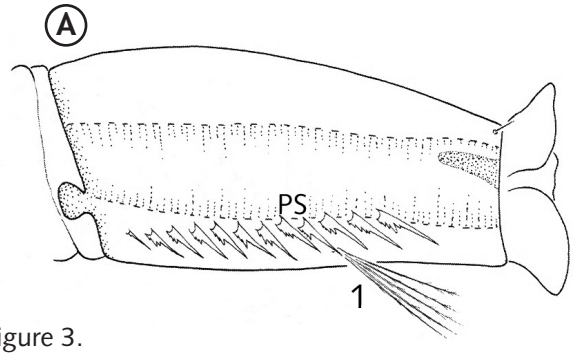


Figure 2.
A. Lateral view of siphon - *Oc. fulvus pallens*
B. Lateral view of siphon - *Oc. tormentor*

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



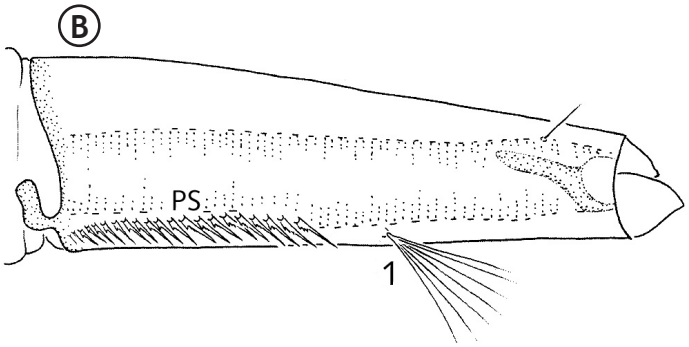


Figure 3.
A. Lateral view of siphon - *Oc. tormentor*
B. Lateral view of siphon - *Oc. mitchellae*

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

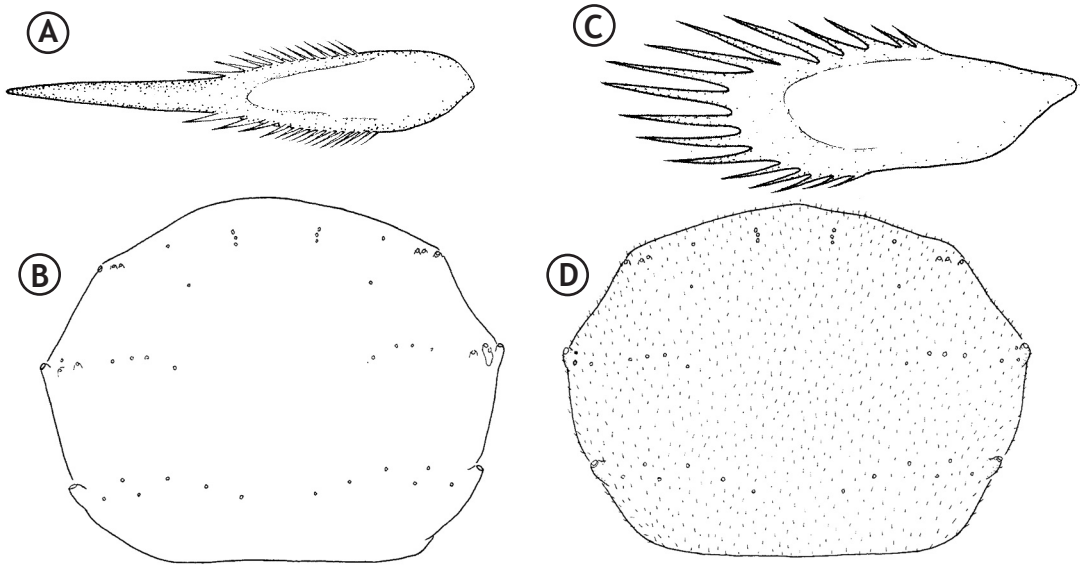


Figure 4.
A. Comb scale - *Oc. atlanticus*
B. Dorsal view of thorax - *Oc. sollicitans*
C. Comb scale - *Oc. taeniorhynchus*
D. Dorsal view of thorax - *Oc. taeniorhynchus*

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).....

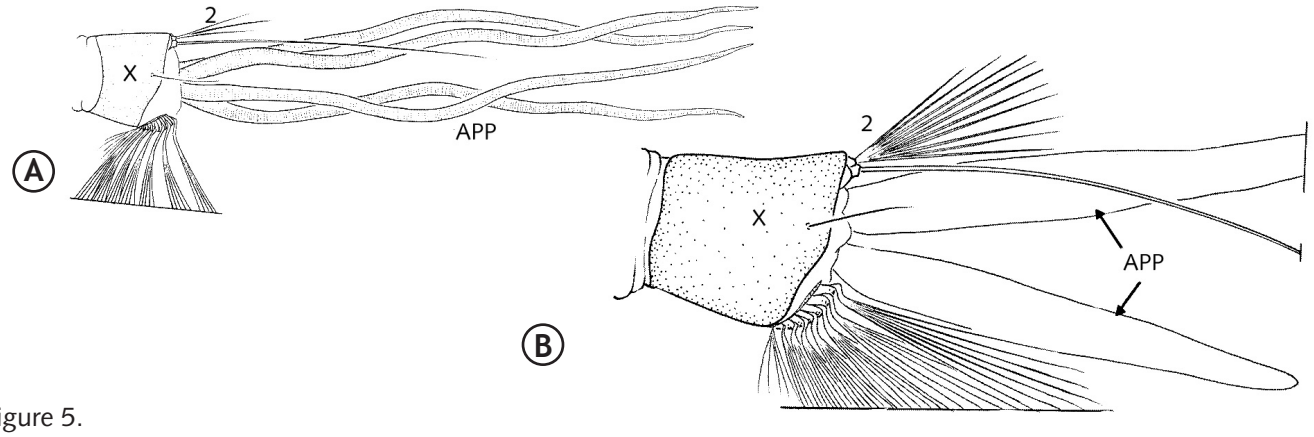


Figure 5.
A. Lateral view of abdominal segment X - *Oc. dupreei*
B. Lateral view of abdominal segment X - *Oc. atlanticus*

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

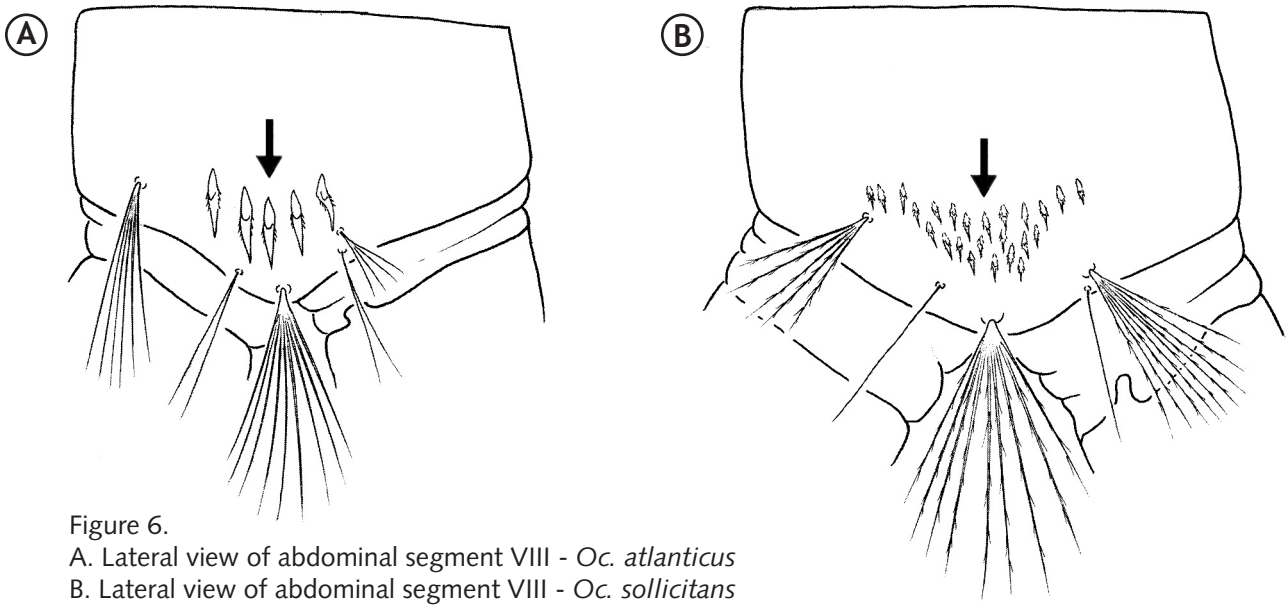


Figure 6.
A. Lateral view of abdominal segment VIII - *Oc. atlanticus*
B. Lateral view of abdominal segment VIII - *Oc. sollicitans*

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*

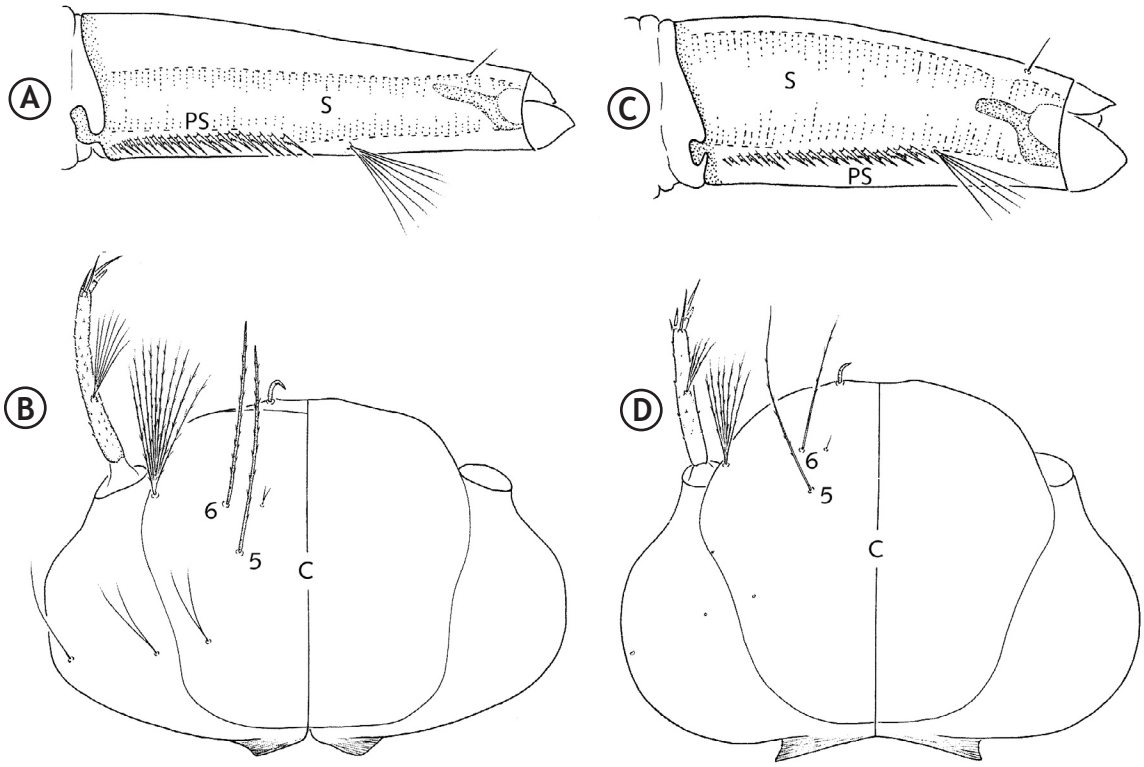


Figure 7.
A. Lateral view of siphon - *Oc. mitchellae*
B. Dorsal view of head - *Oc. mitchellae*
C. Lateral view of siphon - *Oc. sollicitans*
D. Dorsal view of head - *Oc. sollicitans*

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

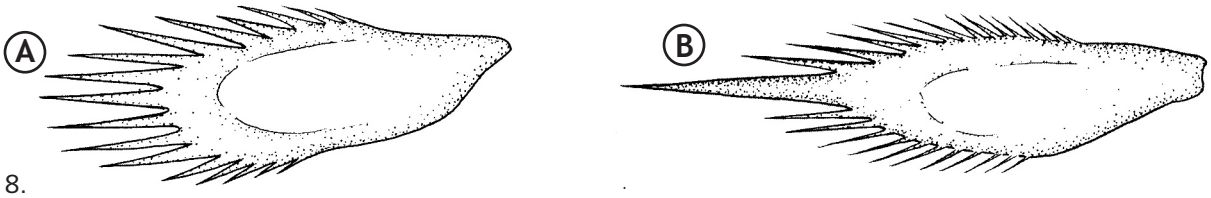


Figure 8.
A. Comb scale - *Oc. taeniorhynchus*
B. Comb scale - *Oc. infirmatus*

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*

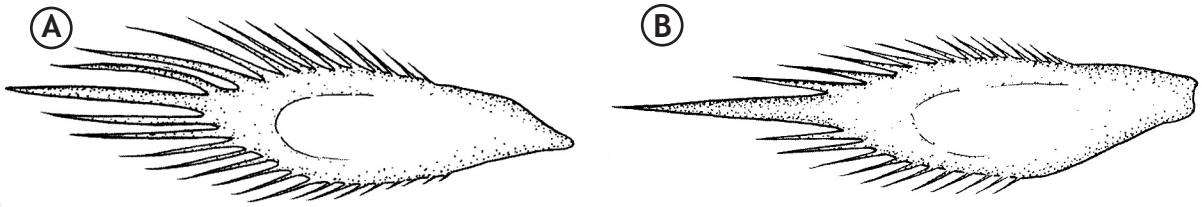


Figure 9.
A. Comb scale - *Oc. trivittatus*
B. Comb scale - *Oc. infirmatus*

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

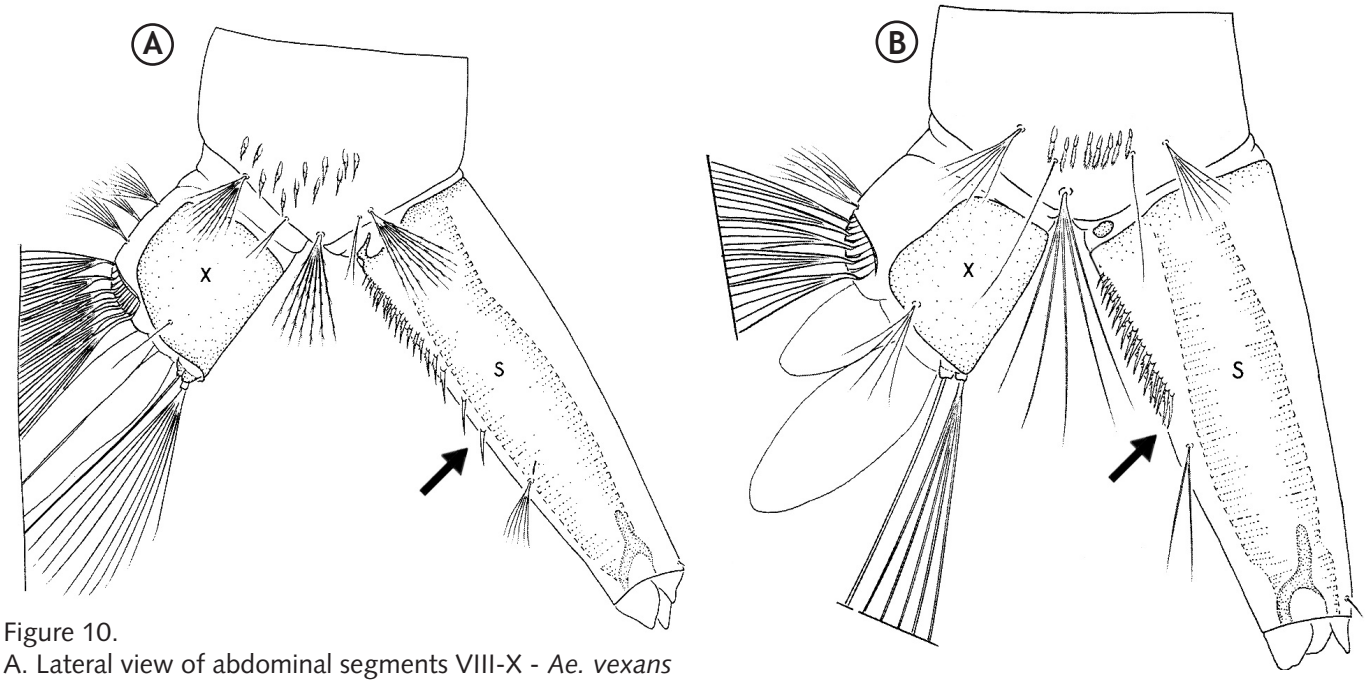


Figure 10.
A. Lateral view of abdominal segments VIII-X - *Ae. vexans*
B. Lateral view of abdominal segments VIII-X - *Oc. triseriatus*

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

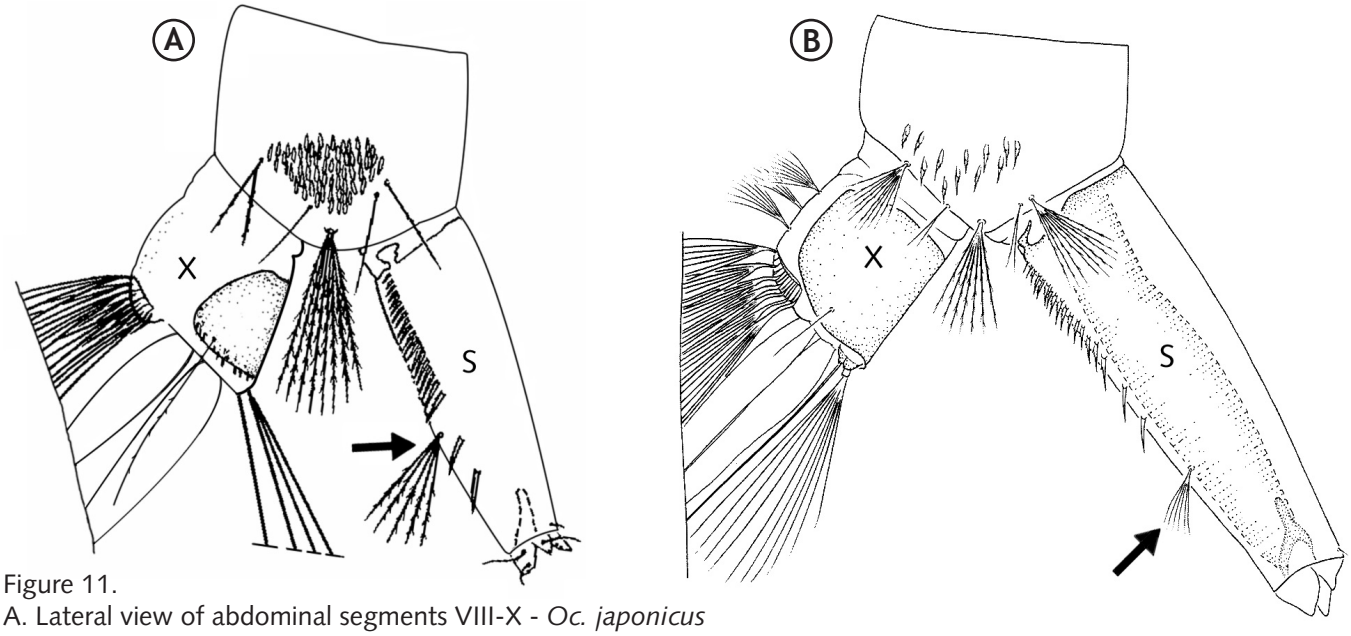


Figure 11.
A. Lateral view of abdominal segments VIII-X - *Oc. japonicus*
B. Lateral view of abdominal segments VIII-X - *Ae. vexans*

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*

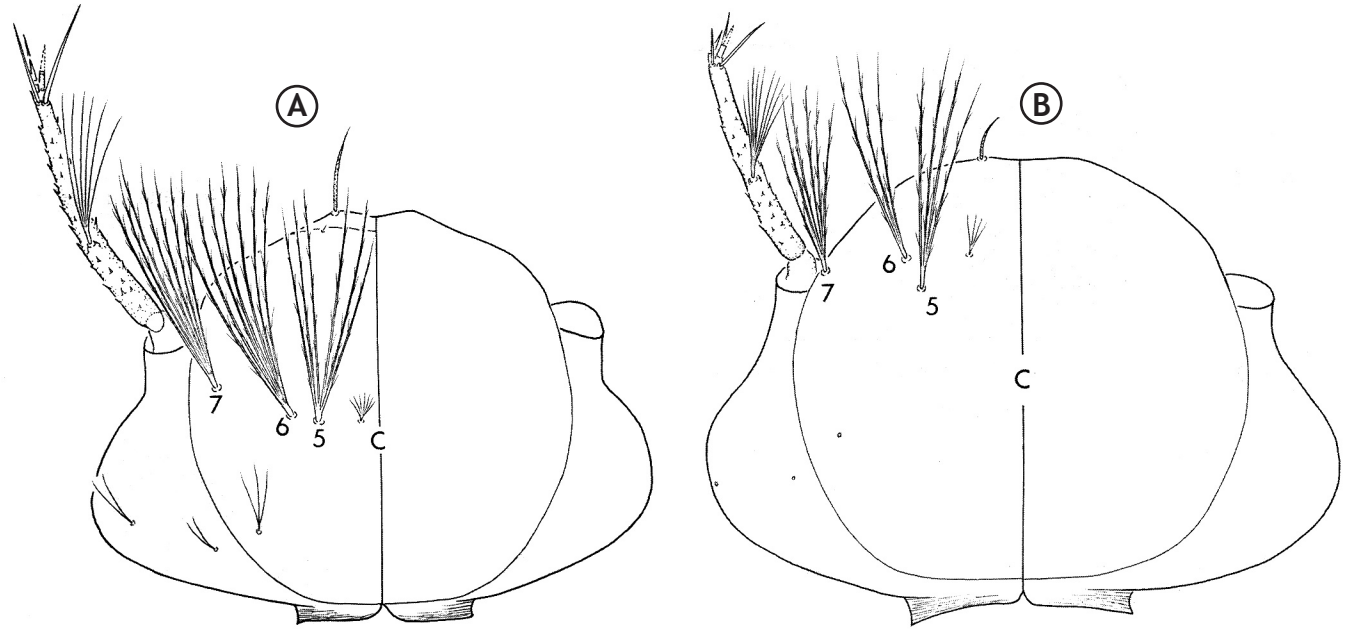


Figure 12.
A. Dorsal view of head and antenna - *Ae. cinereus*
B. Dorsal view of head and antenna - *Ae. vexans*

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

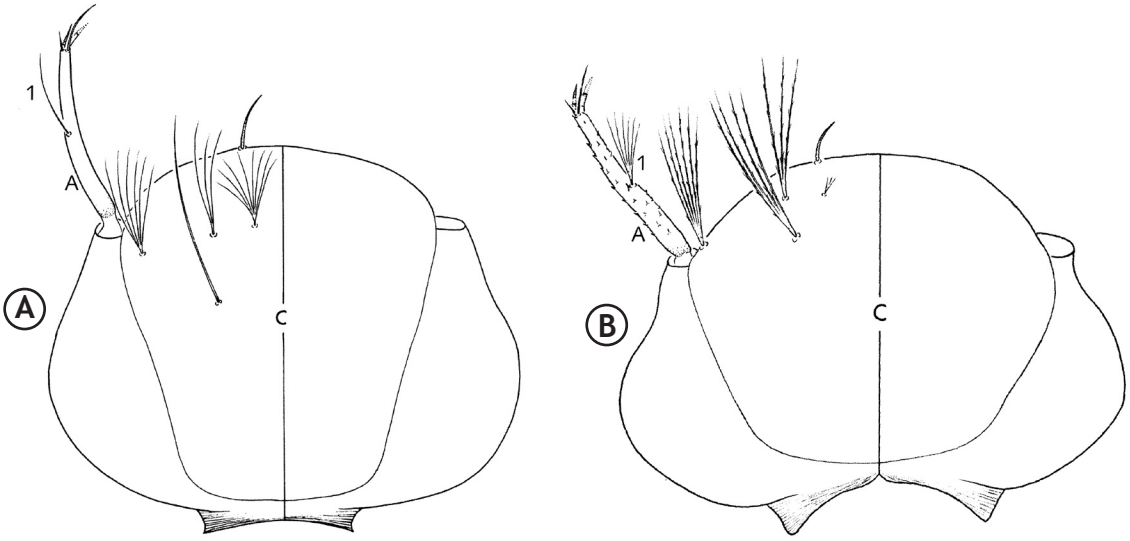


Figure 13.
A. Dorsal view of head and antenna - *Oc. triseriatus*
B. Dorsal view of head and antenna - *Oc. sticticus*

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

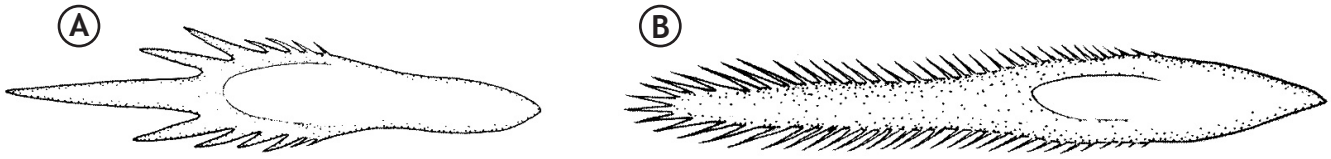
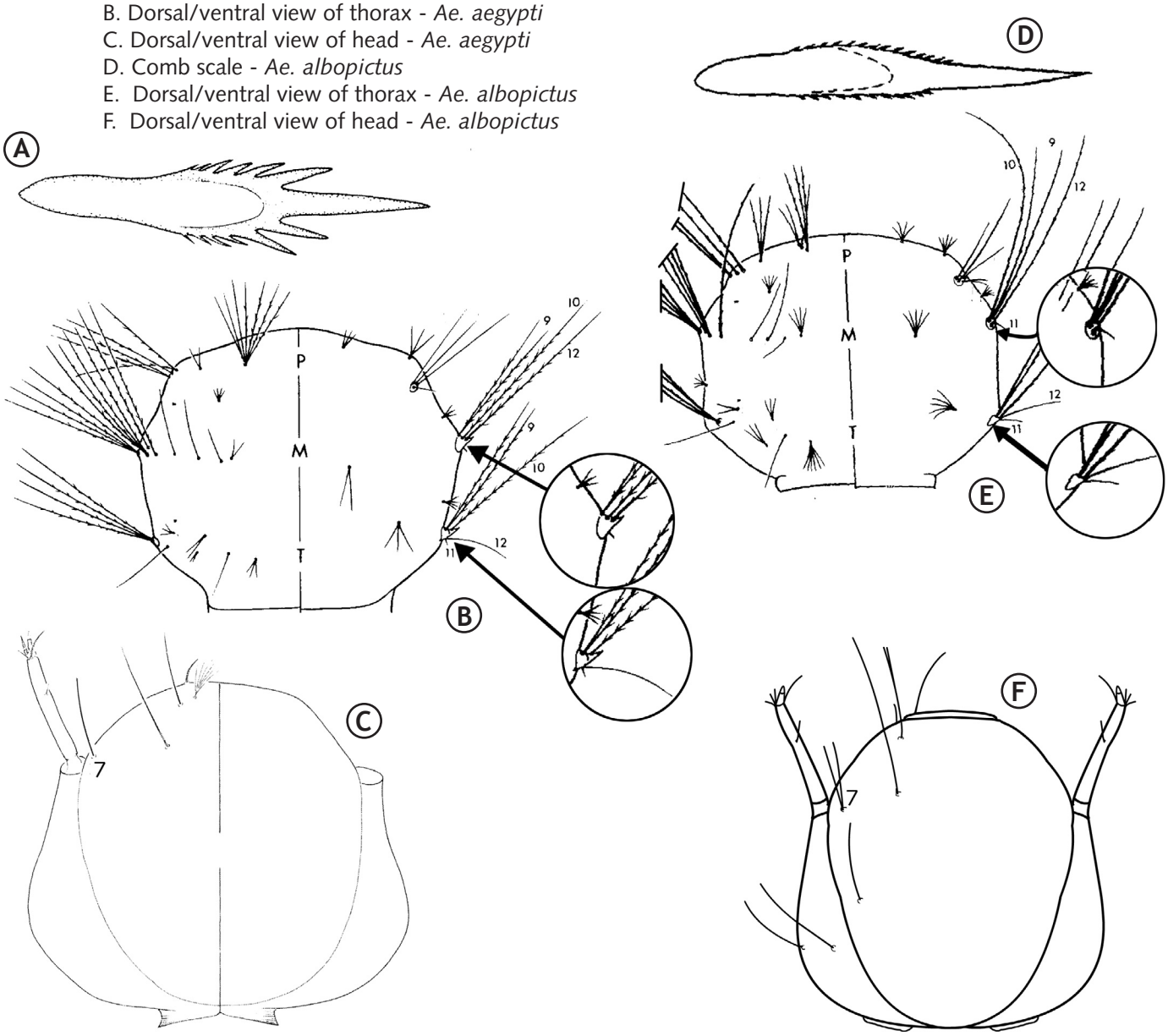


Figure 14.
A. Comb scale - *Ae. aegypti*
B. Comb scale - *Oc. triseriatus*

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*

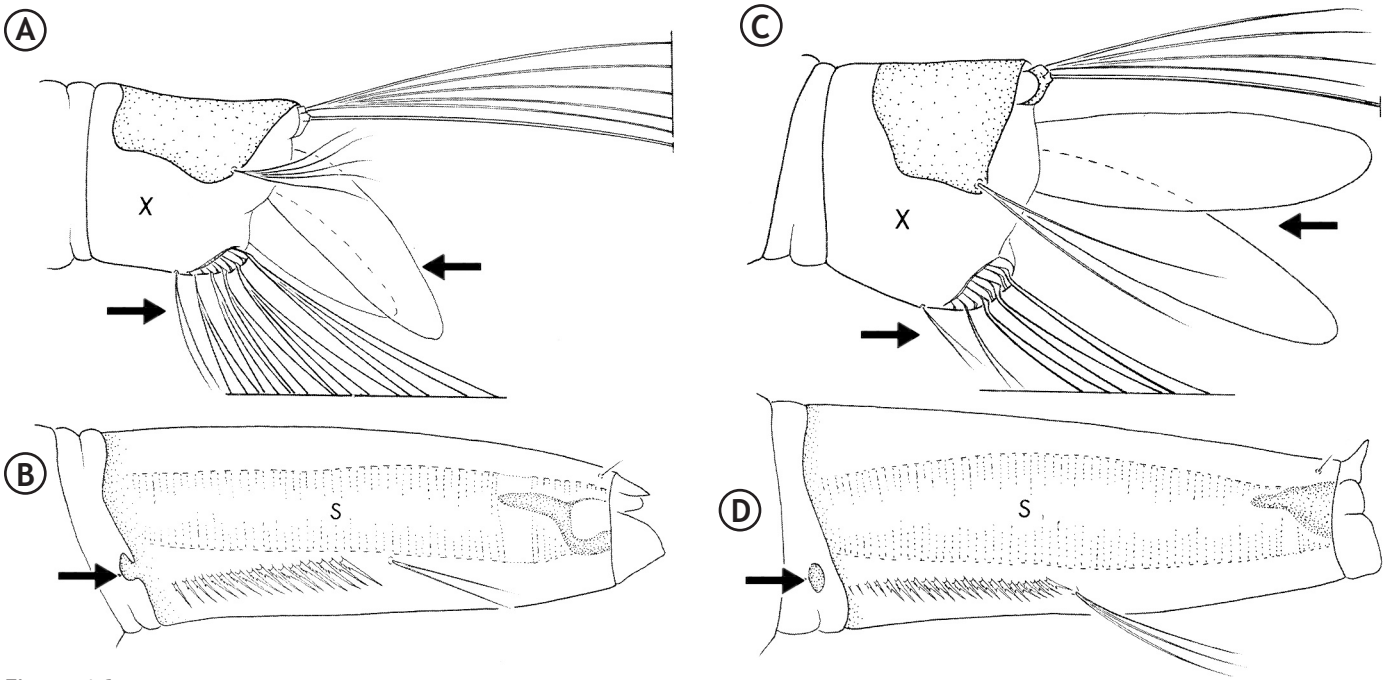


Figure 16.
A. Lateral view of abdominal segment X - *Oc. triseriatus*
B. Lateral view of siphon - *Oc. triseriatus*
C. Lateral view of abdominal segment X - *Oc. hendersoni*
D. Lateral view of siphon - *Oc. hendersoni*

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*

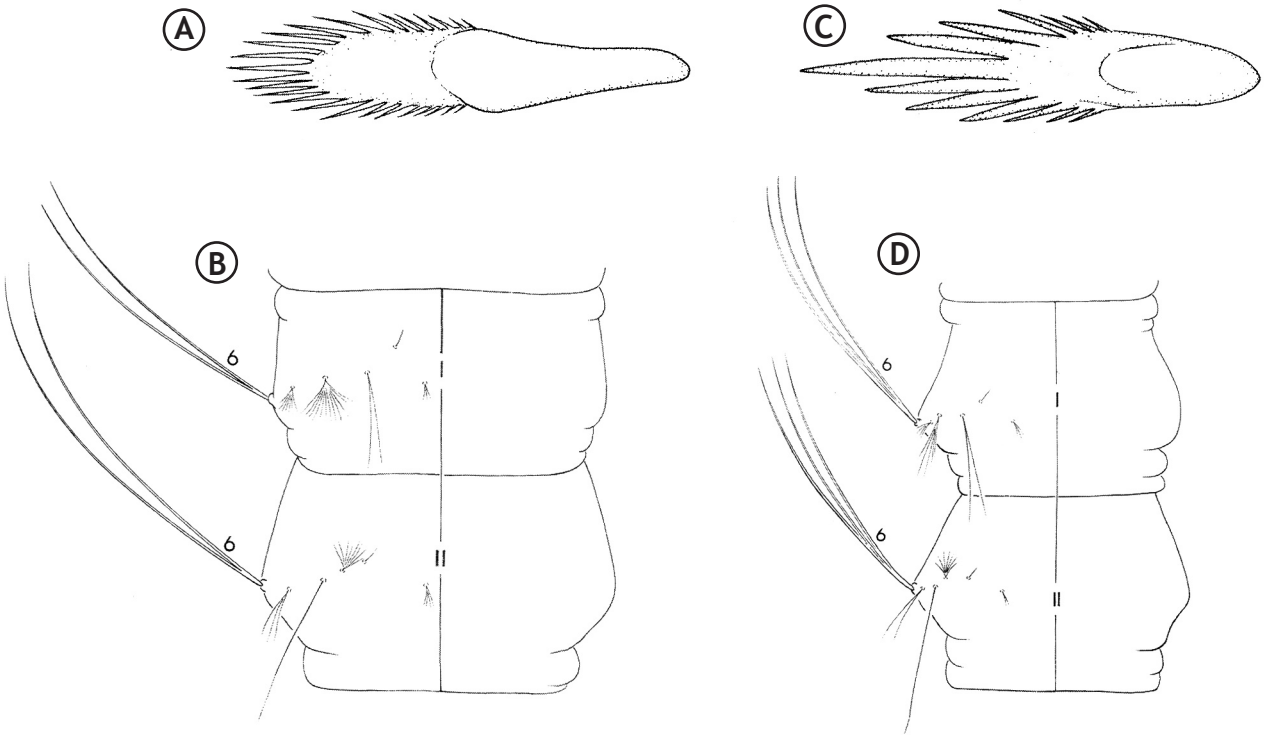


Figure 18.
A. Comb scale - *Oc. c. canadensis*
B. Dorsal view of abdominal segments I and II - *Oc. c. canadensis*
C. Comb scale - *Oc. thibaulti*
D. Dorsal view of abdominal segments I and II - *Oc. thibaulti*

Culex Larvae

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

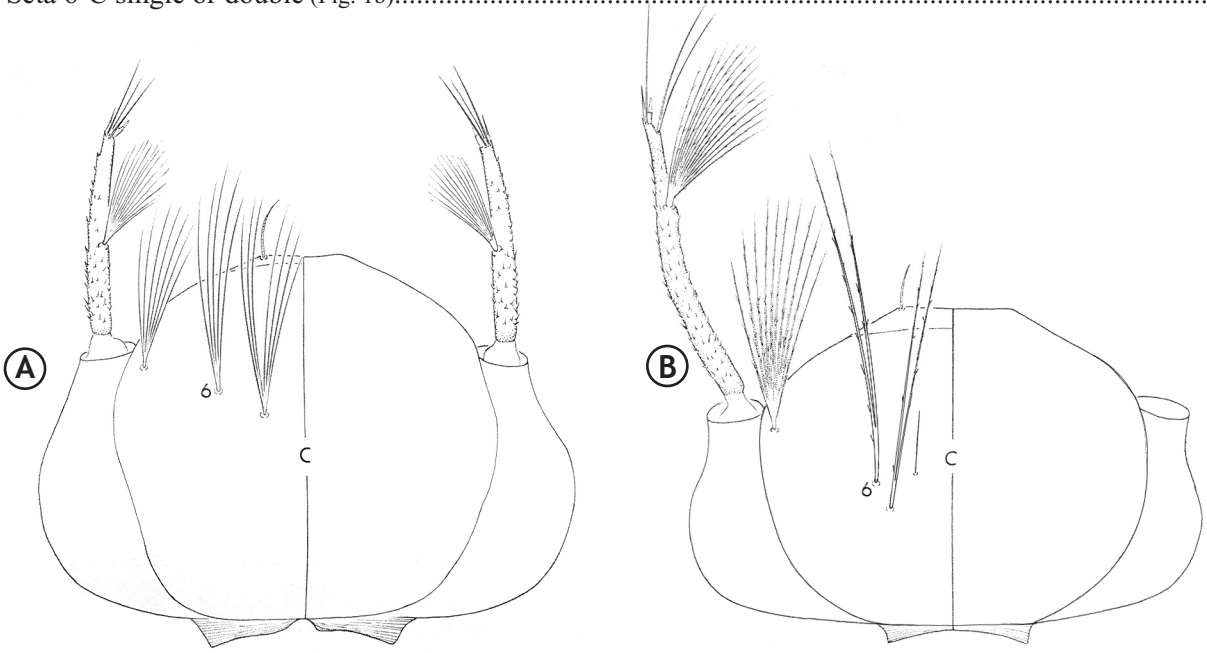


Figure 1.
A. Dorsal view of head - *Cx. restuans*
B. Dorsal view of head - *Cx. territans*

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

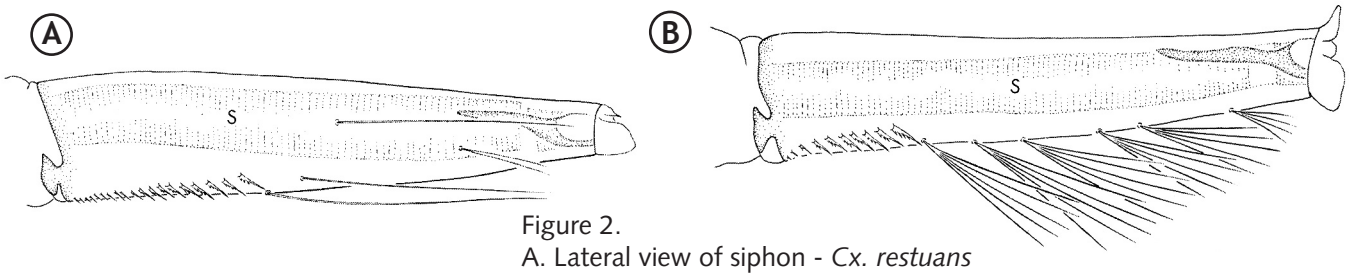


Figure 2.
A. Lateral view of siphon - *Cx. restuans*
B. Lateral view of siphon - *Cx. tarsalis*

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

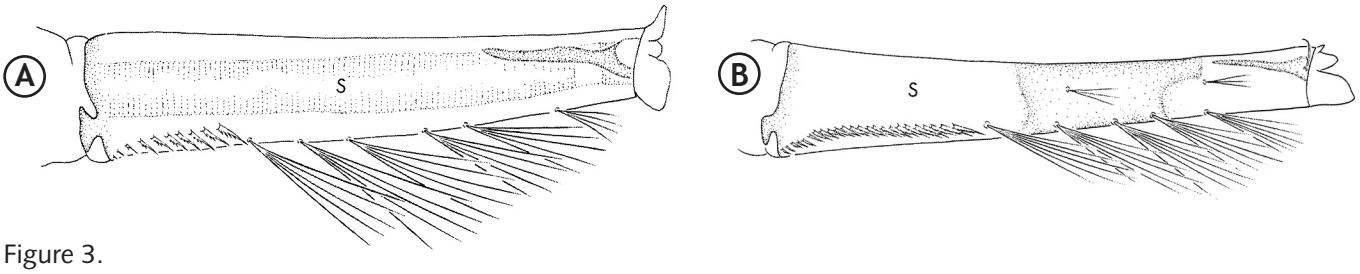


Figure 3.
A. Lateral view of siphon - *Cx. tarsalis*
B. Lateral view of siphon - *Cx. peccator*

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

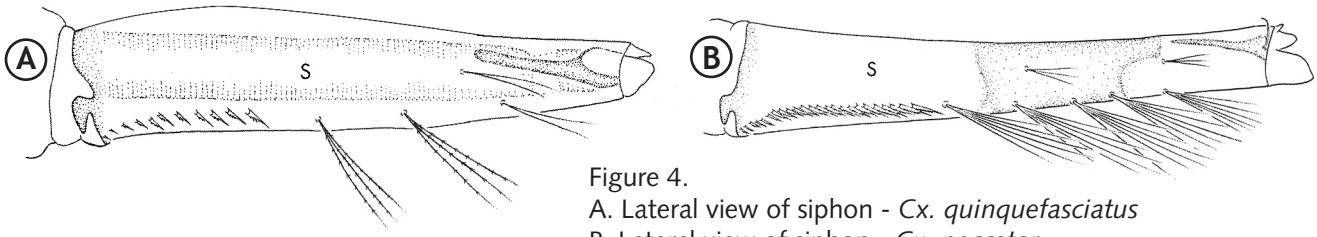


Figure 4.
A. Lateral view of siphon - *Cx. quinquefasciatus*
B. Lateral view of siphon - *Cx. peccator*

5(4'). Thoracic integument with fine aculeae; seta 1-M subequal 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

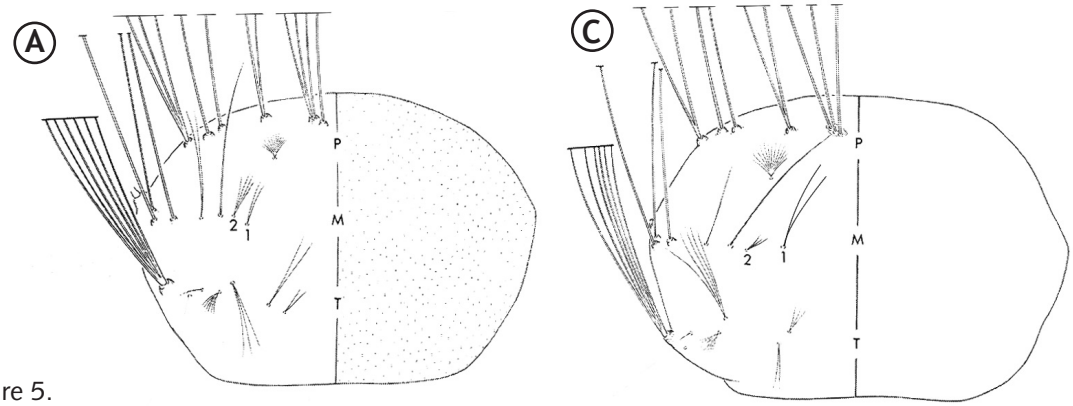
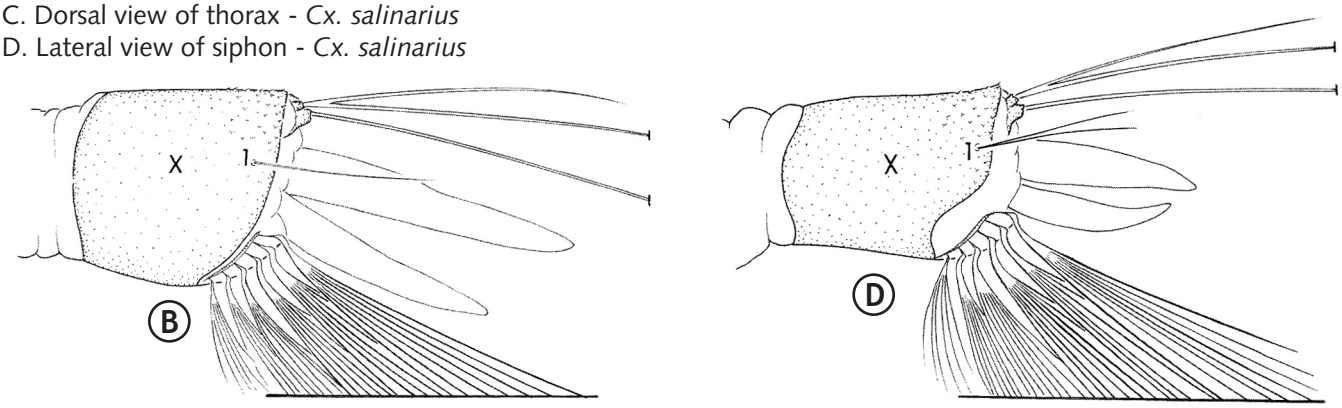


Figure 5.
A. Dorsal view of thorax - *Cx. nigripalpus*
B. Lateral view of siphon - *Cx. nigripalpus*
C. Dorsal view of thorax - *Cx. salinarius*
D. Lateral view of siphon - *Cx. salinarius*



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

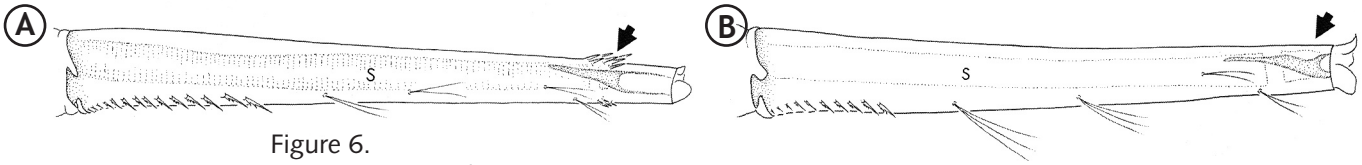


Figure 6.
A. Lateral view of siphon - *Cx. coronator*
B. Lateral view of siphon - *Cx. salinarius*

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

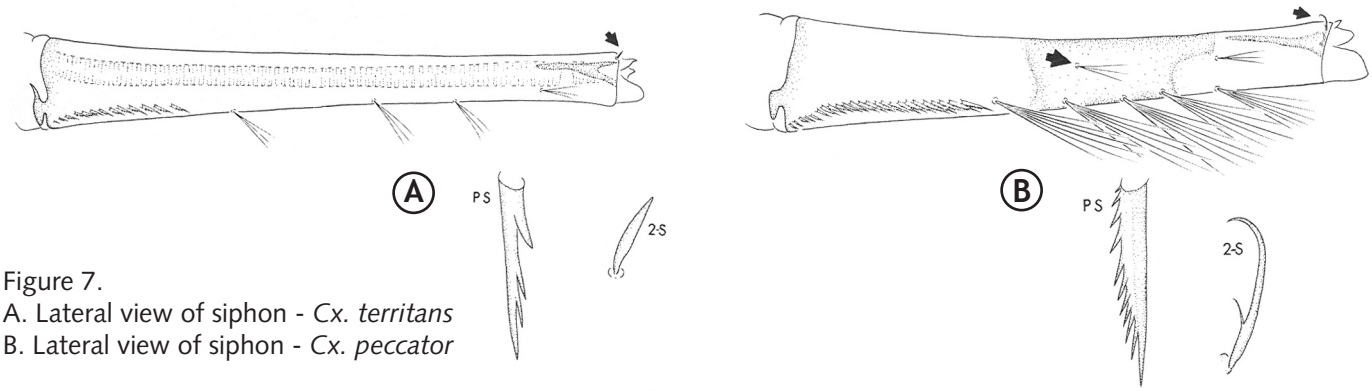


Figure 7.
A. Lateral view of siphon - *Cx. territans*
B. Lateral view of siphon - *Cx. peccator*

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

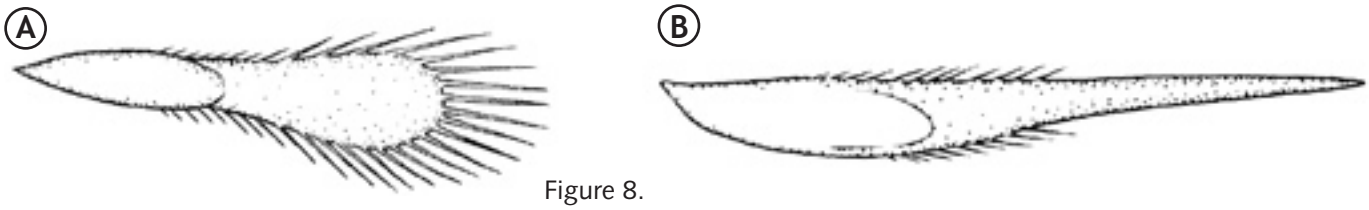


Figure 8.
A. Comb scale - *Cx. peccator*
B. Comb scale - *Cx. pilosus*

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*

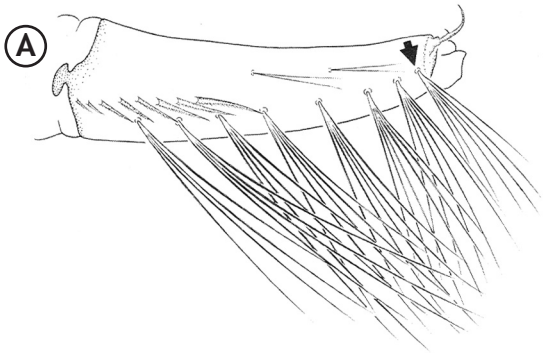
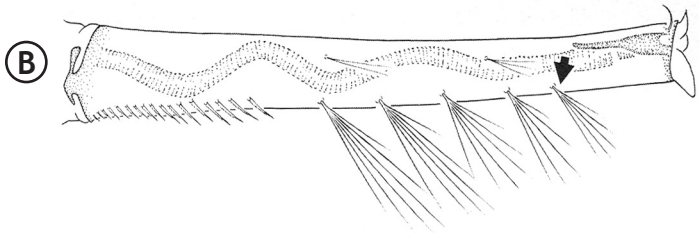


Figure 9.
A. Lateral view of siphon - *Cx. pilosus*
B. Lateral view of siphon - *Cx. erraticus*



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

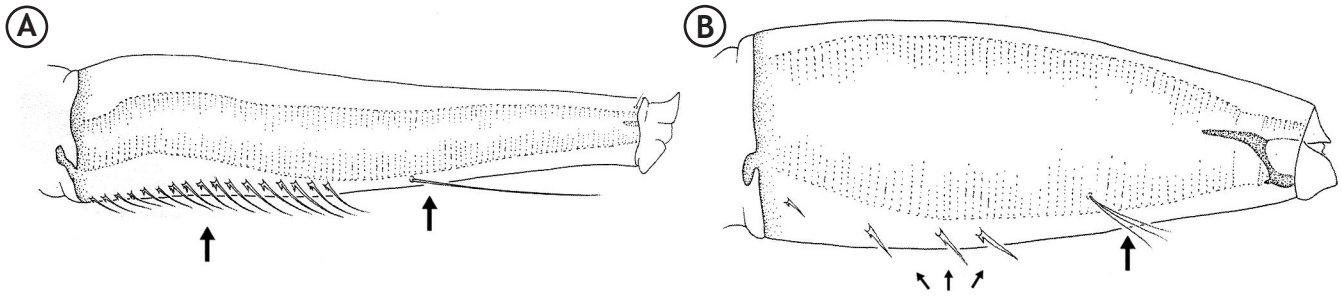


Figure 1.
A. Lateral view of siphon - *Ps. howardii*
B. Lateral view of siphon - *Ps. columbiae*

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*

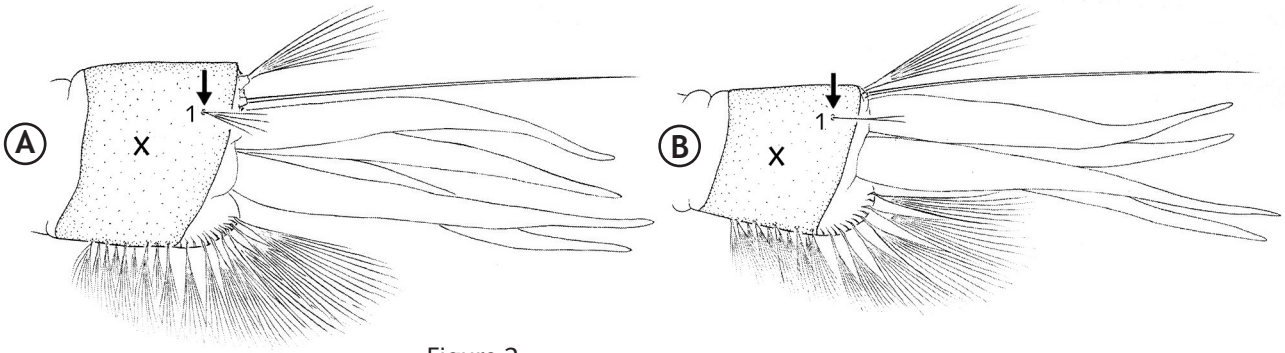
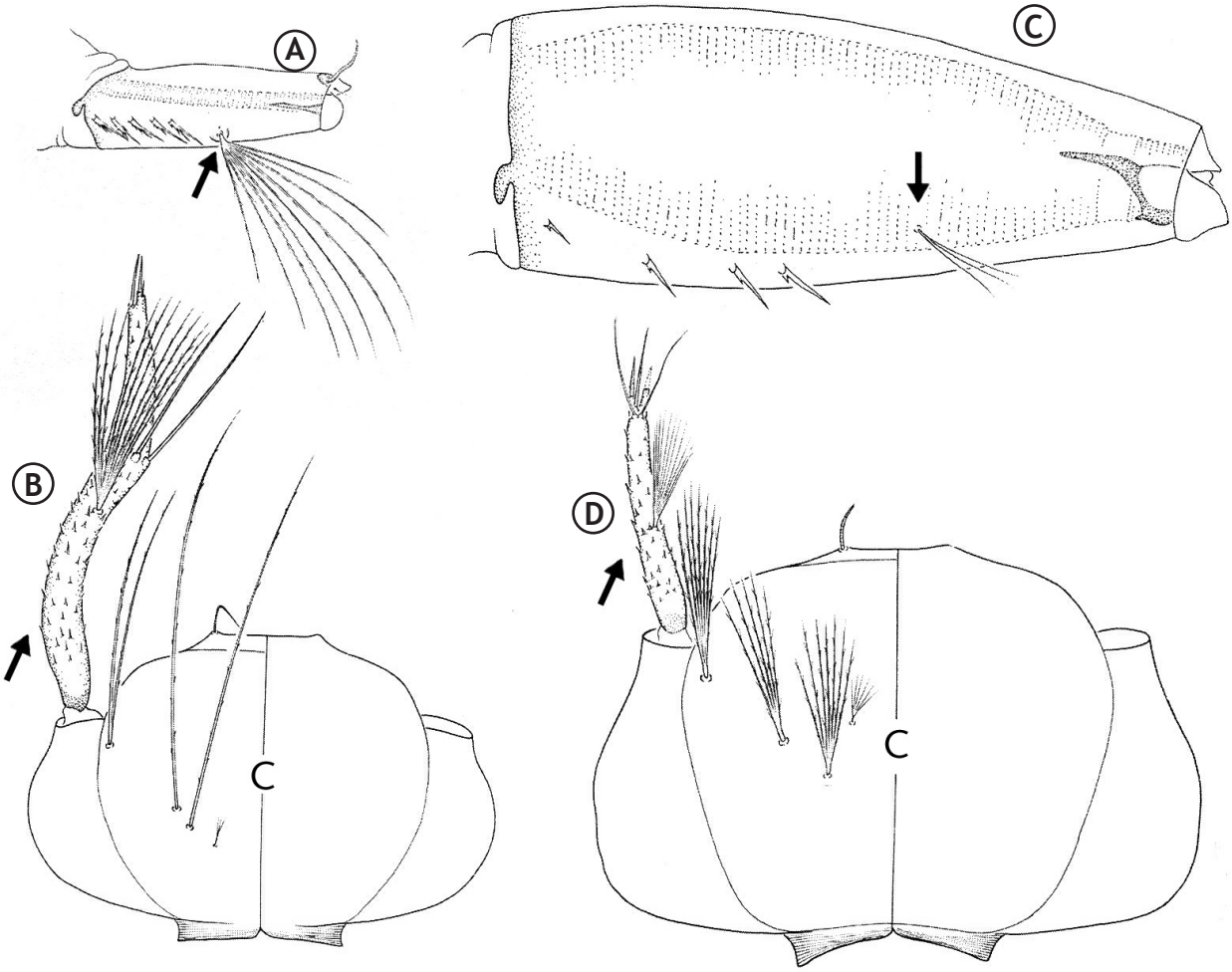


Figure 2.
A. Lateral view of abdominal segment X - *Ps. ciliata*
B. Lateral view of abdominal segment X - *Ps. howardii*

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

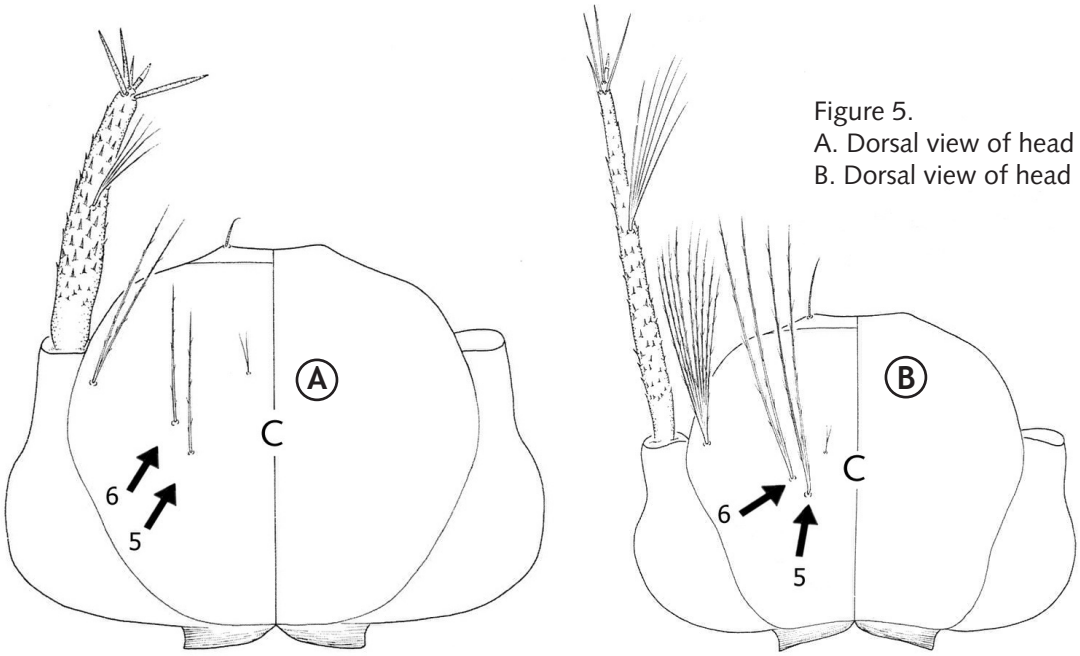


Figure 5.
A. Dorsal view of head - *Ps. cyanescens*
B. Dorsal view of head - *Ps. ferox*

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

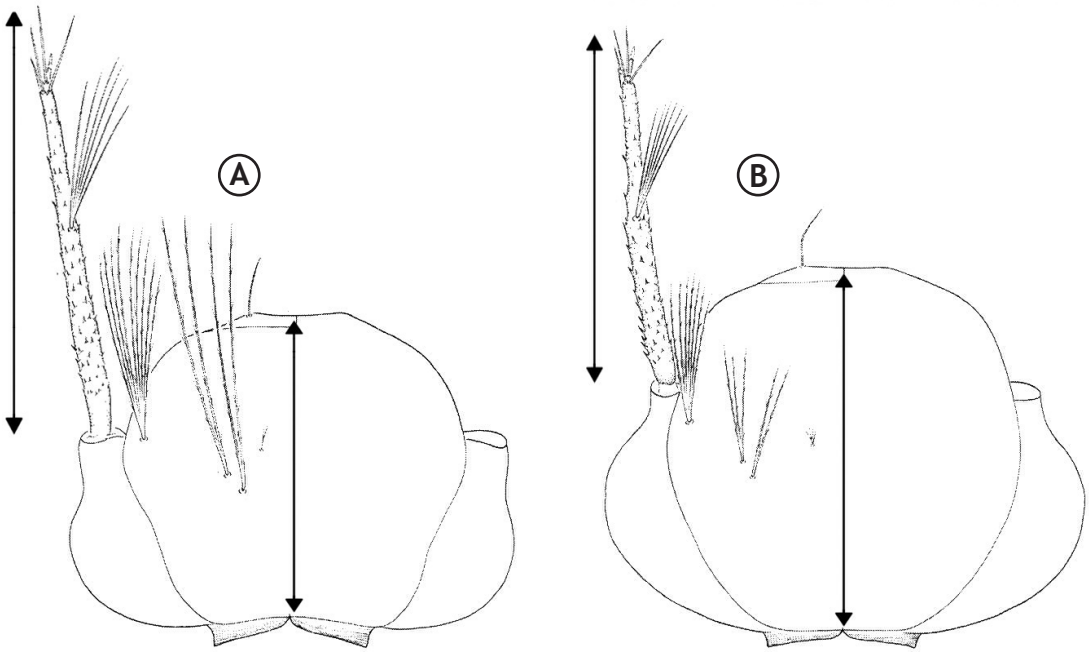


Figure 6.
A. Dorsal view of head - *Ps. ferox*
B. Dorsal view of head - *Ps. horrida*

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*

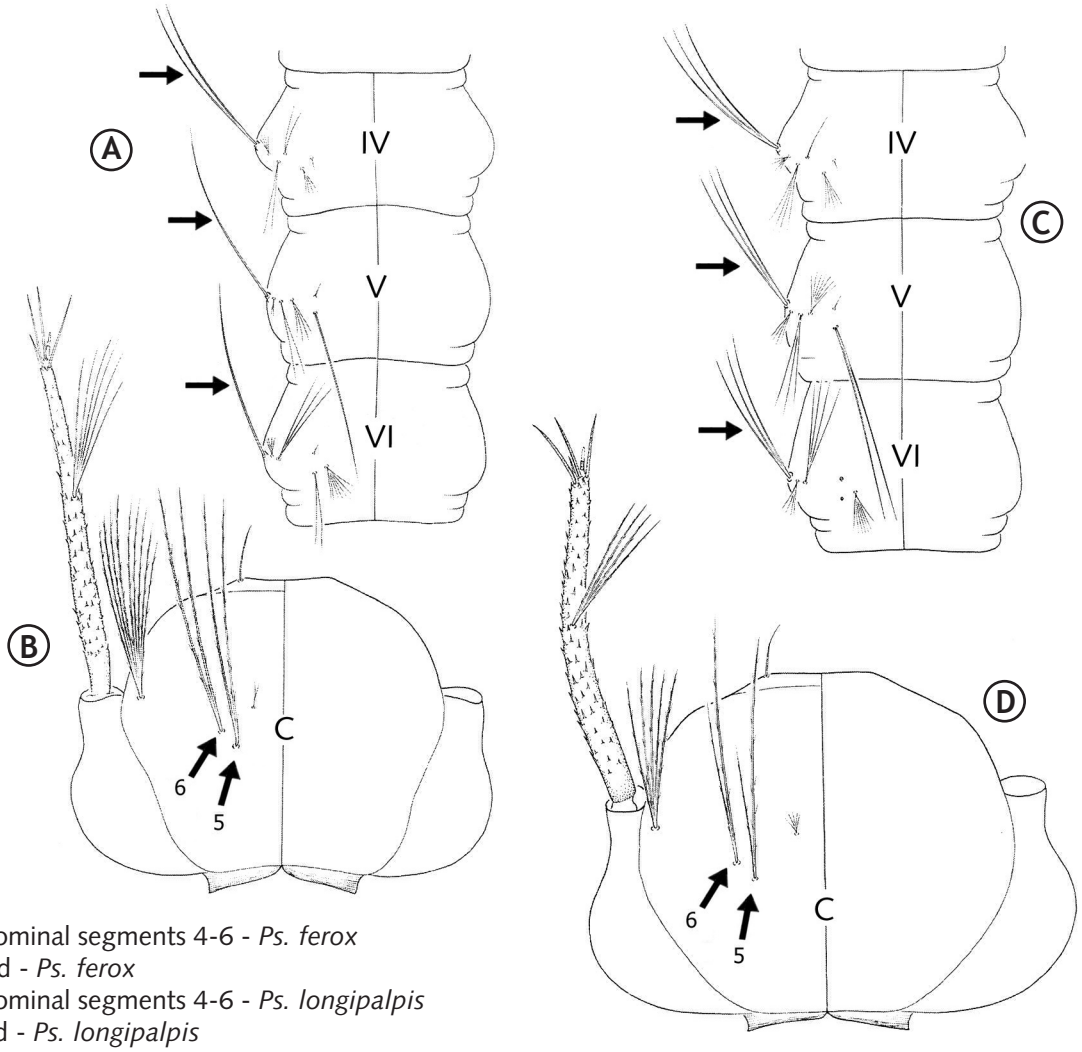


Figure 7.
A. Dorsal view of abdominal segments 4-6 - *Ps. ferox*
B. Dorsal view of head - *Ps. ferox*
C. Dorsal view of abdominal segments 4-6 - *Ps. longipalpis*
D. Dorsal view of head - *Ps. longipalpis*

8(6'). Siphon only slightly inflated (Fig. 8a).....*Ps. mathesoni*

8'. Siphon strongly inflated (Fig. 8b).....9

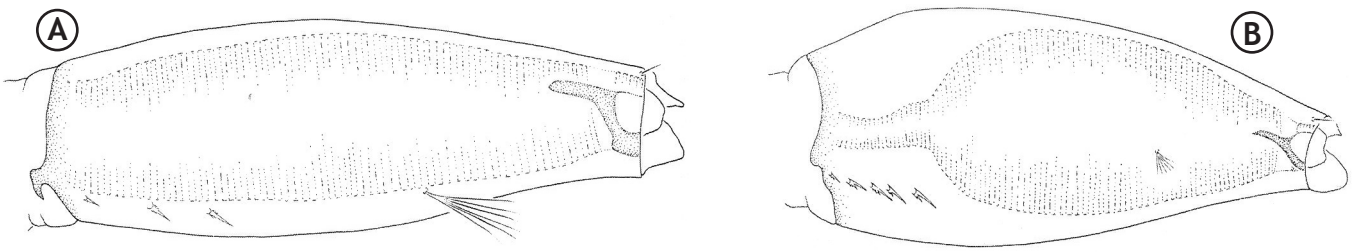


Figure 8.
A. Lateral view of siphon - *Ps. mathesoni*
B. Lateral view of siphon - *Ps. horrida*

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*

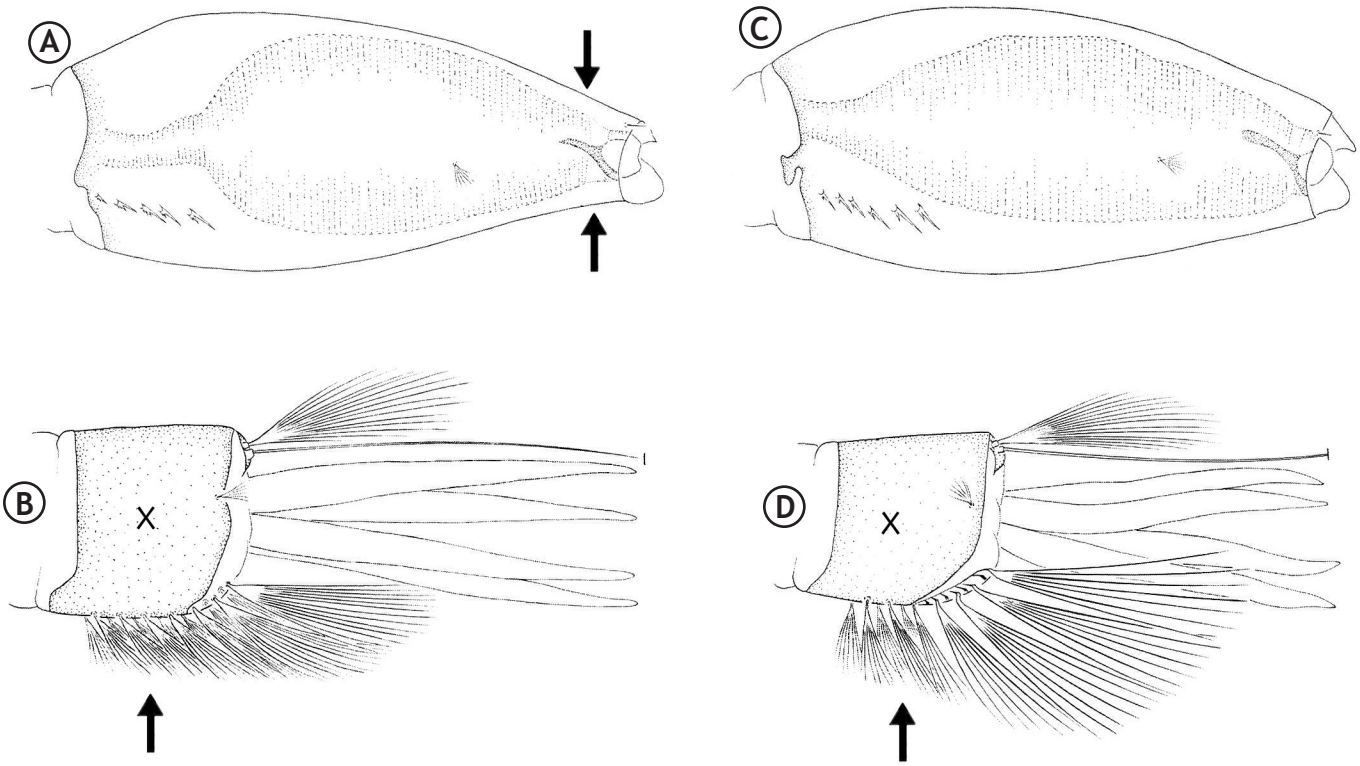


Figure 9.
A. Lateral view of siphon - *Ps. horrida*
B. Lateral view of abdominal segment X - *Ps. horrida*
C. Lateral view of siphon - *Ps. johnstonii*
D. Lateral view of abdominal segment X - *Ps. johnstonii*

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*

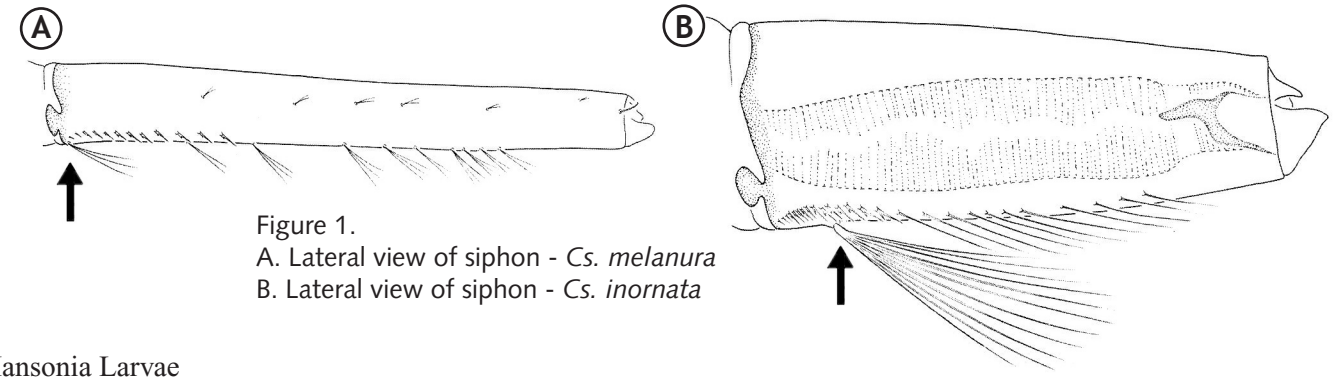


Figure 1.
A. Lateral view of siphon - *Cs. melanura*
B. Lateral view of siphon - *Cs. inornata*

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*

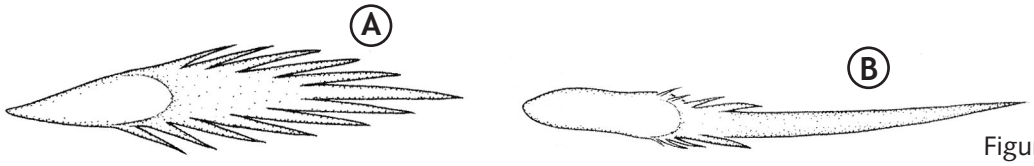


Figure 1.
A. Comb scale - *Ma. dyari*
B. Comb scale - *Ma. titillans*

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*

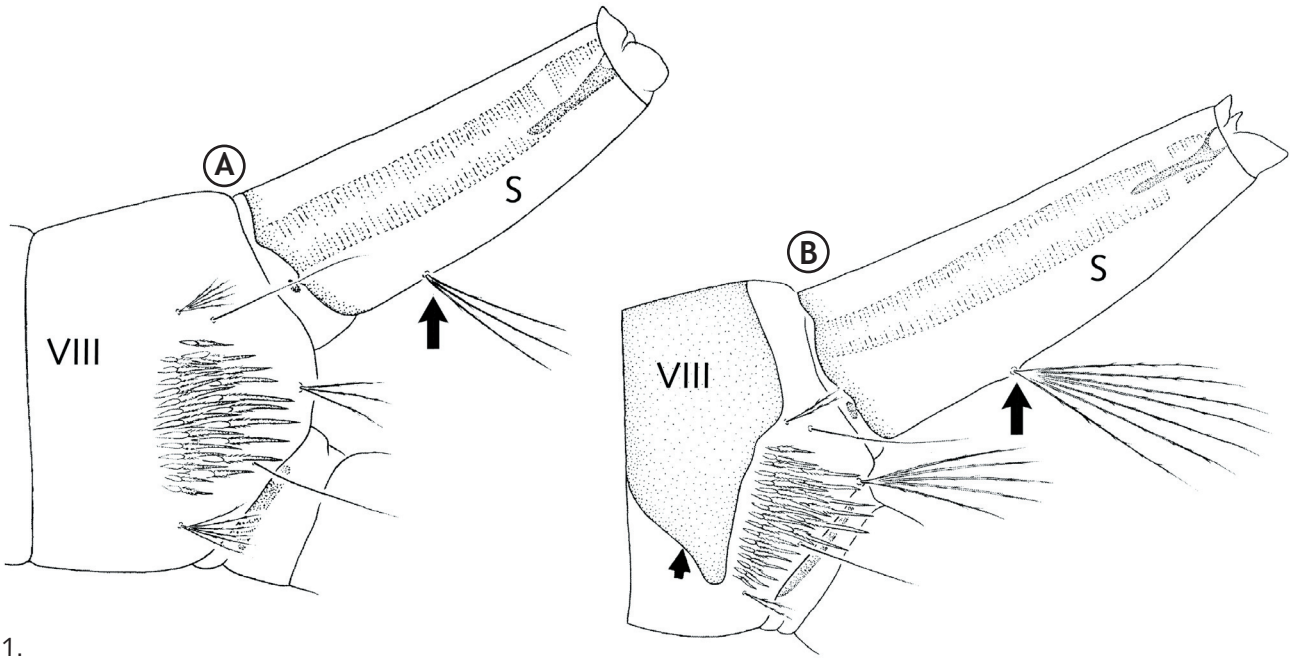
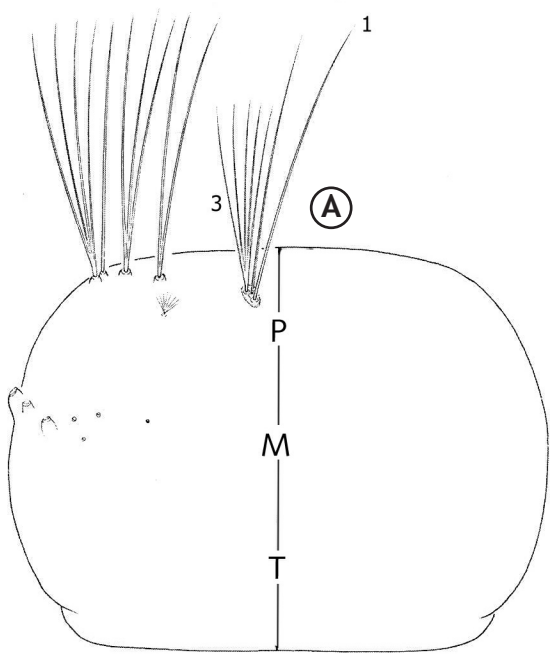


Figure 1.
A. Lateral view of siphon and abdominal segment VIII - *Or. alba*
B. Lateral view of siphon and abdominal segment VIII - *Or. signifera*

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*



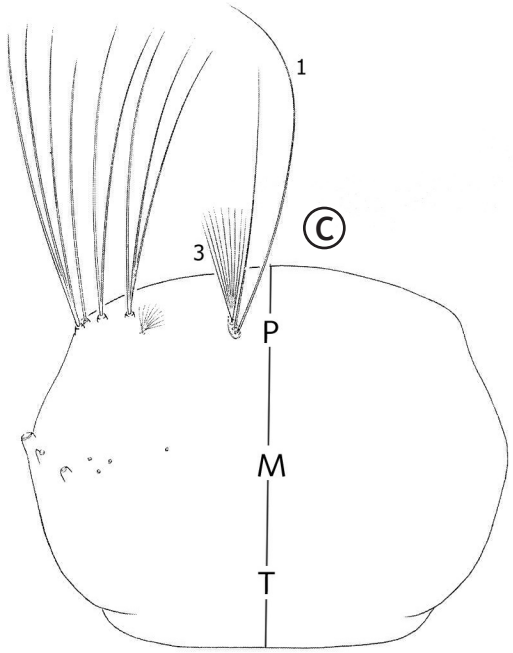
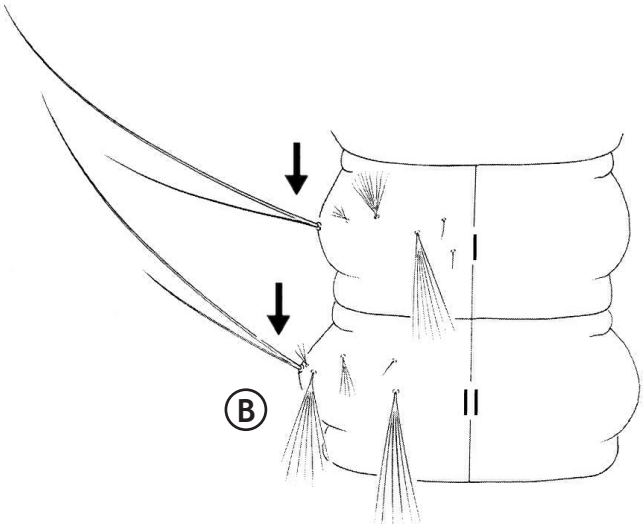
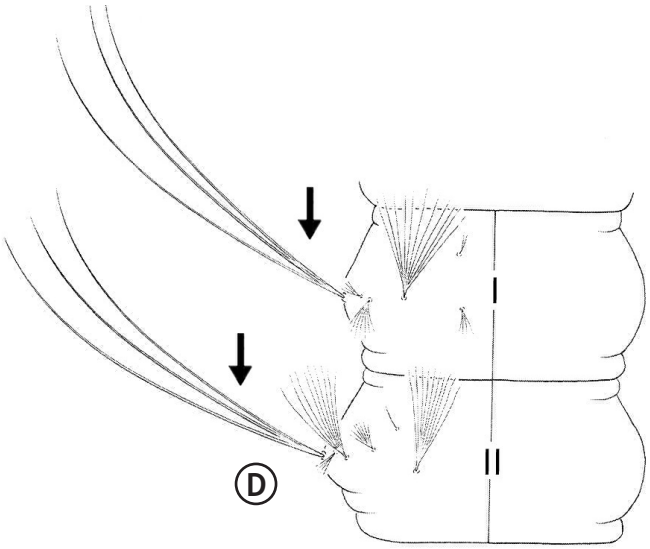



Figure 1.
A. Dorsal view of prothorax - *Ur. lowii*
B. Abdominal segments I and II - *Ur. lowii*
C. Dorsal view of prothorax - *Ur. sapphirina*
D. Abdominal segments I and II - *Ur. sapphirina*